



# The Global Forum on Oceans, Coasts, and Islands

Reports from the Third Global Conference on Oceans, Coasts, and Islands

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## FRESHWATER TO OCEANS LINKAGES EMPHASIZED DURING PARIS CONFERENCE

Summary Prepared by **Kateryna Wowk,**  
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*The Global Forum's Freshwater to Oceans Task Force, composed of experts in both watershed management and integrated coastal and ocean management from various organizations and regions, and co-chaired by Patricia Muñoz, National Polytechnique Institute, Mexico, former chair of the Consejo Consultivo del Agua of Mexico, and Tom Laughlin, U.S. National Oceanic and Atmospheric Administration, organized a number of events both to foster multistakeholder dialogues on improving interlinkages between freshwater and oceans issues, and to assess progress on the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA)/World Summit on Sustainable Development goals.*

*At the Paris conference, a panel of experts presented specific case studies which led to thoughtful dialogue from conference participants, including Al Duda, International Waters, Global Environment Facility (GEF); Margaret Catley- Carlson, Global Water Partnership; Peter Bridgewater, Ramsar Convention; Hon. Mr. Erik Llandikov, Vice-Minister, Ministry of Environmental Protection, Republic of Kazakhstan; Porfirio Alvarez-Torres, Ministry of Environment and Natural Resources, SEMARNAT, Mexico; Veerle Vandeweerd, Regional Seas Programme, United Nations Environment Programme (UNEP), and Global Programme of Action for*

*the Protection of the Marine Environment from Land-Based Activities, The Hague; Ivan Zavadsky, GEF Danube- Black Sea Basin Strategic Partnership, and Shammy Puri, International Hydrological Programme, UNESCO. Discussions continued in multistakeholder dialogues on the intergovernmental review of the GPA (see the GPA/IGR-2 section of the newsletter).*

### **Integrated Water Resources Management**

The panel convened to: review the linkage between freshwater, oceans, and coasts; identify opportunities to advance the linkage between Integrated Water Resources Management (IWRM) and coasts; and identify new opportunities for partnerships between freshwater and oceans organizations.

The Global Water Partnership (GWP) aids nations in improving their water resources management to provide for improved integrated management. It is well known that integrated management involves ecologic and scientific components, but it has only recently become apparent that integrated management *equally* involves human, social, and political components.

An effective IWRM strategy will include the following principles in a scientific and political analysis:

1. Involve all relevant stakeholders;
2. Identify the most urgent issues (and their costs), and *prioritize* those issues;
3. Secure political commitment;
4. Establish a common knowledge/information platform for all stakeholders;
5. Facilitate knowledge/awareness raising to build support;
6. Encourage some institutional development, including financial resources.

Note that in these principles for an effective strategy, water is not mentioned once. The greatest imperative in this process is to mobilize political support. Only then can freshwater and coastal agencies join together in an integrated strategy for the management of land, freshwater resources, coasts, and oceans.

### **Linking Freshwater, Coasts, and Oceans: Addressing Wetlands**

Ramsar is the oldest of the global environmental conventions, covering a wide range of wetlands – from coral reefs to mountains to vast inland swamps. With 150 contracting parties, 1,558 wetlands have been identified as sites of International Importance, of which more than a third are coastal wetlands. Convention actions are implemented according to three pillars: the wise use of wetlands; wetlands of international importance; and international cooperation. All emphasize catchment management and integrated management across systems by using the ecosystem approach.

No one agency, by itself, can implement the strategies of integrated management. Synergy is needed across and between existing structures. The ecosystem approach of the Convention on Biological Diversity is a framework for integrated management of land, water and biological resources. It has the following key principles:

- Management objectives are a matter of societal choice.
- Management should be decentralized to the lowest level.
- Management must recognize that change is inevitable.

The ecosystem approach can help improve existing management structures by integrating all relevant sectors and disciplines, national and international. It can aid in identifying those cultural, technological, and environmental aspects that are inherent to specific ecosystems and allow for society to change the way it manages water and land resources.

### **Linking Freshwater, Coasts, and Oceans: Addressing Aquifers**

Aquifers constitute 99% of all accessible freshwater globally. The seaward discharge from aquifers to coastal ecosystems and their role in delivering nutrients and

other dissolved constituents is becoming increasingly recognized. Large amounts of groundwater continually discharge into the sea, amounting to 5-10% of all freshwater input into the oceans. For truly integrated management of water resources, the interconnections between aquifers and the oceans must be realized. Additionally, aquifers flowing into mangroves, coastal lagoons, and salt marshes may be very significant for the preservation of marine biodiversity.

Several GEF-supported studies have been initiated to address the issue of aquifer discharge to the coasts, and many other GEF partners are supporting efforts in an attempt to integrate IWRM with coastal and oceans management. There is a need to continue to foster the development of these linkages and relationships, nationally and internationally.

### **Case Study: The Caspian Sea**

The Caspian Sea has been deteriorated by increasing anthropogenic pressure, coupled with natural disasters. As a result, there is an increase of eutrophication, water pollution by heavy metals, chemical pollution, and overexploitation of the many types of Caspian flora and fauna. In the beginning, activities for the protection of the Caspian Sea included some regional strategies for capacity building. However, most of the problems of the area are transboundary in nature, and require the inclusion and support of all surrounding nations.

One promising result of regional efforts occurred when the UNEP assisted the region in developing the basic elements for a Framework Convention for the Protection and Sustainable Management of the Caspian Environment and its Resources. The Framework Convention includes pollution prevention, reduction and control; protection, preservation and restoration of the marine environment; procedures to fulfill the obligations contained in the Framework Convention; and formation of the Organization for the Protection of the Sustainable Management of the Caspian Environment and its Resources. In 2005, Kazakhstan became the fourth nation to sign the Convention, and, after Azerbaijan signs, the Convention will come into force.

### **Case Study: The Danube/Black Sea Region**

The Danube-Black Sea Region is the most international river basin in the world. The management of this region serves to exemplify successful policy-building, showing how to advance an issue. Pollution of the Black Sea by nutrient overloading led to the degradation of the ecosystem and reduced biodiversity, resulting in a large economic loss. The GEF contributed in the early stages of the management process, beginning with institution building in the region. This helped lead to the Danube Convention (1998), the Black Sea Convention (1994), and the GEF Danube – Black Sea Strategic Partnership (2001).

The management scheme was aimed at new policies, institutional and regulatory measures, investment projects, capacity building including monitoring systems, legal mechanisms at national and regional levels, implementation of pilot projects, and stakeholder involvement. Strategic partnerships were developed to support country-related investment projects, most notably the World Bank-GEF Investment Fund for Nutrient Reduction, the UNDP/UNEP Black Sea Ecosystem Recovery Project, and the UNDP Danube Regional Project. In a Memorandum of Understanding, long-term and intermediate goals were identified among partners, assuring comparable assessment and reporting on ecological status and input loads and the adoption of strategies for pollution reduction. There will not be an analysis of results achieved until 2007, but the Black Sea does appear to be recovering.

### **Recommendations**

Integrated management of water resources cannot occur without realizing the natural linkages between freshwater, coasts, and oceans. An effective management scheme must take these linkages into consideration, and secure political and societal commitment among stakeholders.

It was ultimately recommended that the freshwater and oceans communities should create stronger partnerships. There is a need to work *across* and *between* freshwater, coastal, and oceans organizations, at the national and international levels. Among these opportunities are collaborations between the Global Water Partnership (GWP) and the Global Forum on Oceans, Coasts, and Islands.

### **Improving Interlinkages between Freshwater, Coasts, and Oceans**

*A preparatory meeting on freshwater to oceans linkages was held at the International Workshop on Freshwater-Coastal-Marine Management Interlinkages, January 10-11, 2006 in Mexico City, organized by the Consejo Consultivo del Agua, Mexico, SEMARNAT, Mexico, Centro EPOMEX, the Global Forum on Oceans, Coasts, and Islands, UNEP Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) and other collaborating organizations. Thirty-nine experts from 29 countries participated in the workshop. The salient points discussed and recommendations put forward at the workshop are presented below.*

### **Mexico City International Workshop on Freshwater-Coastal-Marine Management Interlinkages, January 10-11, 2006**

### **Background**

Continental waters stored in surface waters (rivers, lakes, wetlands) represent less than one percent of the Earth's water resources. Ninety-seven percent is stored in the oceans and the remaining 2% is sea ice, snow, glaciers, and permafrost. However, this small percentage of the Earth's total water resources that is freshwater is disproportionately important to people. The watersheds that integrate the surface water run-off of entire drainage basins play a critical role as sources of water, food, energy, recreation and transportation. Watersheds provide habitat and a host of other ecological services from water purification to flood control and nutrient recycling—all important to people. Watersheds also provide a critical link between the land and sea.

Increasingly, watersheds are under stress from structural modifications (dams, flood control, canalization), habitat degradation (deforestation, urbanization, agriculture), freshwater withdrawals, pollution, and loss of freshwater biodiversity. For example, large rivers such as the Colorado, Ganges, and Yellow Rivers often no longer flow to the sea during the dry season. In the Nile Delta, 30 of 47 commercial fish species have become extinct due to the Aswan High Dam. Reducing the flow of freshwater to the sea can also lead to the intrusion of salt water into previously fresh surface water and groundwater—rendering them undrinkable. On the other hand, according to UNEP, large amounts of river-borne nutrients flowing from the land to the sea have created over 150 oxygen-deprived “dead zones” in the Gulf of Mexico, the Black Sea, the Baltic Sea, the Chesapeake Bay, and the northern Adriatic Sea.

Around 2000 BC, two city-states concluded a treaty to settle conflicts over water uses of the Tigris River. Four thousand years later, we are still learning how to manage human uses of rivers, river basins, watersheds, and coastal areas. Today, much of the focus is on integration. We have integrated river basin management defined by the Global Water Partnership as “*the process of coordinating conservation, management, and development of water, land, and related resources across sectors within a given river basin, in order to maximize the economic and social benefits derived from water resources in an equitable manner while preserving and, where necessary, restoring freshwater ecosystems*” (emphasis added). Integrated coastal management uses almost the same definition, but with an emphasis on estuarine and marine (saltwater) ecosystems. While institutional arrangements have been designed and implemented to address either freshwater or saltwater issues, rarely have institutions worked on the linkages between freshwater and saltwater.

Occasionally, a river basin management plan will address the “downstream” effects of “upstream” activities.

Occasionally, a coastal management project will address the effects of upstream activities and river inflows. Increasingly, international programs such as the GPA, the Global Environmental Facility, and Large Marine Ecosystems are beginning to address linkages. But what have been the collective experiences of these efforts? What institutional arrangements across freshwater and coastal management institutions have worked and why? What incentives have provided appropriate changes in institutional and personal behavior? What kinds of “nested” institutional arrangements (global, regional, and national) have been most effective? How have non-governmental organizations contributed? What has been the role of the private sector? What are the lessons about effective stakeholder involvement? What are the long-term economic and social benefits, as well as the ecological benefits, of linking river basin and coastal management? Is there an adequate natural and social science base for assessing these linkages? Can “best practices” be identified and documented?

In 1999 the United Nations declared the World Day for Water theme, “Everybody Lives Downstream,” which drew attention to the conflicts of equally legitimate water-related interests and relationships between those living “upstream” and those living “downstream.”

The World Summit on Sustainable Development (WSSD) in 2002 called for all countries to develop Integrated Water Management Strategies by the end of 2005. These strategies are intended to build national and regional efforts to tackle specific water challenges, such as pollution prevention, controlling flooding, mitigating the effects of drought, expanding access to water and sanitation, and addressing increasing competition for water and water scarcity. Similarly, the WSSD, as well as the Millennium Development Goals, called for all countries to create systems for integrated coastal and ocean management to address downstream issues in coastal areas (the home of 50% of the world’s population), in oceans (incorporating 70% of the earth’s surface area and 97% of the world’s water), and in Small Island Developing States or SIDS (43 of the world’s nations are SIDS that are especially dependent on ocean, coastal, and freshwater resources).

Today, it is important to address the challenge of linking freshwater to coasts and oceans from a new collaborative perspective that examines how decision-making and institutional arrangements can be aligned to achieve a true “hydro-solidarity” between “upstream” and “downstream” stakeholders. Finding models for how these interests can be reconciled is an urgent and challenging task that can be made more concrete by analyzing a set of case studies of river basins and their associated coastal zones from a management perspective.

## A Shared Agenda of Freshwater and Coast/Ocean Management

Important shared issues on the policy and management agenda of freshwater resources and coastal/ocean management need to be identified and recognized. Some significant examples should be mentioned:

Freshwater flows are critical to the health and productivity of estuaries and coastal waters. Increasing freshwater demands, mainly for irrigated agriculture (80%) and urban development, are depleting freshwater flows and damaging coastal ecosystems and their vital functions as spawning and nursery area for coastal fisheries. Nutrient over-enrichment, eutrophication of estuaries and coastal/ marine waters and coastal “dead zones” are emerging issues, primarily related to increased agricultural activities in river catchments.

Other examples include:

- Pollution of river basins and its consequences for human and ecosystems health in coastal waters and oceans, due to municipal and industrial waste water;
- Degradation of freshwater and coastal habitats caused primarily by changes in flow characteristics by damming and river flow regulation;
- Increased coastal erosion by reduction of sediment flows from rivers as a result of dams and water diversion schemes;
- Lack of knowledge about complex interactions in the coastal/ocean ecosystem and watershed, and lack of understanding of the benefits of an integrated management approach; and
- Increased water demands, land use practices, river regulation works and water resources development projects have crucial impacts on principal coastal and oceans resources and are placing the viability of coastal economic activities at risk.

## Meeting Challenges and Constraints

We do not lack experience in trying to link freshwater and ocean management activities. About 100 nations are currently experimenting with some form of integrated coastal management; 18 Regional Seas Programmes exist within 140 countries; well over 60 countries are completing National Plans of Action for land-based sources of marine pollution; and almost 20 Large Marine Ecosystem projects are funded by the Global Environmental Facility. Tens of millions of dollars have been invested by the Global Environmental Facility and others in linked management approaches. Then why is it so difficult to achieve commitment, coordination and even communication on linked management of catchments and coasts/oceans? Several challenges and constraints have to be faced, such as:

- **Different cultures:** River basin management/ integrated water resources management and coastal/ ocean management policies represent two different traditions.

with different disciplines, different networks, and little communication;

- ***Institutional inadequacies:*** Integrated management is not common practice. In most cases, river basin management and the authority of basin organizations stop at the estuary or are not practiced beyond the border of the estuary. In many countries coastal zone management has not yet reached a mature stage. Responsibilities are divided among various sectoral ministries and a high priority is the implementation of effective institutional arrangements;
- ***Water policy and legislation:*** The major problem is the absence of a comprehensive water policy accommodating integrated water resources management (IWRM) in the context of harmonizing national economic development plans and water sector plans. Such a policy should be effective, efficient, and equitable across geopolitical borders. A formal protocol between river basin authorities and coastal authorities would go a long way to promote integrated management. Deficiencies in the regulatory system have to be mentioned, including lack of enforcement capacity.
- ***Inadequate attention to the full range of socio-economic factors:*** It is impossible to define ecological functions in only monetary terms. The profits of freshwater for irrigation are much easier to quantify than freshwater flows required for productive and healthy coastal ecosystems. The valuation of goods and services the coastal and marine environment provides is of crucial importance. Often there is an imbalance in socio-economic development and political attention between upstream and downstream regions;
- ***Lack of thorough analysis of linked issues:*** A lack of ecological information (pressures, driving forces) has to be mentioned – for example, what is the impact of dams on the degradation of mangroves vis-à-vis the impacts of activities in the estuary itself? Also the perspectives of mid term-economic development are not being analyzed; and
- ***Lack of awareness:*** The vision of freshwater, coast and oceans communities must be broadened and should overcome traditional principles such as ‘Each drop of freshwater that makes it to the sea is lost.’ Stakeholders competing for the same resources will have different visions.

### **The Obvious Benefits of Linked Management**

The major benefit of linked management is the scope it provides to ensure that development activities upstream are planned and implemented with full knowledge of the potential impacts on the ecosystems and economic activities and livelihoods in the coastal and marine areas. This is essential to assure the integrity and health of the ecosystems and the water cycle, and to promote the

sustainable development of both the higher and lower watershed areas.

The costs of inaction are high. It is known from river rehabilitation practices that the costs of ignoring upstream-downstream management linkages have been enormous—the costs of rehabilitation are much higher than the costs of prevention!

### **Management Options - What Could Be Done?**

#### ***At the global scale:***

- Link the coastal/ocean and freshwater communities at important events by creating shared agendas, e.g., at the World Water Forum series, at CSD when follow-up on the water agenda and the oceans agenda takes place, at the World Water Weeks in Stockholm, etc.;
- Develop a program of collaboration between global oceans organizations and global water organizations (e.g. partnerships such as the Global Water Partnership, the Global Forum on Oceans, Coasts and Islands; and UN entities such as UNEP, UNESCO, UNDP, etc.)
- Operationalize the intended management link in the concrete support of such initiatives/targets like IWRM 2005 through, e.g., the IWRM InfoForum; in updating the definition of ICZM, broadening the scope from the terrestrial zone to watersheds and oceans; and
- Enforce the development of capabilities and common standards, methodologies, and indicators in linking freshwater to coasts and oceans.

#### ***At the regional/national scale:***

- Focus not only on assessment of the interlinkages but take concrete next steps to establish multi- sectoral policies, institutional frameworks, stakeholder participation in policy making, and planning across the freshwater-coastal interface, e.g., through establishing freshwater coastal networks in connection with the regional IWRM networks and through a focus on the freshwater/coast interlinkages in IWRM 2005 target support programs, e.g. UNEP, UNDP, and other organizations;
- Promote GPA National Programmes of Action in the context of IWRM and Water Efficiency plans and Large Marine Ecosystem initiatives; and
- Consider and respond to the difficulties that national authorities face in implementing multiple mandates: e.g., creating IWRM plans, ICZM plans, National Plans of Action for the Control of Land-Based Activities, as well as national actions related to regional programs such as the Regional Seas Programmes and the Large Marine Ecosystem Programs. What support do national authorities need to successfully integrate such a wide- ranging set of actions? What specific support/guidance/ facilitation might be needed?

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*Global Forum on Oceans, Coasts, and Islands  
Freshwater to Oceans Task Force*

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