



SUMMARY REPORT OF THE GLOBAL CONFERENCE ON LAND-OCEAN CONNECTIONS: 23-24 JANUARY 2012

The Global Conference on Land-Ocean Connections (GLOC) took place in Manila, the Philippines, from 23-24 January 2012, with the object of providing recommendations for the Third Intergovernmental Review (IGR-3) on the Implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA). IGR-3 took place immediately after the GLOC, from 25-27 January 2012, also in Manila. Over 450 participants, with representatives from 72 governments, and 76 non-governmental organizations, intergovernmental organizations and industry, participated in the GLOC.

On Monday, the first day of the GLOC, participants were welcomed to the conference by Secretary Ramon Paje, Department of Environment and Natural Resources (DENR), the Philippines, Ibrahim Thiaw, Director, Division of Environmental Policy Implementation, UN Environment Programme (UNEP), and the former President of the Philippines Fidel V. Ramos. Joseph Alcamo, Chief Scientist, UNEP, presented on UNEP’s “Foresight Process to Identify Emerging Global Issues.” The conference then split into breakout groups for in-depth discussions of specific issues, including: managing the global nutrient cycle; marine litter; coastal ecosystems; wastewater; and deltas. The breakout sessions were organized around speakers, panel sessions and discussions.

Tuesday morning began with a moderated plenary session to consider reports from the breakout groups that took place on Monday. The plenary was followed by a moderated expert panel addressing “a green economy in a blue world – the contribution of marine and coastal ecosystems and management to move towards higher use efficiency, sustainable food, and water security and improved water quality.” Participants then split into breakout groups to discuss specific issues including: regional seas; coordination among Global Environment Facility (GEF) and UN agencies; integrated water resources management (IWRM) – linking IWRM and the coastal zone; and ecosystem-based coastal planning and management (EBM). The conference closed with a moderated plenary session to consider reports from the second day’s breakout groups and a final plenary session to introduce draft conclusions and recommendations for a report from the GLOC to the IGR-3 on the Implementation of the GPA.

A BRIEF HISTORY OF THE GPA

Major threats to the health, productivity and biodiversity of the marine environment result from human activities on land, including the generation of municipal, industrial and agricultural wastes and runoff, as well as atmospheric



View of the plenary during the closing session of the GLOC

deposition. These contaminants affect the most productive areas of the marine environment, particularly estuaries and near-shore coastal waters. The marine environment is also threatened by physical alterations of the coastal zone, such as the destruction of habitats critical to the maintenance of ecosystem health.

UNCHE AND UNEP: The UN Conference on the Human Environment (UNCHE), held in Stockholm, Sweden, in June 1972, led to the adoption of a number of regional and international agreements, and underscored “the vital importance for humanity of the seas and all the living organisms which the oceans support.” The conference called for the establishment of UNEP, which was codified by UN General Assembly resolution 2997 (XXVII). UNCHE endorsed a regional approach to controlling marine pollution.

UNEP REGIONAL SEAS PROGRAMME: UNEP launched its Regional Seas Programme in 1974 by encouraging groups of countries sharing common seas to find regional solutions to their particular problems. Today more than 143 countries participate in 13 Regional Seas Programmes and five partner programmes, making it one of the most globally comprehensive initiatives for the protection of marine and coastal environments. These regions are the: Black Sea; Wider

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Caribbean; East Asian Seas; Eastern Africa, South Asian Seas; Regional Organization for the Protection of the Marine Environment (ROPME) Sea Area; Mediterranean; North-East Pacific; Northwest Pacific; Red Sea and Gulf of Aden; South-East Pacific; Pacific; and Western Africa. The five partner programmes cover the Antarctic, Arctic, Baltic Sea, Caspian Sea and North-East Atlantic.

UNCLOS: The UN Convention on the Law of the Sea (UNCLOS) opened for signature on 10 December 1982, in Montego Bay, Jamaica, at the third UN Conference on the Law of the Sea. It sets forth the rights and obligations of states regarding the use of the oceans, their resources, and the protection of the marine and coastal environment. The Convention entered into force on 16 November 1994.

THE MONTREAL GUIDELINES: Coinciding with the adoption of UNCLOS, UNEP began addressing issues related to impacts on the marine environment from land-based activities. This initiative resulted in the Montreal Guidelines for the Protection of the Marine Environment against Pollution from Land-based Sources, which were endorsed by the UNEP Governing Council in 1985. The Guidelines were expected to serve as a basis for future drafting work at the international and national levels.

UNCED: The UN Conference on Environment and Development (UNCED), held in Rio de Janeiro, Brazil, in June 1992, adopted Agenda 21 – an action plan for implementing sustainable development. Chapter 17 of Agenda 21 addresses “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.” It specifically refers to the Montreal Guidelines and invites, in paragraph 17.26, the UNEP Governing Council to convene an intergovernmental meeting on the protection of the marine environment from land-based activities.

UNEP GOVERNING COUNCIL DECISION 17/20:

In response to Agenda 21, the UNEP Governing Council, in its decision 17/20 of 21 May 1993, *inter alia*, authorized the UNEP Executive Director to implement the UNCED recommendations, and decided on a workplan, timetable and budget for the preparatory process and the intergovernmental meeting itself, to be held in Washington, D.C., US, in 1995.

GPA: The Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities (GPA) was adopted by 108 governments and the European Commission at the Intergovernmental Conference to Adopt a Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, held in Washington, D.C., from 23 October to 3 November 1995. The Conference designated UNEP as the GPA Secretariat to lead the coordination of GPA implementation. UNEP established the GPA Coordination Office in The Hague, the Netherlands, in 1997. The GPA was designed to be a source of conceptual and practical guidance to be drawn on by national and/or regional authorities in devising and implementing sustained action to prevent, reduce, control and/or eliminate marine degradation from land-based activities. The GPA calls on states to:

- establish priorities based on assessments of the severity and impacts of contaminants, applying integrated coastal area and watershed management approaches;
- set management objectives, including goals, targets and timetables, to address priority problems with regard to source categories and affected areas;
- identify, evaluate and select strategies and measures to achieve these objectives; and

- develop criteria for evaluating the effectiveness of strategies and measures.

UNEP GOVERNING COUNCIL DECISION 20/19B: In February 1999, the UNEP Governing Council, in its decision 20/19B, decided to undertake the first Intergovernmental Review Meeting (IGR) of the Implementation of the GPA in 2001, and requested the UNEP Executive Director to organize an expert group meeting to facilitate the preparatory process.

IGR-1: At the first IGR held in Montreal, Canada, from 26-30 November 2001, representatives from 98 countries, UN agencies, intergovernmental organizations and non-governmental organizations (NGOs) convened to review the implementation of the GPA since its adoption in November 1995, and to chart the way forward. The meeting endorsed the GPA Coordination Office 2002-2006 Programme of Work with indicative costs, and focused on the following issues: municipal wastewater; integrated coastal and oceans governance; building partnerships; and financing the implementation of the GPA. The meeting noted steady, albeit slow, progress in the implementation of the GPA at global, regional and national levels. IGR-1 outcomes include the Montreal Declaration, conclusions of the Co-Chairs, a declaration by the Global Legislators Organization for a Balanced Environment, a statement by the International Council for Local Environmental Initiatives and a statement by NGOs.

IGR-2: The second IGR held in Beijing, China, from 16-20 October 2006 was attended by over 400 participants representing governments, intergovernmental organizations, international financial institutions and NGOs. The meeting addressed: the way forward with National Programmes of Action; a review of accomplishments in GPA implementation from 2001 to 2006; and Guidance for the Implementation of the GPA 2007-2011. Delegates also engaged in 19 partnership workshops on mainstreaming the implementation of the GPA. The outcomes of the meeting included the Beijing Declaration on Furthering the Implementation of the GPA, which was submitted for endorsement by the UNEP Governing Council/ Global Ministerial Environment Forum, held in February 2007.

GLOC REPORT

Welcoming delegates and participants to the Global Conference on Land-Ocean Connections, Secretary Ramon Paje, DENR, the Philippines, underscored the importance of marine coastal resources to the Philippines and described both, the stresses that these resources face and the experience of the Philippines in implementing the GPA, including the establishment of marine protected areas (MPAs).



Ramon Paje, Secretary, DENR, the Philippines

Ibrahim Thiaw, UNEP, called on the GLOC to provide sound scientific inputs and policy solutions into the IGR-3 for the Implementation of the GPA. He called for a closer look at the relationship between land-based threats to coastal ecosystems, including: climate change; chemical and nutrient cycle changes; urbanization; over-exploitation of natural

resources; and proliferation of dead-zones. He underscored the regional seas programme and the “green economy” as means of responding to the challenges of managing coastal and marine issues, highlighting a new UNEP report on the “Green Economy in a Blue World,” to be launched during IGR-3.

Former President of the Philippines Fidel V. Ramos welcomed participants with the traditional Tagalog greeting, *Mabuhay* (long live). He reminded participants of the linkages between environment and people, stressing the importance of mankind in ensuring sustainable development for all, and urged them to take action to ensure sustainable development of oceans.



Fidel V. Ramos, former President of the Philippines

Participants adopted the agenda and organization of work (UNEP/GPA/WG.1/1/Rev.2) for the conference, which was co-chaired by Raphael Lotilla, Partnerships in Environmental Management for the Seas of East Asia (PEMSEA), and Wendy Watson-Wright, UN Educational, Scientific and Cultural

Organization – Intergovernmental Oceanographic Commission (UNESCO-IOC).

UNEP'S FORESIGHT PROCESS TO IDENTIFY EMERGING GLOBAL ISSUES

Joseph Alcamo, UNEP, presented the report on UNEP's “Foresight Process to Identify Emerging Global Issues,” noting it is a systematic procedure to make the international community more aware of critical emerging issues in the global environment. He highlighted three emerging issues: avoiding degradation of inland waters in developing countries; the potential collapse of oceanic systems requiring integrated ocean governance; and addressing increasing pressures on coastal ecosystems with adaptive governance.

He also described challenges at the land-ocean interface. To reduce the impact of nutrients on coastal zones, which can result in ‘hypoxic’ (low oxygen) zones, he suggested more efficient use of fertilizer, improved livestock waste management, and strengthening the Global Partnership on Nutrient Management. To reduce the impacts of other wastewater inputs, such as endocrine disrupting chemicals, he suggested assessing pollutants, raising awareness, and removal of sources. On plastics and other marine debris from poorly managed landfills, untreated sewage, storm water, wind-blown debris and recreational use of coastal areas, he

recommended improving data, raising awareness, controlling sources, strengthening existing initiatives, and establishing a global partnership for marine litter. He said the loss of services provided by coastal ecosystems due to pollution, climate change and coastal development can be overcome by restoring coastal vegetation, a parallel programme to “reducing emissions from deforestation and forest degradation in developing countries” (REDD), mainstreaming ecosystem services in integrated coastal zone management (ICZM), and improving data and scientific understanding. Alcamo called for reducing uncertainties about the presence and impacts of pollutants in the coastal zone; strengthening science-policy linkages; and taking precautionary policy action.

BREAKOUT GROUPS

MANAGING THE GLOBAL NUTRIENT CYCLE:

Chair Analiza Rebueta Teh, DENR, the Philippines, moderated the session and presented key messages from the breakout group, including the need to have a holistic approach to integrated coastal management (ICM), water management, food security and health. She highlighted the need for awareness raising and the establishment of a baseline for fertilizer use.

Mark Sutton, Centre for Ecology and Hydrology, Natural Environment Research Council of the UK, provided a global overview of the nutrient management cycle. He said reduced consumption patterns are powerful opportunities to improve nutrient use efficiency.

Clement Lewsey, National Oceanic and Atmospheric Association (NOAA), US, presented current US policy actions in addressing nutrient pollution. He said the Clean Water Act, Coastal Management Zone Act and the 2008 Farm Bill reduced point source pollution in coastal waters.

Kaj Sanders, Ministry of Infrastructure and Environment, the Netherlands, provided examples of European experiences in nutrient use efficiency in fertilizer consumption. He noted that a recent decrease could be credited to European directives that translate into national policies, and recommended engaging farmers as part of nutrient management strategies.



Kaj Sanders, the Netherlands



Dais of the morning breakout group on “Managing the Global Nutrient Cycle”

Daniel Amlalo, Environment Protection Agency, Ghana, highlighted awareness creation in the application and use of fertilizers, proper waste disposal, and the need to re-use and recycle wastewater.

Gil Jacinto, University of the Philippines, presented a case study from Manila Bay on hypoxia and eutrophication, and showed a correlation between 'red tide episodes' (where shellfish accumulate a toxin produced by marine algae, posing a grave risk to the health and economic livelihood of people living in coastal areas) and the onset of the monsoon seasons.



Kilaparti Ramakrishna, UNESCAP

Kilaparti

Ramakrishna, UN Economic and Social Commission for Asia and the Pacific, highlighted the work of the International Nitrogen Initiative and its critical policy momentum at the global level. He noted that nutrient use efficiency could be achieved through legislative effectiveness and also changing

consumption choices.

Angela Olegario, International Fertilizer Industry Association, reiterated that setting a global target is not a "one-size-fits-all" solution because of the heterogeneity of global farming systems and diverse agro-ecological conditions.

Amit Roy, International Fertilizer Development Centre, shared experiences in improving nitrogen nutrient use efficiency, provided perspectives on the impacts of fertilizer use and highlighted the need for more global research on nitrogen fertilizers.

Roland Scholz, Swiss Federal Institute of Technology, emphasized a holistic approach to close the fertilizer loop to minimize waste, improve capacity building in fertilizer management, and increase recycling efficiency.

Alfred Duda, GEF, proposed focusing on organic livestock manure and sewage as a viable alternative to fertilizers. He also promoted the importance of wetlands as an ecological nutrient reduction solution.

Vladimir Mamaev, UN Development Programme (UNDP), highlighted that the flow of reactive nitrogen to the world's oceans has increased by 150% compared to pre-industrial times. He also emphasized the need for a paradigm shift in waste capture and management.

Thomas Sims, University of Delaware, noted the use of hybrid crops for improving nutrient use efficiency.

Jan Willem Erisman, Energy Research Centre of the Netherlands, said that nitrogen use in the environment forms a cascade effect from local to global. He stressed the need for countries to improve their nutrient use efficiency and reduce fertilizer use across the full food-chain production process by 20% relative to a baseline, within five years.

MARINE LITTER: On Monday morning, breakout group Chair Ellik Adler, Coordinator, Coordinating Body of the Seas of East Asia (COBSEA), highlighted the Honolulu Commitment and Strategy, adopted at the 5th International

Marine Debris Conference in Honolulu, US, from 20-25 March 2011, as a basis for establishing a global partnership on marine litter.

Nancy Wallace, NOAA, said the Honolulu Strategy provides a framework for a global effort, a planning tool, a reference for collaboration, and a monitoring tool to track progress. The Honolulu Strategy's primary goals include reducing the amount and impact of: land-based sources of marine debris; sea-based sources of marine debris; and accumulated marine debris on shorelines, benthic habitats and in pelagic waters. She identified cross-cutting solutions, such as education and outreach, best management practices, legislation and policy frameworks, and monitoring and enforcement capacity, as well as additional goal-specific actions.

She highlighted the Honolulu Commitment's role as a multi-stakeholder pledge to reduce marine debris, which enables individuals and organizations to collaborate to enhance effectiveness, encourage financial support and participate in global efforts.

Mushtaq Memon, UNEP, presented on the global partnership on waste management as a model for addressing marine litter, noting that it serves primarily as a coordinating mechanism through needs assessments for capacity building, an information platform on waste management, sponsored focal areas and regular meetings.

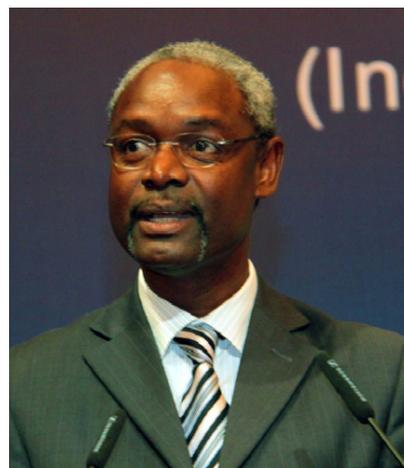
Wallace gave a second presentation on the Marine Debris Network (MDN), an online forum to support a global partnership on marine litter, which is being established by UNEP and NOAA. She said the MDN would allow stakeholders to find and share information, interact with other stakeholders, track progress on the Honolulu Strategy, and take action by pledging support to the Honolulu Commitment.

In the afternoon Biliana Cicin-Sain, Co-Chair, Global Forum on Oceans, Coasts and Islands, said the global partnership on marine litter would need to be carefully structured, with specific indicators and targets, to succeed. With GLOC Co-Chair Wendy Watson-Wright, UNESCO-IOC, she noted that marine litter is included in the zero draft of the Rio+20 outcome.

Mushtaq Memon, Ibrahim Thiaw and Nancy Watson called for launching the global partnership on marine litter at Rio+20.

Heidi Savelli, UNEP, noted that the global partnership on marine litter would build upon the MDN to promote the Honolulu Strategy.

Jan-Erik Johansson, Plastics Europe, stressed the concern of the plastics industry



Ibrahim Thiaw, UNEP

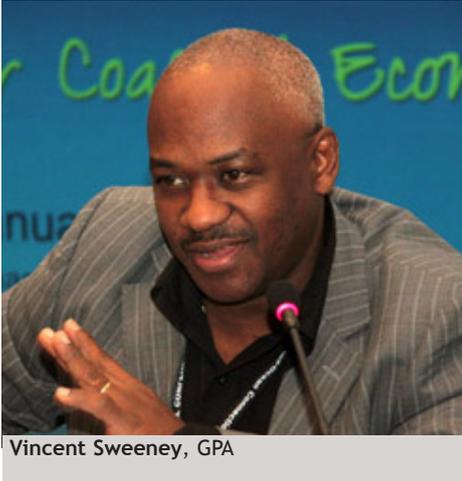
about plastics in the marine environment and underscored their ambition to work collaboratively to address marine litter. He highlighted the importance of waste management, particularly recycling of plastics, transfer of knowledge from countries that have successfully diverted

all plastics from landfills to those that have not, and better knowledge of the problems of microplastics and persistent-organic pollutants.

Chris O'Brien, UN Food and Agricultural Organization (FAO), highlighted the role of the FAO in global efforts on marine litter, particularly in addressing "ghost fishing", which results from discarded or lost fishing gear.

David Johnson, the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) Commission, underscored the role of regional seas programmes, through projects such as "fishing for litter."

During the discussion, participants described innovative plastics recycling projects in the Philippines and noted the need



Vincent Sweeney, GPA

for enforcement capacity to reduce at-sea litter disposal outside of Manila harbor. One participant underscored numerous bottom-up partnerships on litter and hoped the global partnership would not be bureaucratic.

Vincent

Sweeney, GPA Coordinator, said it was encouraging to see interest in a global partnership, and noted the importance of action beyond words – including the commitment of human and financial resources to implement such partnerships.

COASTAL ECOSYSTEMS: Jerker Tamelander, Head, Coral Reef Unit, UNEP, moderated the session, noting trends of declining mangroves and sea and tidal marshes, and threatened coral reefs. He asked participants to consider how the challenges faced by coastal ecosystems can be turned into opportunities to develop and showcase the benefits of a green economy.

Tundi Agardy, Director, Marine Ecosystem Services Program, Forest Trends, presented four ecosystem services: provisioning; regulating; supporting; and cultural/spiritual. She said habitat loss is the biggest driver of ecosystem

services loss, and that marine and coastal systems provide many services simultaneously. Underscoring the need to think holistically, she stressed the need for financing for marine environments, including through innovative

financing mechanisms such as certification, eco-labeling, payments for ecosystem services (PES), public-private partnerships (PPPs) and trust funds.

Linwood Pendleton, Director of Ocean and Coastal Policy, Duke University, presented on "coastal blue carbon" (carbon stored in coastal and ocean ecosystems), describing annual blue carbon emissions from coastal habitat change, and potential areas for carbon credits. He noted that establishing markets is a costly process – the planning and institutional capacity costs for REDD total USD 1.6 billion – but stressed that lessons learned from REDD could be applied to blue carbon. He recommended identifying a handful of ecosystem services to assess, monitor and measure, in addition to a holistic, rather than comprehensive, approach.

Richard Kenchington, University of Wollongong, said a major challenge is to explain science in ways that meet the needs of decision-makers. He identified three strategic priorities: provision and maintenance; local government issues, such as planning and infrastructure; and capacity. He said that the cost of repair and



Richard Kenchington, Australian National Centre for Ocean Resources & Security

restoration of ecosystems is high and stressed that conservation can have a stronger impact, a perspective shared by all panelists. He recommended "individual itineraries" rather than one roadmap or toolkit.

Panelists and participants discussed, *inter alia*: source category prioritization under the GPA; financing, including through innovative financing mechanisms; and data and information gathering. A participant from Conservation International described her organization's mentorship programme between faculty members and local government officials, aimed at building the technical capacity of local governments to implement the Philippines national plan of action for the regional Coral Triangle Initiative. She suggested replicating this partnership in other countries. Several participants from the Philippines highlighted the importance of local knowledge on coastal ecosystems.

WASTEWATER: On Monday afternoon, breakout group Chair Vincent Sweeney noted the importance of sewage as a priority "source category" under the GPA, and encouraged participants to consider how this local issue could be addressed at the global level, and how a proposed global partnership on wastewater could function.

Takehiro Nakamura, UNEP, presented on pro-poor wastewater management (PPWM) – an approach which promotes and demonstrates pro-poor, environmentally-friendly and resource-recycling approaches to wastewater, while addressing the health and hygiene aspects related to wastewater management. He identified the following key components: an international forum on PPWM; an information exchange platform; and demonstration of PPWM with a focus on urban and peri-urban areas. As benefits, he highlighted



Tundi Agardy, Forest Trends

nutrient recycling, mitigation of environmental impacts and collaboration through the proposed global partnership on wastewater management.

Alan Baird, Asian Development Bank, presented on the role of a global partnership in addressing wastewater management challenges. He listed lack of political will, low investment, and lack of awareness as barriers to such a partnership, and called for a wastewater management revolution focusing on: awareness and advocacy; expanding the knowledge base; increasing financing and incentives for investment; and developing partnerships.

Bert Diphooorn, UN Human Settlements Programme (UN-HABITAT), presented on the UNEP / UN-HABITAT interagency collaboration on wastewater management, saying it creates synergies between independent work on wastewater, links with other issues such as climate change, food security and poverty reduction, and promotes policy formulation.



Bert Diphooorn, UN-HABITAT

Christopher Corbin, UNEP, noted the impacts of wastewater on marine-based tourism and highlighted similarities between the challenges faced in the Caribbean and other regions, with regard to finance and fragmented institutional frameworks. He highlighted the Caribbean Wastewater Treatment Fund, sponsored by GEF, the Inter-American Development Bank and UNEP.

Olivia la O'Castillo, UN Secretary-General's Advisory Board on Water and Sanitation, said Rio+20 should catalyze partnerships on wastewater to ensure its placement within national development agendas, and called for a global vision on wastewater management, internationally agreed targets and a global monitoring system.



Olivia la O'Castillo, UN Secretary General's Advisory Board on Water and Sanitation

During discussions, one participant highlighted the release of phosphorus in wastewater treatment systems, which is a waste of scarce phosphorus resources and also damages coastal ecosystem, stressing the importance of nutrient removal and recycling. In response, Nakamura noted the challenges of addressing local issues at the global level, and said an option was to establish a knowledge base to build local capacity to address wastewater management issues. Nakamura noted the importance of coordinating activities related to wastewater management across agencies at the national and international levels. One participant said a review of local land-use plans in

the Philippines shows that local authorities allocate insufficient space for wastewater treatment. Another participant suggested that "water re-use" may be a better term than wastewater management, and said PPWM might be condescending because the poor often lack access to basic drinking water. Nakamura and Baird stressed that the term "pro-poor" is meant to highlight the negative impact of wastewater on the poor.

Chair Sweeney concluded by noting the potential for partnerships to identify appropriate technologies, advocacy and awareness raising, and promoting PPPs. Highlighting suggestions related to nutrient recycling; treating wastewater as a resource; a comprehensive approach to water management; and allocation of space for sewage treatment, he noted on-the-ground examples of the challenges and solutions of wastewater treatment.

DELTA: Christian Severin, GEF, moderated this panel. Gordon Young, International Association of Hydrological Science, presented on land-based and ocean-based processes influencing deltas. He described the impacts of human activities on delta formation and evolution, including dams, land-use change, and groundwater abstraction. He stressed the need to merge freshwater and marine management, and proposed 2013 as the Year of the Delta.

Wim van Driel, Delta Alliance, described deltas as both valuable and vulnerable, and listed climate change and sea level rise as long-term threats. He presented a comparative delta assessment project that identified resilient and sustainable deltas, based on drivers of change, pressures and governance indicators. The Rhine-Meuse delta scored as the most resilient and sustainable, while the Ganges-Brahmaputra-Meghna delta was the least resilient.



Biliana Cicin-Sain, Global Forum on Oceans, Coasts and Islands

R. Ramesh, Ministry of Environment and Forests, India, presented an assessment of the changing climate and human dimensions of the Mahanadi delta. He said land use analysis showed ecosystem degradation, reduced sediment and a 45% decrease in mangroves, noting that human development activities accounted for over half of the changes.

Isabelle Van Der Beck, UNEP, described the Rio Bravo basin located on the US-Mexico border. She said water abstraction is the biggest challenge, with 96% of the river's annual average flow allocated for human use.

Biliana Cicin-Sain facilitated the discussion. She reminded participants that the GPA is the only global programme that connects coastal, marine and freshwater environments. She stressed that the GPA is starting to emphasize prioritization, but that more interactions among actors and processes are necessary for integrated management.

Participants discussed, *inter alia*: climate change; human activities, including sand dredging; and policy approaches, including IWRM and ICM.

REGIONAL SEAS: The regional seas breakout group was chaired by David Johnson, Coordinator, OSPAR, with presentations by Lucien Chabason, UNEP-Mediterranean

Action Plan; Ellik Adler, COBSEA; Christopher Corbin, UNEP; and Dixon Waruinge, Nairobi Convention Secretariat. On best practices for nutrients, the group discussed: legal frameworks as a central basis for cooperation; the multiplicity of issues, partners and stakeholders; and the need for more focused partnerships to respond to specific needs. On best practices for wastewater management, the group identified issues including: leveraging funds; making socio-economic linkages; and bridging global and local scales.

Participants agreed that solutions related to the management of the regional seas must, *inter alia*: apply ecosystem approaches; implement, interpret and facilitate global partnership strategies; avoid fragmentation of marine governance; and harness the global consensus of the GPA. The panel concluded that while mechanisms already exist to foster proposed partnerships, sufficient resources are necessary to strengthen national delivery, implement regional coordination and ensure strategic action. The group recommended: raising the visibility of achievements related to the management of regional seas; strengthening regional seas systems; encouraging bilateral cooperation and mutual support; and ensuring the outcomes of Rio+20 recognize the role of regional seas programmes.

GEF AND UN AGENCIES: Biliana Cicin-Sain chaired the panel. She introduced the coordinated approach of UN agencies through UN-Water and UN-Oceans, but noted that increased collaboration is necessary to promote interventions to contribute to the GPA.

Bert Diphhoorn described the role of UN-Water as a coordinating mechanism for all freshwater issues, including sanitation, water supply, water-related climate change adaptation and wastewater issues. He stressed UN-Water's united voice in global policy debates, particularly in the Rio+20 process.

Jacqueline Alder, Deputy Coordinator, UN-Oceans, said UN-Oceans is smaller than UN-Water, which allows consensus-based decision-making and provides the flexibility to address emerging issues. She described four UN-Ocean Task Forces: biodiversity in areas beyond national jurisdiction; MPAs and other area-based tools; marine debris; and oceans outreach.

Alfred Duda explained that the GEF's International Waters programme works at different scales – from large marine ecosystem and river basin linkage scales, to local community-based demonstration sites. He described several projects, including in the Black Sea large marine ecosystem, where eutrophication and hypoxia have decreased. He said USD 883 million of GEF funding is channeled to the GPA.

Kathleen Abdullah, UN Department of Economic and Social Affairs, said UN-Oceans has different but complementary expertise among its member bodies.



Jacqueline Alder, UNEP

Ibrahim Thiaw, UNEP, thanked Duda, who is retiring this year, for his contributions to oceans and freshwater issues through the GEF.

Participants asked questions related to accessing GEF funding, and the coordination of UN-Water and UN-Oceans in the Rio+20 process, including coordinated submissions on the Rio+20 Zero Draft.

Participants were given the opportunity to rank a list of 19 topics they felt UN-Water and UN-Oceans should prioritize. The top three selections were: ecosystem services, economies and livelihoods, including valuation; climate change adaptation; and water quality and pollution assessment and monitoring. Following discussions, participants agreed PES should be included in projects related to "blue forests" (coastal habitats like mangroves, sea grass beds and coral reefs) that have links to freshwater, as a topic which UN-Oceans and UN-Water should consider pursuing collaboratively.

IWRM: Session Chair Peter Bjørnsen, UNEP, underscored the challenges of making IWRM work in practice and said the goal is to promote the linkages between IWRM and coastal zone management.

Gordon Young presented an IWRM alliance for upstream/downstream, identifying the main principles underlying IWRM as equity, economic efficiency and environmental sustainability. He emphasized that competition between uses and users of water on land and in near-shore marine environments necessitates coordinated management.

Chuck Chaitovitz, Global Environment and Technology Foundation, described best practices related to nutrient reduction in Central and Eastern Europe, highlighting projects



Gordon Young, President, International Association of Hydrological Science

to decrease hypoxic zones in the Black Sea. He underscored best practices for nutrient reduction, *inter alia*: nutrient management; manure management; wetland restoration; riparian buffers; conservation tillage; cover crops; grazing management; and ecological/organic production systems.

Chaitovitz said IWRM is an important policy

foundation for nutrient reduction.

Vincent Sweeney, GPA Coordinator, spoke on the GEF project integrating watershed and coastal area management in the small island developing states of the Caribbean. He identified commonalities including the need to consider freshwater and coastal waters under IWRM, but said challenges include a vague understanding of IWRM, mobilizing resources and tailoring IWRM to specific circumstances.

Jessica Salas, Philippine Water Partnership, and Adrian Ross, PEMSEA, presented on linking ICM and IWRM. Ross highlighted PEMSEA's ICM approach, including ICM development and implementation, a sustainable development of coastal areas framework, state of the coasts reporting, and an ICM code. Ross described the ideal conceptual boundaries of ICM as ridge-to-reef, noting that in reality, the operational boundaries of ICM programmes are affected



Peter Bjørnsen, UNEP-DHI Centre for Water and Environment

by the jurisdictions of participating authorities. He underscored the often conflicting sectoral uses of freshwater, coasts and oceans. Salas described stakeholder challenges, including inequitable resource distribution, generation of land-based contaminants, natural and man-made hazards,

and sector-specific policy frameworks. Ross called for raising public awareness, stakeholder consultation and capacity development. Salas emphasized IWRM as an iterative, evolutionary and adaptive process.

During discussions Chair Bjørnsen summarized key points, *inter alia*: that the Agenda 21 call for integrated approaches to water resources management is more important than ever; EBM, ICM and IWRM are mutually consistent concepts but need to be combined and adapted to specific locations; the GPA should promote integrated approaches; and that it is more challenging to integrate upstream/downstream linkages at large scales. Another participant stressed the boundary issues between watershed management, ICM and administrative jurisdictions. Ross noted that this issue requires functional, administrative and vertical scaling-up to achieve ICM. Chair Bjørnsen highlighted recommendations, including mandating the GPA to: facilitate integration of EBM, ICM and IWRM; promote dialogue between IWRM and ICM communities; develop mechanisms to include marine and coastal considerations into freshwater resource management; and identify good practices and support capacity building for linking of upstream and coastal water management.

EBM: Introducing the breakout group on EBM, Takehiro Nakamura, UNEP, said the session aimed to identify practical steps to transform existing management and policy processes into platforms that incorporate ecosystem and green economy approaches. He outlined key questions to be addressed, including identifying incremental steps to incorporate EBM principles into ICZM and other policy frameworks, and key steps and tools needed to facilitate such steps.

Chairing the session, Richard Kenchington said despite multiple diagnoses, little progress has been made in effectively managing ecosystems. He suggested one reason is that people seek “in-the-box” solutions. He proposed three questions to help identify recommendations: what impedes stakeholder progress towards EBM; what is needed to address these difficulties; and how UNEP and others might provide practical support to address these difficulties.

Tundi Agardy provided an overview of EBM, noting that it is a holistic approach that considers different users, perspectives, interests and aims to conserve and sustain ecosystems for the benefit of future generations. She outlined the five core principles of EBM, including: recognizing connections; applying ecosystem services perspectives; understanding and addressing cumulative impacts on ecosystems; managing for multiple objectives; and allowing for adaptive management. She suggested that carrying out EBM is a three-phase approach that includes planning, application and adaptation, but said that these phases may not be distinct, as EBM is a “journey, not a destination.”

Eugene Nixon, Marine Institute, Ireland, said that incremental steps for EBM imply learning-by-doing, adaptive management, iterative processes and a succession of comparisons. He noted that by using a succession of comparisons, the knowledge of probable consequences exists so that progress can be made or mistakes can be remedied in a timely fashion. He stressed the importance of ecosystem assessments, saying that these provide benchmarks for progress in attaining long-term goals. Lamenting the number of trade-offs, he said that there is a need to understand pressures, and how to mitigate them and their overall effects.



Peter Jones, University College London

Peter Jones, University College London, presented on effective governance frameworks to implement EBM. He underscored the growing need to move beyond ideological arguments, and develop governance models, frameworks and approaches that combine the role of states, markets and communities. Outlining a series of UNEP case studies

assessing governance in MPAs, he highlighted the use of economic, knowledge-related, legal and participative incentives for effective governance. He stressed the importance of strong legal incentives to reinforce MPA governance frameworks, to avoid instability.

In the ensuing discussion, participants questioned the sources of finance for the effective management of MPAs. They identified new and emerging issues, such as the use of frameworks for developing resilient governance, and suggested recommendations, including: methodologies to handle “knowledge digestion problems”; analytical frameworks to measure management effectiveness; and capacity building for formulating participatory frameworks.

MODERATED PLENARY SESSIONS

On Tuesday morning, the plenary considered the reports of Monday’s breakout groups including: managing the global nutrient cycle; marine litter; coastal ecosystems; wastewater; and deltas. Conference Co-Chairs Raphael Lotilla and Wendy Watson-Wright presented highlights and recommendations from the breakout sessions as well as key recommendations and issues to be addressed in the period 2012-2016 by the GPA.

On Tuesday afternoon, Co-Chairs Watson-Wright and Lotilla summarized the plenary panel on the green economy. Watson-Wright highlighted the need to set stringent standards, disseminate best management practices and share information. She also noted the importance of harnessing business interests, such as aquaculture and ecotourism.

The plenary then considered the reports of the breakout groups, which took place on Tuesday, including: regional seas; GEF and UN Agencies; IWRM; and EBM.

A GREEN ECONOMY IN A BLUE WORLD

GLOC Co-Chair Lotilla introduced the moderated expert panel on “a green economy in a blue world.” Linwood Pendleton, moderating the panel, said ecosystems have



Conference Co-Chairs Wendy Watson-Wright, UNESCO-IOC, and Raphael Lotilla, PEMSEA

been under-performing due to decades of misuse and abuse, and stressed that green approaches can increase ecosystem sustainability and resilience, while improving economic profitability.

Keynote speaker Andrew Farmer, Institute for European Environmental Policy, outlined aspects of the contribution of marine and coastal ecosystems to a green economy. He said resource efficiency is key, noting that reducing total material requirements can increase GDP, employment potential and economic security.

He underscored the impact of marine industries such as fisheries, coastal tourism and mining for deep-sea minerals on the green economy, while highlighting the problems caused by marine litter. He said that regulation and market-based instruments to reduce marine litter could be successful if facilities for collection and recycling of waste are available.

He suggested steps for moving towards a green economy, including: recognizing the true value of resources; avoiding inappropriate trade-offs between the economy and the environment; and investing in natural capital. He said EBM, ICZM and marine spatial planning could assist in moving towards and delivering a green economy.

Following the keynote address, three panelists presented national perspectives on the green economy. Zhen-Ren Guo, South China Institute of Environmental Sciences, said China has developed a pollution control strategy for coastal areas to address nutrient discharge into coastal areas and oceans, mainly from agricultural sources.

Annadel Cabanban, UNDP, said the Philippines employs specific tools to achieve a green economy and supports national and regional fisheries initiatives. She highlighted steps the Philippines has taken towards sustainable fisheries development, including ratifying the Convention on Biological Diversity, signing a code of conduct for responsible fisheries and supporting EBM approaches through the regional Coral Triangle Initiative.

Ajit Pattnaik, Chief Executive, Chilika Development Authority, presented a case study related to the green economy and sustainable livelihood in Chilika Lake in India, where an ecosystem approach increased fish and prawn landings, dolphin and avian populations, and ecosystem resilience. He said ecotourism contributed to poverty reduction and sustainable fishing.

Moderator Pendleton concluded that sharing information, flexibility in planning, and monitoring were common across the three presentations. He stressed integrating science and stakeholders to ensure that science supports decision-making.

CLOSING PLENARY

In closing, Vincent Sweeney lauded the GLOC for providing recommendations and inputs for taking the GPA forward and mobilizing funds for the future implementation of the GPA. He said the GLOC recommendations would be forwarded for consideration by IGR-3 and the UNEP Governing Council. The Global Conference on Land-Ocean Connections closed at 5:39 pm.

GLOC Recommendations: The GLOC put forward several recommendations for consideration by IGR-3, on marine litter, deltas, coastal ecosystems, the global nutrient cycle and wastewater, to be addressed during the 2012-2016 period.

On marine litter, GLOC recommends IGR-3, *inter alia*:

- establish a global partnership on marine litter, facilitated through an online marine litter forum for information sharing;
- call for governments and civil society, among others, to sign up for the Honolulu Commitment;
- call for input to be provided on project activities and best practices on the implementation of the Honolulu Strategy;
- call for new policy instruments to be aligned with strategies through regional seas and action plans;
- call for market-based instruments to be developed and adopted; and
- consider using Rio+20 as an opportunity to launch the global partnership on marine litter.

On deltas, GLOC recommends IGR-3, *inter alia*:

- recognize the need to develop adaptive measures, covering economic, institutional, technological and ecological aspects, to address increased intensity of flooding events, salinization of coastal areas and drought;
- recognize the need to develop indicators for better delta management; and
- consider using the GPA as a platform to promote delta management, delta cooperation and inter-delta cooperation.

On coastal ecosystems, GLOC recommends IGR-3, *inter alia*:

- recognize the need to raise awareness of the opportunity for coastal carbon services, and to develop tools for utilizing coastal carbon services in management and financing;
- recognize the need to use natural infrastructure for climate change mitigation and adaptation; and
- call for the creation of innovative financing mechanisms such as PES while ensuring equity of benefit sharing.



L-R: Zhen-Ren Guo, South China Institute of Environmental Sciences; Annadel Cabanban, UNDP; and Ajit Pattnaik, Chilika Development Authority



Conference Co-Chairs Wendy Watson-Wright, UNESCO-IOC, and Raphael Lotilla, PEMSEA, gavelled the meeting to a close at 5.39 pm

On managing the global nutrient cycle, GLOC recommends IGR-3, *inter alia*:

- recognize that setting quantitative targets for improved nutrient management provides a powerful incentive for action, even on a voluntary basis, and for encouraging change;
- consider establishing a target for improved nutrient management;
- recognize the need for effectiveness in achieving behavioral changes, in improving management practice and avoiding overconsumption;
- provide definitions and thresholds for nutrient use efficiency indicators, highlighting the financial benefits for stakeholders and contributions to the green economy;
- set a global goal to work towards improving nutrient efficiency by 20% at a country level;
- make efforts in the longer term to calculate surpluses, and to calculate nutrient inputs into different marine areas; and
- set a mutually agreed timeframe for the above goal to be realized – for instance, by 2016 with a 2008 baseline – through two indicators (improved crop nutrient use efficiency by 20% relative to the base year, with an eventual nutrient use efficiency of 70%; and improved full chain nutrient efficiency by 20% relative to the base year, with an eventual use efficiency of 50%) while also noting that such targets should allow for maximum flexibility for countries to optimize nutrient management according to local conditions. On wastewater, GLOC recommends IGR-3, *inter alia*:
- overcome cultural and psychological barriers to wastewater reuse;
- approach wastewater as a resource through affordable and appropriate technology, wastewater recycling and nutrient recycling;
- demonstrate the potential economic returns on investment for the private sector;
- encourage closer linkages between water utilities and wastewater treatment;
- advocate for cross-sectoral collaboration and better integrated wastewater management;
- advocate for improved wastewater management within national programmes, and deliver relevant training to expand opportunities for information sharing;
- promote benefits of alternative technologies;
- identify opportunities for putting wastewater on the international agenda, which could lead to a global partnership; and
- develop a global vision with internationally agreed targets and monitoring.

The GLOC recommended IGR-3 consider the following, *inter alia*, for inclusion in the Programme of Work for the period 2012-2016 and the Manila Declaration:

- marine litter topics;
- promoting the use of The Honolulu Strategy to reduce the amount of marine debris from land-based sources;
- conducting education and outreach on marine debris and solid waste minimization and management;
- employing market-based instruments to support solid waste minimization and management;
- employing infrastructure and best practices for storm water and solid waste minimization and management;
- improving the regulatory framework regarding storm water and sewage systems, among others, in tributary waterways;
- building capacity to monitor and enforce compliance regarding litter, dumping, solid waste management, storm water and surface runoff;
- conducting targeted cleanup efforts on coastal lands, in watersheds and in waterways; and
- establishing a partnership, including interested parties, stakeholders, regional seas conventions and action plans, to engage interested countries and non-government stakeholders to develop and carry out projects addressing land-based and sea-based sources of marine pollution as a regional implementation platform.

UPCOMING MEETINGS

12th Special Session of the UNEP Governing Council/ Global Ministerial Environment Forum: The UNEP Governing Council/Global Ministerial Environment Forum will, at its 12th special session, focus on the UNCSO-related themes of green economy and international environmental governance and emerging issues. **dates:** 20-22 February 2012 **location:** Nairobi, Kenya **contact:** Jamil Ahmad, UNEP **phone:** +254-20-762-3411 **fax:** +254-20 762-3929 **email:** sgc.sgb@unep.org **www:** <http://www.unep.org/gc/gcss-xii/>

6th World Water Forum: This Forum will focus on the theme “Solutions for Water.” **dates:** 12-17 March 2012 **location:** Marseille, France **contact:** 6th World Water Forum Secretariat **phone:** +33(0)4-95-09-01-40 **fax:** +33(0)4-95-09-01-41 **email:** secretariat@worldwaterforum.org **www:** <http://www.worldwaterforum6.org/>

Ad Hoc Open-ended Informal Working Group to Study Issues Relating to the Conservation and Sustainable Use of Marine Biological Diversity Beyond Areas of National Jurisdiction:

The fifth meeting of this *Ad Hoc* Open-ended Informal Working Group will take place in New York, in accordance with General Assembly resolution 66/231 of 24 December 2011, paragraph 168. **dates:** 7-11 May 2012 **location:** UN Headquarters, New York **contact:** Division for Ocean Affairs and the Law of the Sea **phone:** +1-212-963-3962 **fax:** +1-212-963-5847 **email:** doalos@un.org **www:** <http://www.un.org/depts/los/biodiversityworkinggroup/biodiversityworkinggroup.htm>

2nd International Symposium on the Effects of Climate Change on the World's Oceans: This symposium will examine the issues of: sea level rise; acidification; loss of biodiversity; and changes in species abundance. **dates:** 15-19 May 2012 **location:** Yeosu, Republic of Korea **contact:** North Pacific Marine Science Organization Secretariat **phone:** +1-250-363-6366 **fax:** +1-250-363-6827 **email:** secretariat@pices.int **www:** http://www.pices.int/meetings/international_symposia/2012/Yeosu/scope.aspx

13th Meeting of the UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea: The 13th meeting of the UN Open-ended Informal Consultative Process on Oceans and the Law of the Sea is scheduled to convene in New York, US. **dates:** 29 May - 1 June 2012 **location:** UN Headquarters, New York **contact:** Division for Ocean Affairs and the Law of the Sea **phone:** +1 212-963-3962 **fax:** +1 212-963-5847 **email:** doalos@un.org **www:** http://www.un.org/Depts/los/consultative_process/consultative_process.htm

Oceans Day at UNCSD: The Global Ocean Forum will organize Oceans Day during the thematic days immediately preceding the UNCSD. **dates:** 17-19 June 2012 [tentative] **location:** Rio de Janeiro, Brazil **contact:** Miriam Balgos, Program Coordinator Global Forum on Oceans, Coasts, and Islands **phone:** +1-302-831-8086 **fax:** +1-302-831-3668 **email:** mbalgos@udel.edu **www:** <http://www.globaloceans.org/content/rio20>

UN Conference on Sustainable Development: The UNCSD will mark the 20th anniversary of the UN Conference on Environment and Development (Earth Summit), which convened in Rio de Janeiro, Brazil in 1992. **dates:** 20-22 June 2012 **location:** Rio de Janeiro, Brazil **contact:** UNCSD Secretariat **email:** uncsd2012@un.org **www:** <http://www.uncsd2012.org/>

The Fourth East Asian Seas Congress 2012: With the theme "Building a Blue Economy: Strategy, Opportunities and Partnerships in the Seas of East Asia," the Congress will address new opportunities for the ocean economy of East Asia, the range of partnerships that have developed and are required in order to realize the full potential of a blue economy, and the progress and achievements in governance of regional/sub-regional seas within the framework of the Sustainable Development Strategy for the Seas of East Asia. **dates:** 9-13 July 2012 **location:** Changwon, Republic of Korea **contact:** East Asian Seas Congress Secretariat **phone:** +63 (2) 929-2992 **fax:** +63 (2) 926-9712 **email:** congress@pemsea.org **www:** <http://eascongress.pemsea.org/>

30th Session of the FAO Committee on Fisheries: The 30th session of the FAO Committee on Fisheries (COFI) will review activities of the COFI Sub-Committees on Aquaculture and Fish Trade, progress on the implementation of the Code of Conduct for Responsible Fisheries and associated International Plans of Action, as well as the priorities for the FAO work programme on these issues. **dates:** 9-13 July 2012 **location:** FAO Headquarters, Rome, Italy **contact:** Hiromoto Watanabe, FAO **email:** hiromoto.watanabe@fao.org **www:** <http://www.fao.org/fishery/about/cofi/meetings/en>

IGR-4 on the Further Implementation of the GPA: IGR-4 will review implementation of the GPA for the period 2012-2016 and set the Programme of Work for the GPA Coordination Office for the subsequent period. **dates:** 2016 **location:** TBD **contact:** Vincent Sweeney **email:** vincent.sweeney@unep.org **phone:** +254 (20)7624793 **fax:** +254 (20)7624249 **www:** <http://www.gpa.depiweb.org/home.html>

GLOSSARY

COBSEA	Coordinating Body of the Seas of East Asia
DENR	Department of Environment and Natural Resources
EBM	Ecosystem-based coastal planning and management
FAO	UN Food and Agricultural Organization
GEF	Global Environment Facility
GLOC	Global Conference on Land-Ocean Connections
GPA	Global Programme of Action for the Protection of the Marine Environment from Land Based Activities
ICM	Integrated coastal management
ICZM	Integrated coastal zone management
IGR	Intergovernmental Review
IOC	Intergovernmental Oceanographic Commission
IWRM	Integrated water resources management
MDN	Marine Debris Network
MPA	Marine protected areas
NOAA	National Oceanographic and Atmospheric Organization
OSPAR	Oslo and Paris Conventions for the Protection of the Marine Environment of the North-East Atlantic
PEMSEA	Partnerships in Environmental Management for the Seas of East Asia
PES	Payments for ecosystem services
PPP	Public-private partnership
PPWM	Pro-poor wastewater management
REDD	Reducing emissions from deforestation and forest degradation in developing countries
UNCED	United Nations Conference on Environment and Development
UNCHE	United Nations Conference on the Human Environment
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UN-HABITAT	United Nations Human Settlements Programme