

Global Environment Outlook

Policy options for Latin America and the Caribbean



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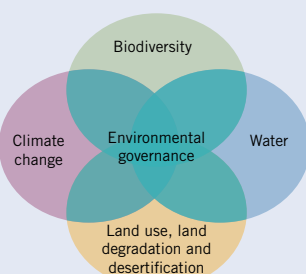
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Latin America and the Caribbean is home to 31% of the world's freshwater resources¹ and 30 distinct mangrove ecosystems located in the continental-marine transition zone. Proclaimed a human right in July 2010 under the UN Decision 64/292 and recognized in the constitutions of numerous LAC countries, the availability of clean water in sufficient quantities and of sufficient quality is essential to human dignity, quality of life and for poverty alleviation. Effective water management policies that improve the efficient use of water resources and promote its allocation among competing uses, need to be applied so as to achieve the goals set by paragraph 26(c) of the Johannesburg Plan of Implementation. This 'policy brief' considers Integrated Water Resources Management (IWRM) and Integrated Coastal Zone Management (ICZM) as two of the more effective frameworks for robust water management.

POINTS TO REMEMBER

- Both IWRM and ICZM are comprehensive, integrated management approaches involving the collaborative participation of all relevant water stakeholders (e.g. government agencies, civil society, academia, water professionals from public and the private sector) for addressing sustainable use of freshwater resources.
- Therefore, although ICZM and IWRM are often applied separately, their combination often enhances their benefits.
- Water policy reform, water governance, effective cost recovery as well as education and information programmes are among the key enabling condition for both IWRM and ICZM.

GE05 processes reflect environmental priorities in LAC



SELECTED GOAL

GE05 provides a scientific analysis of selected environmental challenges and the solutions available to address them, including their environmental and social costs and benefits.

A global intergovernmental and multi-stakeholder consultation undertaken as part of the GE05 process established a High-Level Intergovernmental Advisory Panel to identify and concur on internationally agreed goals to be analyzed as part of the GE05 process, to identify gaps in their achievement, and to frame the regional policy assessment. The Panel also provided high-level strategic advice to guide chapter authors when evaluating the gaps in achieving these goals and identifying the policy options for speeding up their achievement. The Latin America and the Caribbean Regional Consultation was held in Panama City, Panama, from 6 to 7 September 2010. Participants at the consultation selected a set of regional environmental challenges, together with a set of internationally agreed goals which were considered to be the most effective in addressing these challenges.

For water, the selected goal, the United Nations Framework Convention on Climate Change, article 3, paragraph 1-3, reads as follows:

Johannesburg Plan of Implementation, para. 26(c)

"Improve the efficient use of water resources and promote their allocation among competing uses in a way that gives priority to the satisfaction of basic human needs and balances the requirement of preserving or restoring ecosystems and their functions, in particular in fragile environments, with human domestic, industrial and agriculture needs, including safeguarding drinking water quality"

Water resources permeate every aspect of life, be it economic, social, geopolitical or environmental. Effective water resource management meets needs for potable water and domestic usage, for agriculture, transport and for other public and industrial usage. Considering the international goal set by the Johannesburg Plan of Implementation (paragraph 26c) and based on a review of current and past experiences in LAC, the Global Environment Outlook (GEO5) (a report assessing the state, trends and future scenarios of the environment), recommends policy options related to Integrated Water Resources Management and Integrated Coastal Zone Management.

POLICY OPTIONS

Being an essential resource, usable water faces increasing demand, entailing significant impacts on the natural, social and economic systems. Water scarcity, water use conflicts, modification of coastline dynamics and ecosystem health are amongst water-related issues that call for effective and equitable long-term solutions. In this regard, policies related to integrated water governance and coastal zone management can improve the efficient use of water resources particularly in fragile environments.

Integrated Water Resources Management (IWRM) promotes the coordinated development and management of water, land and related resources in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems². IWRM related policies include those associated with:

- Application of economic and financial instruments (see Case study 1);
- Strengthened water governance (see Case study 2); and
- Improvement of information in water quality and quantity.

Integrated Coastal Zone Management (ICZM), is a multi-disciplinary and inter-sectoral approach to land-use planning that promotes effective, meaningful and sustainable management of coastal resources³. The ICZM policy cluster includes:

- Establishment and execution of legislation, regulations, standards and procedures to prevent or minimize environmental degradation (see Case study 3); and
- Protection and restoration of the quality and function of ecological systems within the coastal zone (see Case study 4).

The ICZM requires an appropriate legal framework, effective institutional structure, and information, data and knowledge for management⁴. It also needs a clear and collectively recognized definition of the coastal zone limits. The foundation for implementing this approach is a coastal zone management action plan, while strengthening monitoring and evaluation capabilities enables progress to be rigorously tracked.



Figure 1: Population density estimate for 2010

Due to the physical and ecological connection between river basins and coastal zones, activities carried out in one area may affect another. Therefore, the combination of ICZM and IWRM works toward embracing their mutual benefits. could enhance their benefits.

BENEFITS

By adopting IWRM, resources and capabilities are used in an efficient, cost effective and sustainable way. This is of utmost importance not only because of increasing demand for water due to population growth, but also in the context of climate change. Other benefits include:

- Reduction of water-related conflicts such as those related to the management of transboundary basins and other competing uses;
- Increased stakeholder participation (e.g. women, indigenous groups and other civil society groups) in decision making can contribute to reducing marginality and inequity, as well as promoting transparency and accountability;
- Promotion of conservation and sustainable distribution of water;

- Improvement of decision making and policy formulation with data, information sharing and traditional knowledge;
- Appropriate basin management serves as an input into land use planning policies and helps to address issues of food security, ecosystem protection and waste management;
- Reduction in transaction costs in water chains⁵.

Integrated Coastal Zone Management promotes the preservation of ecologically sensitive areas (such as mangroves), fosters sustainability of important socioeconomic activities (e.g. fisheries and tourism), worsening preserves natural ecosystems functions and services (e.g. coral reefs), and improves the quality of the marine environment (e.g. by reducing contamination of vessels and ports).

Population density in the coastal areas of LAC is significantly greater than in inland territories (see Figure 1). This situation results in increased urbanization and tourism, worsening land-based pollution in coastal and marine ecosystems increased populations at risk of coastal related hazards, as well as

adding pressure on existing infrastructure. Sea level rise and the increasing intensity of the El Niño/ El Niña phenomena continue to affect coasts, changing coastline dynamics, ecosystems health, rainfall patterns and river flows. ICZM is acknowledged as an appropriate means to limit the impact of these pressures on coastal ecosystems.

Additionally, policies related to IWRM and ICZM can also benefit biodiversity as well as land use while preventing land degradation by offering protection to watershed habitats and maintaining water supply to key ecosystems (see Table 1).

ENABLING CONDITIONS

Key enabling conditions to promote IWRM and ICZM are similar and include⁴⁻⁶⁻⁷:

- **Water policy reform:** including new legislation and standards;
- **Enhanced water governance:** including institutional frameworks to monitor and enforce legislation, development of institutional capacity to design and implement integrated management plans, projects and long-term programmes at

different scales, and greater engagement and use of local knowledge through basin committees;

- **Enhanced land governance:** Development of land registers, stable governance arrangements, low transaction costs, credible enforcement arrangements and clearly defined rights and/or entitlements for land and water use;
- **Capacity development of governments to collect tax revenues,** so that funds can be efficiently and equitably allocated to water programmes and project. This could also include mechanisms to change the culture of water use, such as economic valuation and the «polluter pays» principle;
- **Education and information programmes,** so that people have a greater sense of responsibility and awareness of the consequences of their actions. This could, in turn, help to increase participation and build an interested critical mass that contributes to monitor government actions.

Case study 1: Application of economic and financial instruments - Payment for Ecosystems services in Quito (Ecuador)⁸⁻⁹

The Fund for the Protection of Water (FONAG) was established in Quito in 2000 as a trust fund to which water users of the Ecuadorian capital would contribute.

With the objective of co-financing activities, such as rehabilitation programmes, and conserving and maintaining watersheds, FONAG welcomes the primary stakeholders and users in the planning, implementation and financing of projects. With such efforts, the Fund seeks to improve livelihoods and generate employment. More specifically, the work undertaken by FONAG can be divided into three major themes: i) research, ii) evaluation environmental services, and iii) training and education.

Thanks to the fund, more than 65,000 ha of watersheds are now under improved management (in the watersheds of the Oyacachi, Papallacta, Antisana, San Pedro and Pita rivers). By 2008, the fund had facilitated the development of approximately 260 ha. of forest plantations an increase of 53% from 2006. More than 1800 people are estimated to have received economic benefit associated with watershed management and conservation.

The FONAG experience has demonstrated that a strong portfolio of donors, along with co-financing from local, private or public agencies, are essential to ensure the success and continuity of such initiatives (Cisneros and Lloret, 2008). Furthermore, similar projects should highly considered adaptive management through evaluations and readjustment in order to respond to environmental and socioeconomic dynamics in the watershed and in the country. Finally, a culture of awareness regarding water use and management need be raised within the broader populations, vis-a-vis multi-stakeholder communication programmes.

Certain elements must be taken into account to replicate experiences. Amongst them: develop negotiating skills, encourage transparency in the management of funds and encourage active participation of communities, sectors and stakeholders who make decisions or influence them. This initiative has influenced the development of similar programmes elsewhere in Latin America. For example, in 2010 in Bogota (Colombia) and in Lima (Peru), trust funds (respectively called Water We Are and Aquafondo) were created to finance programmes and projects for recovery and conservation of watersheds.

Table 1:
Examples of cross-linkages and cross-benefits between the Integrated Water Resources Management (IWRM) & Integrated Coastal Zone Management (ICZM) and other regional environmental priorities

	Water	Biodiversity	Land use, land degradation and desertification	Climate change	Environmental governance	Oceans and seas
Integrated Water Resources Management (IWRM)	<ul style="list-style-type: none"> • Fosters appropriate water pricing; • Respects and promotes traditional water uses and conservation practices; • Promotes the adoption of watersheds as a planning and management unit, thus preventing habitat fragmentation and ecosystems disruption. 	<ul style="list-style-type: none"> • Water quality monitoring to maintain ecosystem health, supports fish stocks, spawning and migration sites; • Conserves water basins optimal conditions maintaining the ecosystems and biodiversity that depend on them. 	<ul style="list-style-type: none"> • It is synergetic to land use policies; • Contributes to food security (through improved allocation of water for irrigation); • Contributes to dry lands protection. 	<ul style="list-style-type: none"> • Integrated approach to planning and (information) management improves resilience under variable hydrologic scenarios. 	<ul style="list-style-type: none"> • Promotes equitable water tariffs and water allocation; • Reduces water-related conflicts; • Promotes multi-stakeholder participation, reduction of marginality, transparency and accountability; • Improves water related information dissemination. 	<ul style="list-style-type: none"> • Can help to maintain critical ecosystems such as mangroves and coral reefs; • Can help to protect coastal and marine species.
Integrated Coastal Zone Management (ICZM)	<ul style="list-style-type: none"> • Modulates water demand and supply generated by urbanization and the tourist sector through land use planning and water use efficiency programmes; • Minimizes user conflicts, maintain safe yields and reduce saline intrusion due to unsustainable extraction. 	<ul style="list-style-type: none"> • Water quality monitoring aids management of ecosystem health fish stocks, spawning and migration sites, aquatic plants of commercial importance, proliferation of zoo/ phytoplankton; • Reduction of pressures to coral reef and mangroves. 	<ul style="list-style-type: none"> • It is synergetic to land use policies; • Reduces land use conflicts in coastal areas. 	<ul style="list-style-type: none"> • Improves resilience and reduces vulnerability to sea level rise; • Lessens coastal related disaster risks of CC related increased frequency of events such as windstorms. 	<ul style="list-style-type: none"> • Promotes efficient use of available infrastructure; • Broadens the participation to include greater public and private sector partnership and participation; • Promotes the development of specific legislation and institutional frameworks. 	<ul style="list-style-type: none"> • Promotes the control of land-based sources of pollution; • Promotes monitoring of sea water intrusion into aquifers; • Helps marine ecosystems knowledge and conservation; • Improves sea water quality; • Promotes adaptation to sea level rise impacts.

Case study 2: Strengthened water governance – Institutional arrangements in peri-urban Bolivia¹⁰

Bolivia employs a number of management models for the provision of water and sanitation services (municipal companies, unions, user associations, neighborhood committees, among others). Many of these systems and organization have been independently developed by local initiatives, resulting in highly fragmented service areas - mainly around big cities - with regards to:

- Financing mechanisms;
- Technical assistance;
- Regulation of services; and
- Relations between operators when they have to share water sources or a water treatment system.

Water and sanitation provision for the peri-urban area of Cochabamba is a good example of this situation.

The City of Cochabamba (Bolivia) - especially its southern districts - has grown in a rapid and ad-hoc manner (growth rates higher than 12% per year). Due to water scarcity, institutional instability of the main public service provider (SEMAPA) and the inefficiencies of small-scale operators, several community organizations have undertaken the micro-management of their own water resources.

The result is a network of stakeholders (supported by NGOs, universities and other organizations) and arrangements. Amongst major activities and achievements are:

- Connection to the principal water system for those districts where it is financially and technically possible;
- Decentralized water and sanitation networks with municipality resources and with support of NGOs and SEMAPA supervisors;
- Community projects financed with international cooperation funds (e.g. composting toilets and other ecological treatment systems);
- Stakeholders cooperation (i.e. in providing services to each other, to hire a technician for specific purposes or to buy supplies at better prices); and
- Water “block supply”, whereby SEMAPA delivers a determined amount of water to a local operator at the end of the adduction system. The local operator then begins treatment, distribution and billing activities.

The main challenges include:

- The definition of rights over water resources given the intense competition between domestic consumption, irrigation, and decentralized systems;
- The role of stakeholders; and
- The operator’s autonomy to determine service conditions.

Further policies need to be established and enforced to guarantee the security of the water supply system by establishing an integrated approach to the evaluation and management of risks at every stage of the supply chain (also referred to as the “Water Safety Plan”).

Case study 3: Integrated Coastal Zone Management Plan of the Integrated Management Unit Guapi-Iscuandé¹¹

Early after its commitment with the international community (derived from the Rio Convention), Colombia carried out processes to establish environmental planning and conservation strategies as well as to protect and develop its Caribbean and Pacific coastal zones. These efforts were framed within the Convention on Biological Diversity.

Initiated in 2000, the Integrated Management Unit of Guapi and Iscuandé (IMU Guapi-Iscuandé) is located on the Southwest shore of Colombia and covers 2,485 km². Following the first step of establishing institutional arrangements, three other phases were carried out, those being a) **Phase I - Characterization and Diagnosis**: This diagnosis developed an inventory and description of the biophysical, socioeconomic and government-administrative characteristics; including an integrated identification and analysis of critical problems affecting the area; b) **Phase II- Formulation of an Integrated Management Plan**; and c) **Phase III-Implementation of the Integrated Management Plan (current phase)**.

The implementation of the entire ICZM process has been addressed through the integration and application of different methodological tools, which could be successfully replicated in other marine and coastal areas in Colombia or replicated internationally. These include:

- Collection and analysis of data and information for characterizing the area.
- Interdisciplinary work through technical meetings and workshops for integrated assessment, identification of management guidelines and formulation of an integrated coastal zone plan;
- Local stakeholder participation, participatory results map and document construction and validation; and
- Use of information technology tools (GIS).

Case study 4: Coastal Zone Management Unit (CZMU) in Barbados

Concerned about economic, environmental and social impacts that coastal erosion would have on the development of Barbados, the Government of Barbados carried out the island's first coastal conservation study in 1981. Conducted with the financial assistance of the Inter-American Development Bank (IADB), the study established that ground water discharge into coastal watersheds, unsuitable sea defense structures and; increasing number of climate related events (e.g. hurricanes) were causing coastal erosion thus threatening the tourism industry. Recommendations on conservation practices and potential funding were therefore proposed.

In order to oversee the study and to execute its recommendations the Coastal Conservation Project Unit was created, from which the Coastal Zone Management Unit (CZMU) was developed in 1996. Now established as a permanent agency within the government, the CZMU has two strategic objectives:

1. The sustainable use of the coastal management area by implementing policies aiming to maintain (and where possible enhance) environmental quality while enabling economic development;
2. An effective legal and administrative structure to implement integrated coastal management.

In addition to providing technical expertise and assessment to the Town and County Development Planning Office (TCDPO), the Unit also works on beach erosion monitoring and control, coastal structures and resource inventory as well as on public education outreach. In order to do so the CZMU is divided into three technical sections i) the Coastal Resource Management section; ii) the Engineering section and iii) the Marine Research section.



CHALLENGES AND WAYS FORWARD

Due to inadequate legislation, lack of enforcement and insufficient technical expertise; as well as weak institutional and financial capacity, ICZM remains a work-in-progress. Thus, public and private sector partnership and participation would likely

be beneficial. The limited implementation of IWRM in the region is largely related to fragmented and conflicting institutional mandates, a lack of skilled human resources, inadequate mechanisms for effective public participation; and a lack of sustainable

financing and harmonization mechanisms, structures and procedures, to gather and present data. In the latter, there is an ongoing need of relevant, comprehensive indicators for accurate assessing of the state and tracking trends and progress.



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