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**ASSESSMENT AND RECOMMENDATIONS ON THE
MANAGEMENT OF FRESHWATER RESOURCES WITHIN THE
FRAMEWORK OF THE CARTAGENA CONVENTION**

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FINAL INTEGRATED REPORT

**DEVELOPING A NEW STRATEGY OR PROTOCOL ON THE MANAGEMENT OF
FRESHWATER RESOURCES WITHIN THE FRAMEWORK OF THE CARTAGENA
CONVENTION**

SMALL SCALE FUNDING AGREEMENT

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1. EXECUTIVE SUMMARY

Integrated Water Resource Management (IWRM), is an approach to managing water that focuses on the planning and management of water systems. IWRM promotes the coordinated development and management of water, land and related resources in order to maximise economic and social welfare in an impartial manner where sustainability of vital ecosystems is not compromised.

Anthropogenic activities are known land based sources of pollution. Domestic wastewater, industrial effluent and agriculture can introduce pollutants into freshwater systems that ultimately affect nearshore and coastal ecosystems. This exemplifies the importance of IWRM and the necessity for effective freshwater management as it relates to the marine environment. Therefore, with respect to freshwater resources, while water quality is key, additional aspects such as supply, allocation, wastewater treatment and reuse are also critical sectors in the IWRM approach.

There have been longstanding challenges in the Wider Caribbean Region (WCR) with respect to the implementation of IWRM. These challenges are attributed to regional issues such as climate change, fragmented governance and legislation, lack of funding among others.

The Regional Activity Centres (RACs), IMA and CIMAB, collaborated to review and analyse the recent and current studies performed regarding IWRM implementation and how the regional action framework that has been developed can be used within the framework of the Cartagena Convention.

The European Union was reviewed as an example from a region external to the WCR in order to provide insight and a different perspective. The main legislation, the Water Framework Directive, offered useful information on the protection and management of water resources as well as transboundary issues between its Member States. This highlighted the importance of identifying water bodies in a well-established system to facilitate effective management.

After review, recommendations were made regarding the potential solutions to holistically treat with freshwaters and the management of water resources on a regional level via incorporation of IWRM into the Cartagena Convention.

2. INTRODUCTION

The Cartagena Convention is a legally binding agreement between contracting parties of the WCR to prevent, reduce and control pollution of the marine environment. Pollution impacts are directly connected to anthropogenic activities. Land based sources of pollution such as domestic, agricultural and industrial discharges are all transported downstream via freshwater and ultimately into the coastal water bodies. This leads to the deterioration of water quality which affects human health and marine ecosystems. While, management approaches such as source-to-sea or ridge-to-reef treat land, water and coastal areas as a collective ecosystem, there are water-based issues and developmental challenges that require different solutions. Integrated Water Resources Management (IWRM) is a process that assists countries in their efforts to deal with water issues in a cost-effective and sustainable way.

IWRM is defined as a process that promotes the coordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

The slow adoption of IWRM in the Wider Caribbean Region (WCR) has been attributed to several challenges including, but not limited to, weak or fragmented water resources governance (legislative, political and institutional levels), lack of civil society engagement and participation in the water sector, data limitations, lack of funding, weak regional governance of the sector, shortage of trained technical staff, climate change, poor land use planning, lack of gender mainstreaming and limited monitoring and evaluation.

The development and adoption of IWRM in the region is a priority within the framework of the Cartagena Convention, the only binding regional agreement for the protection of the marine environment of the WCR. To this end, the present study by the Regional Activity Centres for the Land-Based Sources of Marine Pollution Protocol (RAC-CIMAB and RAC IMA), has been developed.

The objective of this report is to develop a strategy or protocol for the management of freshwater resources within the framework of the Cartagena Convention, with a sub-regional focus for both English-speaking and Spanish-speaking countries of the Wider Caribbean Region (WCR).

This report is based on the review and adaption of key documents by Barrios and the Global Water Partnership-Caribbean (GWP-C):

- “Integrated Water Resources Management Framework to Support the Implementation of the Cartagena Convention.” – Barrios, 2021.
- “Action Framework for Integrated Water Resources Management for the Caribbean Community Region.” Consultancy to Develop a Regional Action Framework for Integrated Water Resources Management for the Caribbean Community Region.” – GWP-C, 2024.

These documents provide a background on past efforts, existing challenges and revised strategies towards increasing the level of IWRM implementation in the WCR.

Barrios outlined an IWRM Framework to support implementation of the Cartagena Convention. This included planning principles, supportive actions for coastal and marine management and the proposal of a conceptual framework. Barrios also provided an implementation outline that suggested integration in to the ¹Sustainable Development Goal 6 (SDG 6) framework as an action roadmap and outlined the main areas that are used to indicate² progress under the SDG.

The GWP-C, under the GEF funded Integrating Water, Land and Ecosystems Management in Caribbean Small Island Developing States (IWEco) regional project, developed an IWRM Action Framework for the CARICOM Region. This work provided the current status of IWRM and challenges faced regionally. A framework was proposed with an action roadmap and key elements to complete implementation over a 5-year period.

3. REGIONAL REVIEW OF IWRM

3.1 IWRM OVERVIEW

The Dublin statement on Water and Sustainable Development (1992) outlined the action required to reverse the existing trends of overconsumption, pollution, and rising threats from drought and floods. The Guiding Principles (Box 1) have been used to form the foundation of many present day IWRM policies.

Barrios identified that IWRM became accepted as part of the Sustainable Development Goals (SDG) and was defined as a process which promotes the coordinated development and management of water, land, and related resources to maximize the resultant economic and social welfare in an equitable and sustainable manner (UN Environment, 2018).

Several approaches that emerged to strengthen and support water resource management were acknowledged such as Water Security, the Water-Food-Energy Nexus, and parallels to economic, social and environmental dimensions of the SDG as it relates to the sustainable management of water resources.

Further to this, within the 2030 Sustainable Goals, SDG 6 - Clean Water and Sanitation, specifically include the implementation of IWRM (SDG 6.5.1) as a target along with key areas of water resource management such as universal access to drinking water and sanitation,

Guiding Principles

- **Fresh water is a finite and vulnerable resource**, essential to sustain life, development and the environment
- **Water development and management should be based on a participatory approach**, involving users, planners and policy-makers at all levels
- **Women play a central part** in the provision, management and safeguarding of water
- **Water has an economic value** in all its competing uses and should be recognized as an economic good

Box 1 - Guiding Principles of Dublin Statement

¹ Sustainable Development Goal 6 (SDG 6) aims to ensure availability and sustainable management of water and sanitation for all

² SDG 6.5.1 Target indicator - Degree of integrated water resources management

pollution control and water use efficiency among others. The SDG indicator 6.5.1 is now tracked globally as countries report their degree of implementation for integrated water resources management based on four components – Enabling environment, Institutions and participation, Management instruments and Financing.

Climate Change and Biodiversity were also considered to form part of the IWRM approach with respect to the region. The projections for the Caribbean are for rising sea levels, hotter temperatures, more variable rainfall with increased drying, increased sea surface temperatures, and more intense hurricanes. The potential of IWRM in aiding for biodiversity conservation through better understanding and management of existing hydrology, fostering an adaptive response. This is key as rising sea levels pose a threat to coastal ecosystems such as mangroves forests.

Lastly, water resilience is a critical aspect of water resource management and is central to a robust IWRM system. A country's ability to resist, adapt or recover from exposure to hazards with respect to water, greatly strengthens the response when faced with risks such as climate change, a pandemic (COVID-19) and economic or social disruptions. This would involve a different outlook where building system resilience and compensatory mechanisms for impacts are included in the water resource approach.

3.2 IWRM FRAMEWORK TO SUPPORT IMPLEMENTATION OF THE CARTAGENA CONVENTION AND ITS PROTOCOLS

3.2.1 COMMON PRINCIPLES

Further to this, Barrios proposed a regional and expedited approach to the adoption of IWRM, where sustainable development is met through the understanding of the benefits and potential synergies with other natural resource management and social processes. Importantly, a multi-sectoral approach was demonstrated to be paramount in efforts to properly integrate water management. In addition, common principles were proposed which are based on regional challenges and anchored in the UN Environment's Ocean Strategy.

- Ecosystem-Based Management
- Source to Sea
- Sustainable Consumption and Production
- Natural Capital Approach
- Science-Policy Interface
- Resilience Building
- One Health for All
- Public Participation

3.2.2 KEY IWRM ACTIONS TO SUPPORT COASTAL AND MARINE MANAGEMENT PROCESSES

With consideration for effectively managing coastal and marine resources, development of a holistic IWRM system requires an adaptive approach inclusive of certain key elements to that process. These elements or actions were identified by Barrios as the following:

- Water Governance

- Water for the Environment
- Water Budget and Allocation
- Disaster Risk Management
- Planning for Integrated Solutions
- Alternative Financial Mechanisms
- Information and Knowledge Management

3.3 IWRM IMPLEMENTATION OUTLINE

The first step was identified as SDG integration as a means of effective monitoring implementation efforts. The SDG targets, in particular SDG 6.5.1, provided a roadmap for degree of IWRM implementation at a regional and national level.

The other main actions were as follows:

Enabling Environment

This mainly refers to legal frameworks, policies, planning tools and any other issues that enables IWRM implementation. Having a water authority to lead implementation, establishing a clear definition of the limits between freshwater and coastal ecosystems to avoid overlap and promotion of ratification of regional agreements (such as Cartagena Convention) to increase national participation and political support.

Institutions and Participation

A water governance model with a water authority body that will prioritise stakeholder participation, to formalize changes to water policies and plans. This includes water utilities, the private sector, non-governmental organisations (NGO) and civil society.

Management Instruments

Harmonising legal and regulatory frameworks to minimise gaps by developing and adopting an ecosystem and risk management based IWRM. First, define water for ecosystems as the core goal of the IWRM process based on the best available water balances and ecological knowledge. Then, integrate water and land management based on a Disaster Risk Management (DRM) plan, in which ecosystems would play a key role for both risk management and water security. As a part of the monitoring strategy, monitoring of indicator SDG 6.5.1 on IWRM implementation must be a priority for the region. The monitoring process would be mainly developed by government agencies, then a systematic participation of different stakeholders and sectors would improve the monitoring process.

Financing

Proposing an IWRM financing strategy based on a multisectoral approach including water and sanitation services, Disaster Risk Reduction (DRR), health, ecosystem services, tourism and other economic activities that accrue benefits from water resource development and management, that is from having IWRM in place.

As proposed above, this IWRM implementation outline, including these specific actions, should result in an increased degree of IWRM implementation based on the conceptual

framework as recommended by Barrios. This work provided an opportunity to take an accelerated approach towards increased implementation in the region.

4. REGIONAL ACTION FRAMEWORK FOR IWRM

An Action Framework for the implementation of Integrated Water Resource Management for the Caribbean Community (CARICOM) region has been recently established by the GWP-C. The GEF Integrating Water, Land and Ecosystems Management in Caribbean Small Island Developing States (IWEco) regional project focused on addressing water, land, and biodiversity resource management, as well as climate change. Each component of the IWEco project was interconnected through areas of Sustainable Land Management (SLM), Integrated Water Resources Management (IWRM) including Water Use Efficiency (WUE), Integrated Coastal Zone Management (ICZM) and maintenance of ecosystem services.

The development of an IWRM Action Framework aimed towards enabling a streamlined approach within the CARICOM Member States³/ Small Island Developing States (SIDS) was a key objective of IWEco for achieving effective and sustainable management of the water resources in the CARICOM region. In addition, the study also included two Associate Member States⁴ and two non-CARICOM Caribbean countries.⁵ The necessity for such a framework is directly related to the lack progress in the rate of IWRM implementation in the region, due to the need for countries to establish supporting legislation. Through the work done under IWEco – legislative studies, water sector situational analyses and stakeholder engagement – a conceptual IWRM framework was established with the vision, mission and primary objective listed below:

Vision: A harmonised Integrated Water Resources Management model that ensures water security for the CARICOM SIDS.

Mission: To develop a Regional IWRM framework that promotes sustainable water governance through creating an enabling environment and building climate and disaster resilience for the sustainable development of the CARICOM SIDS.

Objective: To strengthen the policy, legislative and institutional mechanisms, and capacity building for Integrated Water Resources Management (IWRM) and ecosystem services management, while increasing climate and disaster resilience.

It was noted in the development of this conceptual framework that a participatory approach, highlighted as a guiding principle of IWRM, is most critical for the implementation process.

Further to this, it was observed that in the Spanish-speaking countries⁶ of the WCR, the adoption of IWRM has been slow and partial, primarily due to the lack of legal framework. However, with the implementation of new ways of linking water with land use, sanitation,

³ CARICOM Member States – Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Montserrat, Saint Lucia, St Kitts and Nevis, St Vincent and the Grenadines, Suriname, Trinidad and Tobago

⁴ CARICOM Associate Member States – Anguilla, British Virgin Islands

⁵ Non-CARICOM Caribbean Countries – Cuba, Dominican Republic

⁶ Spanish-speaking Countries – Costa Rica, Colombia, Guatemala, Mexico, Nicaragua, Panama, Honduras & fn 5

and social inclusion policies, most states in the region are promoting the adoption of IWRM. It is important to note that the IWRM Vision and Mission state above is the same for both CARICOM and Spanish-speaking countries which demonstrates strategic alignment for all countries within the WCR.

4.1 REGIONAL CHALLENGES

While it has been well noted that a holistic approach and collaborative efforts are required for countries to best facilitate IWRM implementation, there are familiar issues and challenges across the region. As previously mentioned, successful and sustainable water resource management can be realised through multisectoral means, requiring synergies between environmental, social and economic areas. However, there are existing challenges and emerging issues that have been outlined below:

- Climate Change and Disaster Risk Reduction
- Gender, Youth and the Role of Women
- Land use and Pollution
- Financing in the Water Sector
- Transboundary Water Management

In addition, the potential water resource management challenges that the WCR may be faced with in the future were outlined as:

- Water Availability
- Climate Variability and Change
- Overcoming Implementation Deficits Water Efficiency
- Non-Revenue Water

4.2 STRATEGIC GOALS

In development of this regional IWRM framework, the existing issues, challenges and gaps were considered by GWP-C before proposing strategic goals for implementation within CARICOM SIDS⁷. Working towards these goals should lend support to achieving the overarching goal of the IWRM Framework i.e. strengthen policy, legislative and institutional mechanisms, and enhance capacity building. In addition, it should also lead to improved ecosystem services management and increased climate and disaster resilience.

- Strategic Goal 1:

Improve capacities/frameworks for holistic, multi sectoral and cross cutting disaster risk reduction and climate change adaptation that integrates circular economic principles and gender considerations.

⁷ Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago

- Strategic Goal 2:
Encourage coordination among key water stakeholders towards harmonisation, communication, and community empowerment and involvement at the national and regional levels.
- Strategic Goal 3:
Promote knowledge based participatory approaches that incorporate Traditional Ecological Knowledge (TEK) or Local Ecological Knowledge (LEK) traditional, /nature based solutions, the role of women and Indigenous knowledge towards improved water resources management.
- Strategic Goal 4:
Guide the development or strengthening of an independent, overarching water resources entity to govern inter agency coordination and oversight at the national level, and cooperation at the regional level.
- Strategic Goal 5:
Strategise the introduction of water information systems, with monitoring and evaluation mechanisms to improve data collection, sharing and access at the national and the regional levels.
- Strategic Goal 6:
Identify and facilitate the implementation of sustainable financing mechanisms.

Furthermore, an action roadmap that defines the strategic direction for IWRM development and implementation in the CARICOM region was also proposed by GWP-C. The roadmap includes activities, output targets, outcomes, output indicators, collaborating partners and funding required in order to achieve the strategic goals mentioned above by 2028.

Promoting an enabling environment was a fundamental part of this framework. Through policy, legislative and institutional instruments, effective management of water resources could guide IWRM implementation by updating national policies and roadmaps of countries in the region. However, the success of implementation would be dependent upon the ability of countries to support the sustainable management and use of their water resources through these means.

4.3 CRITICAL ELEMENTS FOR IWRM IMPLEMENTATION

In order to achieve the strategic goals and effective implementation of this Regional Action framework, GWP-C have outlined key principles necessary for progress. Some of these areas have been previously mentioned by Barrios (Section 3.3) with respect to a proposed implementation such as Governance (Legal Framework, Regulations and Institutions), Public Participation and Stakeholder Engagement, Management and Technical Instruments and

Financing and Environmental Rehabilitation. In light of this, the additional elements are outlined.

- Political Will and Commitment

Political will and commitment are essential to the successful implementation of a regional framework on IWRM, noting the anticipated changes in institutional governance mechanisms

- Capacity Building

Sourcing skilled personnel is a corequisite for implementing the framework. Formal certification programmes in IWRM should be developed through partnerships with regional tertiary-level institutions, which should complement and strengthen collaborations with new and existing capacity-building agencies

- Sustainable Financing

Access to financing to implement IWRM programmes and plans is a primary constraining factor among member countries. It is incumbent on the regional implementing agency to develop a sustainable financing strategy and identify innovative financing mechanisms.

- Data Collection, Analysis, Reporting and Sharing

The presented framework requires the responsible authority to develop a harmonised programme for data collection across priority areas in IWRM and the integration into user-friendly, accessible, national and regional information systems.

- Governance Mechanisms

The CARICOM Secretariat should assume administrative responsibility for the coordination of regional implementation through the appropriate unit. A major factor in successful implementation is the provision for regional discussion and strategic development

- Monitoring and Evaluation

Monitoring and evaluation facilitate the validation of strategic objectives and measurement of progress while contributing to framework feasibility and adaptation to evolving conditions and use.

5. EXPERIENCES IN OTHER REGIONS

5.1 EUROPEAN UNION - WATER FRAMEWORK DIRECTIVE

The main goal of the Water Framework Directive (WFD) is to establish a system for the protection of inland surface waters, transitional waters, coastal waters and groundwater across its member states. The WFD is focused on the implementation of the protection principles for the aforementioned water bodies in order to preserve and enhance the status of aquatic ecosystems, with certain particulars depending on the water body type.

The WFD also promotes sustainable water use by focusing on long-term protection of the available water resources. In addition, the framework also aims towards mitigating against the effects of floods and droughts, providing a sufficient supply of good quality surface water, the significant reduction of groundwater pollution, the protection of territorial and marine waters and the achievement of the objectives of relevant international agreements.

Water Protection

The WFD focuses on ensuring good qualitative and quantitative health, i.e. on reducing and removing pollution and on ensuring that there is enough water to support wildlife at the same time as human needs. Since 2000, the WFD has been the main law for water protection in Europe. It applies to inland, transitional and coastal surface waters as well as groundwaters. It ensures an integrated approach to water management, respecting the integrity of whole ecosystems, including by regulating individual pollutants and setting corresponding regulatory standards. It is based on a river basin district approach to make sure that neighbouring countries cooperate to manage the rivers and other bodies of water they share

Key to the functioning of the WFD is the Environmental Objectives (Article 4) which requires member states to implement measures preventing/limiting deterioration (or pollution), to protect, enhance and restore its surface waters and groundwater. It also stipulates that protected areas should achieve compliance with any relevant standards⁸ or objectives within a given time period of 15 years unless otherwise required.

Water Management

Protective structures based upon water management were appropriately devised at hydrological and administrative levels. Member States must identify the basin districts located within their territories. Those districts are regrouped in river basin districts (Article 2(15) and Article 3(1)), where small river basins maybe included with a larger river basin. In addition, groundwaters that do not fully follow a particular river basin, shall be identified and assigned to the nearest or most appropriate river basin district. Coastal waters are also included and are identified and assigned to the nearest or most appropriate river basin district or districts. The water resource management then occurs at this level in concert with the respective administrative arrangements for the application of the rules of the WFD

⁸ Environmental Quality Standards Directive includes the established standards that must be met to achieve good surface water chemical status in accordance with WFD, Article 4

A river basin management plan (RBMP) is established for each river basin district (Article 13(1)) and includes relevant elements for implementing the applicable legislation, most notably the results of the above-mentioned analyses (Annex VII). The plan primarily includes a summary of the significant pressures and impacts of human activity on the status of surface waters and groundwater, a list of environmental objectives, a summary of the economic analysis and one of the programmes of measures.

Elements of the WFD can be likened to a source-to-sea system⁹ where the land is drained by the river basin and ultimately into the coastal waters which are all collectively managed as one river basin district under a RBMP.

Transboundary Management

The WFD treats with transboundary issues between Member states by mandating any river basin that lies in more than one territory will be identified as an international river basin district. Each member state is responsible for the administrative arrangements which include identifying the authoritative body that will apply the rules of the WFD for the part of the river basin lying within their respective state. Coordination between Member states is essential for achievement of the Environmental objectives established for the entire international river basin district. In the instance where a river basin district extends to non-Member state of the EU, the relevant Member state(s) involved must ensure coordination between all parties to meet the objectives of the WFD.

The WFD can be definitively be instructive to the countries within the WCR with respect to the development of national IWRM legislation and the need for improved management of freshwater resources. The Directive should also inform policy for the Spanish-speaking countries of the WCR as they may have similar transboundary scenarios. The WFD provides valuable information and experiences that would be very useful to IWRM implementation in the WCR.

⁹ A source-to-sea system is the land area that is drained by a river system, its lakes and tributaries (the river basin), connected aquifers and downstream recipients including deltas and estuaries, coastlines and near-shore waters, the adjoining sea and continental shelf as well as the open ocean

6. RECOMMENDATIONS

After review of the previously mentioned reports and the outlined requirements for improved implementation in the region, the Cartagena Convention may serve as useful to aid to these efforts. As such, the following recommendations/proposals are made towards enhancing the management of freshwater resources.

- The Cartagena Convention and its Protocols are directly related to marine waters. To properly treat with freshwater issues and IWRM, it is proposed that the LBS STAC makes the recommendation to the LBS COP that a new Technical Agreement be created for IWRM in the region. This may allow enhanced empowerment of a contracting party to create an enabling environment (laws, policies) which is key to IWRM implementation.
- The strategic goals identified are harmonised for both English and Spanish-speaking countries in the WCR. These goals should be used to form the pillars of an IWRM Protocol to achieve implementation progress within contracting parties.
- Consideration should be given towards the consolidation of coastal water bodies and the respective rivers/river systems/river basins that drain into them, whereby they form one unit. This is representative of a Source-to-Sea approach. In this way, if coastal waters experience deterioration/pollution from such a freshwater source, it can be holistically monitored to derive the cause and work towards pollution prevention can be done expediently.
- The development of an IWRM Protocol should include an Annex with discharge limits/pollutant loads for all surface water and freshwater sources for effective management of water quality. Ideally, these freshwater limits should be in alignment with the marine limits of LBS Protocol (Annex III), and established in such a manner that avoids duplication or overlaps.
- Transboundary agreements should be established between countries that share a river basin to ensure multisectoral cooperation for the complete management of the collective water resource.

These recommendations are made not only as a means of achieving implementation progress but to further develop the necessary framework and maintain both fresh and coastal water resources in the WCR.

7. CONCLUSION

The countries of the WCR face a number of challenges regarding the implementation of integrated water resource management. Although this progress has been historically slow, the studies by Barrios and GWP-C have discussed and outlined clear pathways for acceleration. The adaption and support of the Action Framework and roadmap should result in increased progress of the SDG 6.5.1 target indicator by countries in the region with limited advancement to date.

The implementation framework presented in this report takes into account aspects such as, political will, capacity building, sustainable financial support, data collection and information sharing, strengthening cooperation mechanisms, including the management of transboundary water resources; and monitoring and evaluation of the achievement of strategic objectives. These are all essential for IWRM to progress regionally.

However, for comprehensive regional success, it is imperative that all countries adopt the multisectoral approach and focus on the guiding principles and all critical elements for implementation previously outlined. Each country in the region must ensure it promotes the effective stakeholder participation, including government agencies, community organizations, and marginalized groups, such as women, youth, and indigenous communities to safeguard the sustainability of its water resources.

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