DELIVERABLE 4 - PHASE 2

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

Prepared by Global Water Partnership-Caribbean (GWP-C)

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List of Acronyms

AF	Adaptation Fund
BCRC-Caribbean	The Basel Convention Regional Centre for Training and Technology Transfer for the Caribbean
Cap-Net	International Capacity Development Network for Sustainable Water Management
CARDI	Caribbean Agricultural Research and Development Institute
CARICOM	Caribbean Community
CARPHA	Caribbean Public Health Agency
CAWASA	The Caribbean Water and Sewerage Association Inc.
CEHI	Caribbean Environmental Health Institute
CIMH	Caribbean Institute for Meteorology and Hydrology
COTED	The Council for Trade and Economic Development
CWWA	Caribbean Water and Wastewater Association
DRWH	Domestic Rainwater Harvesting
GCF	Green Climate Fund
GEF	Global Environment Facility
GEPAP	Grenada's Equality Policy and Action Plan
GWP-C	Global Water Partnership-Caribbean
GWP	Global Water Partnership
HLF	High Level Ministerial Forum
ICWE	International Conference on Water and the Environment
IWECO	Integrating Water, Land and Ecosystems Management in Caribbean Small Island Developing States
ICZM	Integrated Coastal Zone Management
IWCAM	Integrating Watershed and Coastal Area Management
IWEco	Integrating Water, Land and Ecosystems Management in Caribbean Small Island Developing States
IWRM	Integrated Water Resources Management
IWRMC	The Integrated Water Resources Management Council
LBS Protocol	Land-Based Sources and Activities Protocol

LEK	Local Ecological Knowledge
MEAs	International Multilateral Environmental Agreements
MOUs	
NAWASA	National Water and Sewerage Authority, Grenada
NGO	Non-Governmental Organisation
NRW	Non-Revenue Water
OECS	Organisation of Eastern Caribbean States
PPPs	Public–Private Partnerships
RIC	Regulated Industries Commission
RWHS	Rainwater Harvesting Systems
SDGs	Sustainable Development Goals
SIDS	Small Island Developing States
SLM	Sustainable Land Management
TEK	Traditional Ecological Knowledge
TOR	Terms of Reference
TPA	Training and Public Awareness
UNCED	United Nations Conference on Environment and Development
UNEP	UN Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
WRM	Water Resources Management
WUE	Water Use Efficiency
WSSD	World Summit on Sustainable Development

Section 1: Introduction and Background

1.1 Introduction: Achieving Sustainability of Water Resources

Water is a key driver of economic and social development and is essential to the integrity of the natural environment (GWP, 2020). The authors of the 2015 World Water Development Report asserted that water is at the core of sustainable development with water resources and their range of services underpinning poverty reduction, economic growth and environmental sustainability. Progress in the three dimensions of sustainable development—social, economic, and environmental—is bonded by the limits imposed by finite and often vulnerable water resources and how these resources are managed to provide services and benefits (UNESCO, 2015).

Furthermore, interlinkages between water and sustainable development reach far beyond its social, economic and environmental dimensions. Human health, food and energy security, urbanisation and industrial growth, as well as climate change, are critical challenge areas in which policies and actions at the core of sustainable development can be strengthened or weakened through water (UNESCO, 2015). Accordingly, borne out of the understanding that sustainable development related to poverty reduction, food and nutrition, human health, gender equality, energy, economic growth, sustainable cities and the environment would be at risk without the consideration of water, Sustainable Development Goal (SDG) 6 calls for the availability and sustainable management of water and sanitation for all. Moreover, water is crucial in creating resilient and low-carbon economies needed to "build back better" from the impacts of the COVID-19 pandemic.

Economic and social development is stymied in part by freshwater shortages, as increasing water demands are compounded by destabilising changes in climate, deterioration of water quality and the degradation of water-related ecosystems. In the Caribbean, rapid development in the urban areas, improved sanitation and health practices in rural areas, and continued growth in tourism and industrialisation, especially in the region's relatively developed countries, have significantly increased the demand for freshwater resources. Climate change is likely to increase seasonal variability, creating a more erratic and uncertain water supply, thus exacerbating problems in already water-stressed areas, and potentially generating water stress in places where it has not yet been a recurring phenomenon.

The indiscriminate use of forests and encroachment into protected watershed areas have resulted in significant changes in the water-retention capacity of the soil. Despite the paucity of global water quality data due to a lack of monitoring and reporting capacity, trends indicate a deterioration of water quality in nearly all major rivers in Africa, Asia and Latin America, with nutrient loading among the most prevalent sources of pollution (OAS, 2008). Globally, an estimated 80% of all industrial and municipal wastewater is released into the environment without any prior treatment, with detrimental effects on human health and ecosystems (Modern Water, 2021).

In the Caribbean, countries have reported significant inadequacies in their ability to treat and manage wastewater disposal effectively. It is common practice to release effluent directly into the sea with minimal or no treatment. Additionally, hundreds of chemicals are also negatively impacting water quality with the risks related to emerging pollutants, including micropollutants. This has been acknowledged since the early 2000s.

Even in places where water is physically available, there sometimes is a lack of necessary legal and institutional frameworks and infrastructures to ensure access to water for all. Most countries in the region have not assigned sufficient funds for proper law enforcement in cases of pollution or overexploitation.

Additionally, deterioration and malfunction of the municipal water supply and sewage treatment system, poor maintenance and weak attempts at rehabilitation of irrigation distribution systems have created added problems in water resources management. Further, water usage allocation, whether in the form of concessions—the most widespread mechanism used in the region—or water rights, has not been very effective in controlling overexploitation and pollution of water bodies throughout Latin America and the Caribbean or in reducing conflicts fuelled by water stress induced by various sectors competing over scarce resources.

Hard-pressed to maintain the coverage and quality standards set in the face of increased demand while achieving and maintaining robust annual growth rates, Caribbean nations have been required to balance demands and availability of water for current and future development. To do so, water resource sustainability is necessary to satisfy the changing and often competing short and long-term economic and social development needs, without compromising the healthy functioning of vital ecosystems.

A sustainable water resource system aims to provide sufficient quantities and qualities at acceptable prices and reliabilities while protecting the environment and preserving the biodiversity and health of ecosystems for future generations. Therefore, a sustainable approach to water resources must ensure resiliency and adaptability to shocks, primarily those associated with climate variability and climate change, and the efficient provision of safe, reliable and easily accessible water for domestic, commercial and industrial sectors and reliable access to sanitation while protecting water resources from pollution.

The results from the latest monitoring and reporting on SDG Indicator 6.5.1 in 2020 showed that the average integrated water resources management (IWRM) implementation score was 54% (i.e., a medium-low degree of IWRM implementation). The Caribbean in particular also fell under the same medium-low degree of implementation, ranging from 31% to 50% (UN-Water, 2021). Noting the Caribbean Community's (CARICOM) vulnerability to a series of environmental stressors that affect and limit access to water resources in particular, it can be stated that there is an urgent need to advance the degree of IWRM implementation in the Caribbean region.

1.2 Background of the Consultancy

Funded by the Global Environment Facility (GEF), the Integrating Water, Land and Ecosystems Management in Caribbean Small Island Developing States (IWEco) project is a five-year regional project that aims to address water, land and biodiversity resource management, as well as climate change. The IWEco Project has four interconnected components:

1. Development and implementation of integrated targeted innovative, climate–change-resilient approaches to sustainable land management (SLM), IWRM including water use efficiency (WUE), integrated coastal zone management (ICZM) and maintenance of ecosystem services.
2. The strengthening of the SLM, IWRM and ecosystems monitoring and indicator framework(s)
3. Strengthening of the policy, legislative and institutional reforms and capacity-building for SLM, IWRM/WUE and ecosystem services management, taking into consideration climate change resilience building.

4. Enhancing knowledge exchange, best practices, replication and stakeholder involvement.

The Caribbean Public Health Agency (CARPHA), a partner in the IWEco Project, was subcontracted to execute activities under project component 3 (i.e., policy and legislation), which falls under the development of a regional action framework for IWRM for the CARICOM region. This component is to be implemented in collaboration with the Organisation of Eastern Caribbean States (OECS).

Global Water Partnership-Caribbean (GWP-C), a regional organisation committed to collaborating with its partners to promote and strengthen interaction and cooperation at all levels and across different sectors to sustain IWRM in the Caribbean, was contracted during 2021 to undertake the Consultancy to Develop a Regional Action Framework for IWRM for the CARICOM Region.

1.3 Objectives and Relationship to IWRM

After the periodical assessments of the rate of implementation of IWRM in the Caribbean region, it was determined that the region falls under the "medium-low" level of implementation, with no significant progress between 2017 (i.e., the baseline) and the first progress assessment conducted in 2020. This level of implementation is mostly due to the limited enabling environment for IWRM in Caribbean countries, which relies on the countries' ability to establish a legal and policy framework for the advancement of IWRM.

The Consultancy to Develop a Regional Action Framework for IWRM for the CARICOM Region aims to establish an overarching framework for CARICOM's approach to the sustainable and effective management of water resources in member and observer states. This intervention will eventually be seen as contributing to a higher degree of IWRM implementation in the region as a whole, as well as an increased level of IWRM implementation in the individual countries that are member states of the region.

The following are the objectives of the consultancy:

1. To develop a regional action framework for IWRM for the Caribbean, inclusive of road maps and action plans containing relevant actions and interventions, informed by the results of the following:

a) A comprehensive theoretical study of the water policy, legislative and institutional framework of the 17 CARICOM SIDS (i.e., 15 member states and two associate members) and two non-CARICOM Caribbean countries (i.e., Trinidad and Tobago, Jamaica, Saint Vincent and the Grenadines, Saint Kitts and Nevis, Antigua and Barbuda, Dominican Republic, Cuba, Grenada, Saint Lucia, Barbados, Guyana, Suriname, Belize, Dominica, Bahamas, Anguilla, British Virgin Islands, Montserrat and Haiti) and the overall Caribbean region.
b) A situational analysis of the institutional water sector in the CARICOM region and its implication in other relevant fields (e.g., energy, climate change, disaster risk management, tourism, agriculture and public health) was conducted through a desk review.
c) A multi-stakeholder engagement approach with key informants, previously identified via appropriate stakeholders' mapping.

2. To ensure the identification and inclusion of linkages between IWRM and intersecting areas at the national and community levels such as socioeconomic development, food security, environmental and public health, paying special attention to their intersectionality with gender, Indigenous and ethnic groups and other relevant vulnerable demographics when appropriate
3. To produce the reports determined in the terms of reference (inception report, findings of the IWRM study, IWRM conceptual framework, draft IWRM framework, revised draft regional IWRM framework and final technical report) aimed to inform and support the client (CARPHA and OECS) in the facilitation of institutional strengthening and capacity development-oriented virtual events, targeted towards the adoption of the developed regional IWRM framework.

After an intensive desktop review and national and regional consultative processes in which the main challenges of IWRM at the national and regional levels were identified and discussed, the conceptual IWRM framework was developed with the following vision, mission and primary objective:

Vision: A harmonised IWRM 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 in support of the sustainable development of the CARICOM SIDS.

Objective: To strengthen the policy, legislative and institutional mechanisms and capacity-building for IWRM and ecosystem services management while increasing climate and disaster resilience.

For regional attention and execution, focus is given to four priority areas (i.e., policies, regulations and plans, institutional frameworks, management and technical instruments and financing). Prioritising the framework's abovementioned areas would entail paying attention to the following:

- Public awareness and stakeholder engagement
- Capacity-building
- Sustainable finance
- Political commitment
- Data collection, analysis, and reporting

Regarding the means of implementation and responsible authorities to commence the application of this framework, beyond relying solely on what have been the typical associates and stakeholders (governmental water management agencies and authorities), the conceptual framework advocates for a wider integration through public awareness and stakeholder engagement. Additionally, the conceptual framework recognises that three of the four elements of the Dublin principles on equitable and effective water management, explicitly involve public participation and stakeholder outreach:

- Principle 2: Participatory approaches
- Principle 3: Role of women
- Principle 4: Social and economic value of water

The conceptual framework emphasises that true participation requires the involvement of all stakeholder groups at all levels of society in water management decision-

making. Moreover, the public is a vital stakeholder in the successful execution of any IWRM policy or plan. The preparation of the draft regional IWRM framework incorporated the guiding concepts discussed at international conferences. These concepts align with those at the national and regional levels.

Section 2: Overview of IWRM in the Region

2.1 IWRM: Deconstructing the Process

IWRM promotes the coordinated development and management of land, water, and related resources to maximise economic and social welfare in a manner that is equitable and does not compromise sustainability (GWP, 2021; World Water Council, 2015).

2.2 Emerging Principles of IWRM

There has been a gradual transformation in expectations for water resource management. Prior to the adoption of IWRM, economic growth and development generally followed the construction of water infrastructure, once rivers and natural hydrology were controlled. Stakeholders benefited from reduced risks, increased wealth, and improved health, as the perceived benefits of economic activity outweighed the costs and any lost rights. Control was centralised and top-down, with water resource development managed by government bureaucracies, justified by the calls to action from political leaders and the technical certainty of experts. IWRM was intended to resolve the quickly accumulating problems in water resource management. IWRM sets out to reconcile multiple competing uses of water with legitimacy attained through public participation and with coordination and technical competence assured through specialised basin entities or agencies where they exist (World Water Council, 2015).

The foundations for water resource management were articulated in 1977 during the UN-Water Conference in Mar del Plata and remain relevant today. Water strategies today strongly echo the priorities set out in the Mar del Plata Action Plan which was adopted at the conference. The plan called for a coordinated water sector where there is national action on water resources management with the aim of securing the highest level of national welfare (World Water Council, 2015). “Institutional arrangements adopted by each country should ensure that the development and management of water resources take place in the context of national planning and that there is real coordination among all bodies responsible for the investigation, development and management of water resources” (UN, 1977).

The transformations that were broadly envisioned in the Mar del Plata Action Plan were further elaborated during the International Conference on Water and the Environment (ICWE) in Dublin. As a precursor to the United Nations Conference on Environment and

Development (UNCED), the water sector organised the ICWE, which was attended by water experts and international, intergovernmental and non-governmental organisations. Keynote papers from the conference contain descriptions of most of the characteristics of IWRM as it is understood today. However, the most significant outcome was the Dublin Guiding Principles. The Dublin Guiding Principles stressed the importance of coordination within the water sector, recognising that the level of coordination within the water sector that was recommended in Mar del Plata would not provide the fundamental changes needed to achieve holistic management. This was the basis for the call in Agenda 21, at the UNCED six months later in Rio de Janeiro, for integrated water resources development and management. The IWRM concept was formalised at the 2002 Johannesburg World Summit on Sustainable Development (WSSD), during which small island developing states (SIDS) committed themselves to adopting IWRM as the approach by which water will be managed in the future.

IWRM is now considered best practice for water resources management, given the fact that it takes on an integrated approach and noting the cross-cutting nature of water resources. IWRM requires adopting nations to depart from the business-as-usual mechanism of managing water and transition to an integrated sustainable management approach. This requires proper water governance to ensure an effective enabling environment that must be supported by clearly-defined institutional roles with appropriate management instruments. The Dublin principles function as a foundation for this process, the principles are as follows:

2.2.1 Principle 1: Water is a Finite and Vulnerable Resource

Freshwater is a finite and vulnerable resource, essential for sustaining life, development, and the environment (Kanda, 2021). This principle underscores the numerous purposes, functions, and services that require water. Consequently, management must be holistic, taking into account the various sectoral and environmental demands on the resource, as well as the associated threats.

2.2.2 Principle 2: Participatory Approach

Water development and management should be based on a participatory approach, involving users, planners and policymakers at all levels. Water is unique as a resource because everyone is a stakeholder. Therefore, input should be solicited in all phases of the management process from a wide cross-section of stakeholders covering all interests. The nature of participation will depend upon the spatial scale relevant to particular water

management and investment decisions, as well as the political environment. Effective participation and contributions to the decision-making process empower individual interest groups and are considered the best means for achieving long-lasting consensus and common agreement. Participation does not always achieve consensus; arbitration processes or other conflict resolution mechanisms also need to be put in place (FUB, 2021). Similarly, simply creating participatory opportunities will do nothing for currently disadvantaged groups unless their capacity to participate is enhanced.

2.2.3 Principle 3: Role of Women

Women play a central part in the provision, management and safeguarding of water. Despite the acknowledgement that women play a key role in the collection and safeguarding of water for domestic and other uses, they have traditionally had a much less influential role than men in management, problem analysis and the decision-making processes related to water resources. Involving people in influential roles at all levels of water management has the potential to improve the management and sustainability of water resources, as it allows for distinct perspectives to be considered (IRC International Water and Sanitation Centre, 2004).

2.2.4 Principle 4: Social and Economic Value of Water

Water is a public good and has social and economic value in all its uses. Managing water is crucial to achieving social objectives, such as efficient and equitable use and the conservation and protection of water resources (Clear Water Dynamics, 2021). Water should be considered as both an economic and a social good. The true value of the resource should be represented in management plans.

These four principles are the pillars of the modern water sector and IWRM policies, as reflected in many of the existing regional road maps, plans and policies that relate to IWRM. All participating countries are equipped with varying levels of enabling environments, possessing laws, policies, plans, institutional arrangements and management instruments. The IWRM process varies with a state's stage of development as a country's need for water management varies according to its geography, climate, size, population, political and cultural systems, level of development and the nature of its water resource problems. Accordingly, although IWRM implementation is a step-by-step process, the number of steps and the depth of the work required, depends on a country's present progress

towards IWRM and the goals set. Some changes can occur immediately as water resource management components may already be advanced. In contrast, several years of planning and capacity-building may be required when there is limited development.

Additionally, the steps in IWRM planning and implementation do not have to be followed sequentially in practice. Although logically, the creation of policies and institutional frameworks should precede the use of specific management instruments, there are instances when steps are not followed in any specific order but are iterative. Institutional change that requires the creation of new legislation is typically a time-consuming activity. Therefore, regarding the IWRM enabling environment, it is practical to start somewhere, working as far as possible with existing arrangements, rather than waiting for more wide-ranging reform measures to be enacted.

Because IWRM aims to create sustainable water security within the present constraints by incrementally improving the institutional framework, there are certain conditions that should be met. These conditions include the following:

- Political will and commitment
- Clear vision and management plans
- Participation and coordination mechanisms
- Capacity development
- Well-defined, flexible and enforceable legal frameworks and regulation
- Water allocation plans
- Adequate investment, financial stability and sustainable cost recovery
- Deep knowledge of natural resources
- Comprehensive monitoring and evaluation

Before embarking on the IWRM process, one should assess the context to determine whether any of the conditions mentioned above are present, cannot be readily instituted or can be wholly or partially developed over time. The starting point of the IWRM process is the identification of priority issues regarding significant and urgent water resources problems to be dealt with as part of the “need” based approach to building a management framework. Issues can be livelihood/demand issues (e.g., meeting the increasing and often conflicting demands of different economic sectors) or resource-impact issues (e.g., the impact of climate variability and changes, impact from human activities and land management).

Demand issues need to be balanced based on an understanding of the resource base (capital stock) and the threats to this resource base. After identifying priority issues, the country's progress towards a national IWRM framework is assessed by considering its enabling environment, institutional framework, management instruments, national plans, endorsed international agreements and processes, capacity-building and empowerment activities and fora for cross-sectoral and multi-stakeholder dialogues. Because several essential elements of a framework may already exist, it is crucial to establish the starting point and identify gaps and areas needing review and strengthening when considering the agreed overall goals and objectives articulated according to the identified issues and priorities. These elements need to be amalgamated to form a basis for further progress towards the IWRM framework.

IWRM planning requires a strong commitment to a future with sustainable management of water resources. It implies the top political leaders and stakeholders have will and leadership. This is because the IWRM concept challenges existing ways of doing things, building awareness and understanding of the need for change and the potential solutions among the highest political decision-makers, managers, practitioners and other stakeholders. Commitment from stakeholders is necessary because they are the ones who strongly influence water management through joint efforts and behaviour change. Therefore, the consolidation and development of partnerships are necessary to develop strong multi-stakeholder groups and fora that can facilitate participation in the IWRM planning process. Additionally, the cross-cutting nature of IWRM must be reflected in the composition of the fora with the roles and interests of the actors established through stakeholder analysis. Conscious actions to build consensus, especially at the highest political level, must be built into the process from the beginning and be checked and enhanced at every stage.

Raising public awareness, promoting accountability, and building capacity are valuable initiatives to utilise when fostering commitment to reform among stakeholders and in the other phases. The availability of timely and relevant information on the status of the environment to all concerned sectors and stakeholders, particularly at the river basin level, is an essential precondition for growing awareness. Raising awareness and multi-stakeholder involvement are critical to the success of IWRM planning processes, it is necessary to put in place a communication strategy for the IWRM reform process and its results. Other initiatives, such as promoting educational activities in water resource sustainability, can

prompt behaviour change through fostering accountability. Capacity-building, as another driver of behavioural change, can be achieved through building the knowledge and technical skills of national and local leaders, or through the transfer and adoption of best management practices to reflect local conditions.

Having recognised the need for an IWRM approach, the fostering of political will and commitment to articulated IWRM goals, the next phase of the IWRM problem involves the determination of the root causes of the problem and formulation of future actions. Water resource management should be assessed within the context of the existing environmental and socioeconomic conditions, policy, legislative and institutional frameworks, capacity and capabilities and the overall national goals. The assessment should indicate the required specific water resource development and management functions or tools and mechanisms necessary to address the prioritised issues identified and the gaps in the existing framework.

The phases and steps of IWRM are listed in the following table:

Table 1: Phases and steps of IWRM implementation

Steps	Phase
Issue identification Detailed planning and coordination Development of strategic planning instrument(s) Revision and validation of instrument(s)	Conceptualisation Phase
Adaptation of the instrument(s) at all levels Involvement of stakeholders Development of a communications strategy Monitoring, evaluation and documentation	Implementation

Water resource systems are directly and indirectly affected by economic, social, and demographic factors. These drivers of change (i.e., governance, demography, land use, economy, social conditions, technology, climate change and climate variability) affect the hydrology and related water demands and functions of water resources at the river basin level. Prioritising adaptation responses of the water resource management to these drivers of change is a key component of the IWRM process and is facilitated by the iterative nature of the process. The following features of the IWRM process enable a water resource system to adapt to changing needs, circumstances, and societal goals continuously:

- Initiation of IWRM actions at any point of the evolutionary process
- Capacity-building throughout the IWRM process
- Cross-sectoral cooperation and integration

- The promotion of the pursuit of effective solutions that involve adapting to changing circumstances and values
- Consensus building and stakeholder ownership at each phase of the process
- Incremental, step-by-step process and practical framework for future planning
- The iterative IWRM process starts again with the 'recognising' phase, responding to new needs through incorporating ever-changing ideas, values and technologies

2.3 Advancement of IWRM in the Region: A Summary

2.3.1 Regional Setting

The control of the water sector at the regional level appears to have room for further growth. Although water issues are covered in the Sustainable Development Directorate, the CARICOM, a significant regional entity, is working in favour of acquiring a more comprehensive influence in this regard. In 2008, a CARICOM resolution to initiate the Consortium of CARICOM Institutions on Water sought to develop a common water framework for the community. The framework aimed to assist member states with developing and implementing IWRM plans. The terms of reference of the consortium, approved in 2010, included representation from regional non-CARICOM institutional partners. The immediate aims were to develop a consolidated work programme and set up a clearinghouse and library of water resource projects and a skills database.

The consortium was meant to facilitate the assessment of national water resources, identify priority issues, build up capacity and update water legislation as a means of moving forward with the development of a common water framework in the long term. However, the lack of accessible available funds and the voluntary nature of the consortium have severely hampered its ability to address any of the objectives set out in the terms of reference. Consequently, the framework has had little impact on the region, and IWRM-related activities have taken place in the absence of any regional-level coordination. Rather, specific interventions are implemented at the national level by supra-national bodies.

To some extent, other regional institutions have been more successful in playing a direct role in supporting initiatives at the national level, either through regional projects that include a portfolio of national-level interventions or through their involvement in national and local projects. Examples include the other CARICOM institutions such as the Caribbean

Environmental Health Institute (CEHI, now CARPHA), the Caribbean Institute for Meteorology and Hydrology (CIMH) and the Caribbean Agricultural Research and Development Institute (CARDI). Non-CARICOM entities, such as the GWP-C, the Caribbean Water and Wastewater Association (CWWA) and the Caribbean Water and Sewerage Association Inc. (CAWASA), have also been in initiatives in the region

Regional bodies tend to focus on operational-level activities, working within the current governance arrangements. Their activities have led to the strengthening of existing human resources and operational infrastructure capacities, focusing on improving their efficiency and effectiveness. Occasionally, linked to financing infrastructure projects with a requirement for structural adjustment of the governance arrangements, the focus has been on reordering the national-level institutional framework.

One such intervention, the GEF Caribbean-wide Integrating Watershed and Coastal Area Management (IWCAM) project, up to its completion in 2011, supported the development of national IWRM plans and reviewed the policy, legislation and institutional structures in the participating countries. The outcome was the publication of a toolkit for institutional, policy and legislative improvements supporting the GEF-IWCAM project approach in Caribbean SIDS. The toolkit was designed for technocrats, policymakers, planners, developers, and legislators and provided model examples and laws, including legislative drafting guidelines for the regional strategy and action plan for the GEF-IWCAM project. In addition, national and subnational IWRM roadmaps were prepared in Antigua and Barbuda, Barbados, Grenada, Saint Lucia and Union Island in Saint Vincent and the Grenadines. Draft policy statements were developed in Antigua and Barbuda and Dominica, and dialogue and issue papers in Cuba, Jamaica, Saint Kitts and Nevis and Trinidad and Tobago were supported. This provided a platform to aid in IWRM implementation and the Land-Based Sources and Activities Protocol (LBS Protocol) of the Cartagena Convention. Notably, the development of the Wider Caribbean 2021–2030 (RSAP) is a key output that has synergies with this regional action framework for IWRM in CARICOM. Specifically, the aforementioned strategy is one of the tools developed by the Specially Protected Areas and Wildlife sub-programme of the United Nations Environment Programme (UN Environment) and Caribbean Environment Programme (CEP) to support conservation and sustainable use of coastal and marine ecosystems in the wider Caribbean (UN Environment, 2020) and the Regional Strategic Action Plan for the Water Sector in the Caribbean to Develop Resilience

to the Impacts of Climate Change (Inter-American Development Bank [IDB] et al., 2019; RSAP).

In 2012, the secretariat of the OECS commissioned the development of a model water policy and legislation on behalf of its member states. The two model documents are based on IWRM principles and incorporate climate change and the LBS protocol to address the issue of pollution control. They also promote the use of economic instruments as management tools, and provision is made for sub-regional collaboration, in areas such as the economic regulation of water utilities. There is also some policy guidance provided at the country and regional level (i.e., CARICOM and OECS levels) and within international multilateral environmental agreements (MEAs). Some of these are listed in the following table:

Table 2: MEAs and Regional Guidance Documents related to water resource management

MEAs	**Regional Guidance Documents**
Basel Convention on the Transboundary Movement of Hazardous Waste and its Disposal, 1992 Rotterdam Convention, 1998 Stockholm Convention on Persistent Organic Pollutants, 2004 Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat, 1975 Convention on Biological Diversity, 1993 and its Protocols (Cartagena, Nagoya) United Nations Framework Convention on Climate Change, 1992 Kyoto Protocol, 2005 Paris Agreement, 2015 United Nations Convention to Combat Desertification, 1994 United Nations Convention on the Law of the Sea, 1982 Vienna Convention for the Protection of the Ozone Layer, 1985 Montreal Protocol on Substances that Deplete the Ozone Layer, 1987 Minamata Convention on Mercury, 2017 Convention on International Trade in Endangered Species of Wild Fauna and Flora 1975	Convention for the Protection of the Wider Caribbean Region (Cartagena Convention), 1986 Protocol Concerning Pollution from Land-Based Sources of Pollution, 2010 Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (ESCAZU), 2021 OECS Biodiversity and Ecosystems Management Framework 2020–2035 Draft OECS Regional Green-Blue Economy Strategy and Action Plan Revised St. George's Declaration of Principles for Environmental Sustainability in the OECS (SGD 2040) Revised OECS Regional Plan of Action for Agriculture 2012–2022 Eastern Caribbean Regional Climate Change Implementation Plan–Final Report OECS Climate Change Adaptation Strategy and Action Plan Eastern Caribbean Regional Climate Change Implementation Plan OECS Model Water Policy and Act 2013

Sources: (European Commission, 2021; UNEP, 2021)

2.3.2 National Setting

There is a continuum of progressive forms of water policies, laws and institutions within the region. There have been, for some states, substantial changes in water governance in line with the prevailing thinking advocated by such bodies as the UN-Water and the Global Water Partnership (GWP). For most countries, policy and governance have remained

unchanged for several decades, with many Caribbean states yet to adopt effective policies to address challenges in water management.

Of the participating countries, only St. Lucia, Cuba, Jamaica and Trinidad and Tobago approved and adopted water policies that help align states' priorities with the needs of the overall water sector and focus on sustainable use and management of water. However, such a level of integration of policy and planning is not typical in the Caribbean.

The other participating countries have policies that deal with various components of their water sector as an essential element of their national development strategies or have what they regard as a water policy. Moreover, for some countries, their water sector policies are in the conceptual or draft stage. The development of a national water policy has been considered by Antigua and Barbuda, and Barbados. Similarly, Saint Vincent and the Grenadines has initiated actions in the water sector. One of the outputs was a draft water resources policy rather than a sector-wide policy. Notably, countries such as Antigua and Barbuda, Barbados and Saint Kitts and Nevis have embarked on the IWRM Roadmap process via the GEF-IWCAM project, to develop water policies potentially. However, efforts made by the aforementioned countries have not been fully integrated (as yet) into their respective governments' policymaking frameworks.

The central government of each country, via ministries or agencies, plays a significant role in water policy in the region. Government prerogatives include strategic planning, priority setting and environmental regulation. In most cases, multiple central government actors are involved in policymaking in the water sector. Jamaica is the only country in which responsibility for policymaking is also designated to its public utility. In contrast, only one ministry spearheads policymaking for the water sector in Barbados. Subnational actors' contribution to water policy design is almost non-existent. Caribbean actors outside the public sector (i.e., the private sector, customers, non-governmental organisations and community-based organisations) seldom enjoy the level of influence observed in other parts of the world. This siloed approach to water policymaking leads to incoherence between local needs and national policy initiatives. Further, it reduces the possibility of the successful implementation of cross-sectoral policy at the subnational level. Subnational development is adversely impacted as opportunities to maximise efficient and effective cross-sectoral public services are lost.

Various emerging policy challenges demand reforms that have the potential to change the current state of affairs. Obstacles to effectively design and implement water reforms are rooted in misaligned objectives and poor management of interactions among stakeholders. The lack of engagement with the different relevant water sector actors in policy design, limits the flow of information across ministries, various levels of government and local actors. As a result, knowledge of what is happening on the ground is not shared with national and subnational authorities. The information gap leaves the central government with only a partial view of water-related issues and prevents the identification of information and capacity deficiencies critical to supporting effective governance. The resulting potentially diverging or contradicting objectives between the various levels of governments and ministries can compromise long-term targets for integrated water policy.

Apart from the policy gap, coordination gaps in water policy design are mostly due to the ambiguity attached to the monitoring and management of water resources within broader features such as watersheds, which may be mismatched with administrative zones resulting in institutional and territorial fragmentation. There seems to be little separation between responsibility for water services and water resource management in the Caribbean because both are oftentimes managed by centralised institutions. Water governance is based on a state-based management paradigm at the national scale, with the majority of key stakeholders working in the public sector. At the national level, the vague and conflicting allocation of roles, responsibilities and funds among the various actors at the various levels in the water sector prevents a coordinated and coherent approach to policy implementation.

In the Dominican Republic, this problem has been documented and recognised. Saint Vincent and the Grenadines, Trinidad and Tobago, Antigua and Barbuda, Grenada and Saint Lucia Kitts and Nevis are also faced with the problem. The capacity gap translates into the inadequate implementation of water policies locally, due to the lack of resources to manage water management functions resulting from organisational, technical, procedural, networking and infrastructural capacity deficiencies. A feature of such an unstructured arrangement is a lack of system checks and balances that would allow for transparency, institutional quality and integrity in water policy design, and a degree of accountability for those responsible for the water management.

The varied history of European colonisation in the Caribbean gave rise to the differing legal arrangements concerning water management. The growth of urban centres and

diffusion of ideas about water services provision in the mid to late 19th century, influenced the sector's legal and institutional arrangements. The predominant arrangement which survived well into the postcolonial period, was for island administration to provide water services as a municipal or government responsibility.

Today, the roles and responsibilities of central governments are defined by specific water law(s) or, in the case of Cuba, by their constitution as well. Although some states have comprehensive legal frameworks that clearly define the government bodies' responsibilities and powers, most have outdated and fragmented laws, where little distinction is made between water services and water resource management responsibilities. The emphasis is on the provision of water services while resource management is subsumed within and secondary to service provision. These functions are often centralised within the same body, reflecting a predominant supply-side paradigm that conceives water resources narrowly, as an integral extension of water supply services.

Although attempts have been made to adopt water resource legislation in states with underdeveloped water legislation to address the array of issues in the water sector, their water governance systems have proven to be resistant to change, exhibiting rigidity rather than inertia. All countries have laws, most outdated, that establish water utilities as separate entities. In most states, water service providers also undertake water resources management. Government-owned companies or statutory authorities undertake water supply and wastewater services with little independent oversight and evaluation.

Apart from St. Lucia, Jamaica and Trinidad and Tobago, responsibilities for various aspects that impact water management are dispersed across and within several government agencies or ministries with diverse mandates and poor institutional coordination. Several authorities have mandates relating to water management, but no single authority has an explicit mandate for watershed management in Antigua and Barbuda. Although commissioned with water resource management responsibilities, Grenada's National Water and Sewerage Authority (NAWASA), focuses primarily on water service provision.

Even when there are many legal provisions to promote the sustainable development and management of water resources, they are inadequate and fragmented. In Grenada, the provisions for water resource management legislation are fragmented and insufficient, if not absent. In Saint Vincent and the Grenadines, no water resource management policy or

legislation defines and elaborates the management of water resources. Legal provisions for the development of water resources are not integrated or harmonious.

Attempts to bring existing legislation in line with relevant international agreements and promote and operationalise cross-sectional coordination and integration have stalled. Discussions have been prolonged or dragged out in the Dominican Republic, and there is little to no progress in Saint Vincent and the Grenadines and Barbados, where draft bills have yet to be approved and adopted. The lack of reform of the inadequate and fragmented water services and resource management legislation has made the implementation of water resource management cumbersome across the region.

In the Caribbean region, regulatory responsibilities in the water sector are generally distributed among multiple central authorities, i.e., ministries, departments, and agencies. Typically, a regulatory authority oversees public utilities and existing Water Acts vest some responsibility for pollution control, which is seldom exercised, in the utilities. Environmental standards are enforced by a ministry, a specialised government body or a combination of both. Countries in the region have established systems of oversight of potable water quality, usually overseen by the Ministry of Health or an equivalent body. Hence, regulation remains a government function, and, as a result, the activities of other government agencies are not rigorously held to account.

This self-regulation gives rise to overlapping and often duplication and conflicting functions in areas of public health, pollution control and the management of watersheds. In Barbados and Grenada, the regulatory framework across various institutions is incomplete or piecemeal, with no clear demarcation of regulatory powers. There is almost no independent regulatory oversight in Grenada’s water sector, with regulatory measures limited to the quality of potable water supplied. In Antigua and Barbuda, regulatory measures for water resource management are minimal.

In contrast, economic and environmental regulatory functions are separate from service provision in Saint Lucia, Jamaica and Trinidad and Tobago. Environmental regulation utilises abstraction licences and discharge permits. These are reliant on the use of command-and-control approaches rather than economic incentives.

Both Grenada and Antigua and Barbuda lack water allocation mechanisms, as water is supplied based on user requirements and water availability. Water abstraction licencing has neither been established nor implemented despite cabinet approval.

States such as Antigua and Barbuda and Saint Vincent and the Grenadines also lack a regulatory framework addressing discharge and water quality. Failures are evident in the oversight of discharge and effluent standards in the private sector, though this is primarily because of low penalties and enforcement rather than a lack of legislation. Practices around monitoring, reporting and enforcing permit conditions are loose and reflect the difficulties experienced in enforcement.

After colonisation, governments sought to address the legacy of neglect and large-scale marginalisation by implementing programmes to significantly expand the provision and access to basic services. The state assumed a key role in the economy and acted as a guarantor of essential services. The strong social welfare stance, characterised by governments throughout the region, established a precedent of affordable services, including water delivery.

Consequently, the public has come to expect that governments will provide services by guaranteeing financial support to ensure services are affordable. Almost inevitably, water services become politicised, and, hence, political, rather than financial considerations play a significant role in any decisions about changing water prices. There are only a few instances of independent oversight, as the responsibility for tariffs, and economic regulation is rarely exercised independently of ministerial or cabinet control. Exceptions are Jamaica, Saint Lucia and Trinidad and Tobago, where although there is some degree of independent oversight where recommendations can be made, the final approval is still under the remit of the respective ministries.

The use of management instruments in water management is limited to the use of volumetric charges and block tariffs for increasing consumption levels, differentiated water rates between domestic and commercial users, and irrigators. In the Dominican Republic, some legislation charges the users for the right to use the resource (managing costs) and other legislation charges them for the volume of water utilised. In Trinidad and Tobago, tariffs must be approved by the Regulated Industries Commission (RIC), but legal frameworks have not established a formula for setting tariffs. The RIC makes recommendations to the

responsible minister, and the last water price reviews conducted in 2007 have yet to be adopted.

Grenada is also moving towards a system of oversight through the Grenada IWRM Plan (2019) and the Water Resources Management and Regulation Bill, which was approved by the cabinet in February 2024. Due to the sensitive nature of water tariffs and the narrow perception of water as a social good, the financial performance, standard of service, transparency and accountability of the regulation of the water utilities necessarily suffer. Consequently, most of the region's water utilities operate at a loss and rely on government funding for major improvements in light of insufficient revenue generation.

Most Caribbean states have a ministry that allocates funding to the public water utility. The responsibility generally lies with the Ministry of Finance or its equivalent in each country. In Jamaica, however, other ministries are also in charge of funding the rural water and sanitation sector. The Ministry of Local Government and Community Development provides policy, regulation and funding mechanisms to small water systems in Parish Councils.

In countries like Dominica and Guyana, where indigenous communities have a strong presence, their rights and roles in water resources management are not often recognised. Engaging these communities and incorporating their traditional knowledge and practices can lead to more inclusive and sustainable IWRM approaches.

2.3.3 Regional Progress in Implementing IWRM

A stakeholder mapping exercise was carried out in the following 19 countries: Trinidad and Tobago, Jamaica, Saint Vincent and the Grenadines, Saint Kitts and Nevis, Antigua and Barbuda, Dominican Republic, Cuba, Grenada, Saint Lucia, Barbados, Guyana, Suriname, Belize, Dominica, Bahamas, Anguilla, British Virgin Islands, Montserrat and Haiti). The stakeholders identified the level of power and interest of a wide range of institutions, from local public sector agencies, state-owned, private sector organisations and companies, environmental and professional NGOs, academia, and individuals with a vested interest in the process and implementation of IWRM.

Information was collated and analysed, resulting in 19 stakeholder maps, one for each beneficiary country. The information in the maps was illustrated utilising the interest/power

matrix. On one axis, this matrix indicates how influential stakeholders are, and on the other, how much IWRM influences or is influenced by these stakeholders. Each stakeholder can be classified into one of the following groups based on their position: keep satisfied, manage closely, monitor and keep informed.

In Antigua and Barbuda, most of the identified stakeholders came from the public sector with a high interest and power resulting in them falling under the closely managed category. In Barbados, the situation was similar in that most of the stakeholders with high interest and power also came from the public sector, resulting in them having to be managed closely. The situation in Grenada, though like Antigua and Barbuda and Barbados, indicated that stakeholders from the NGO community, in addition to those from the public sector should be managed closely. Similarly, in Jamaica, most of the stakeholders that are to be closely managed are from the public sector. The same can be inferred for Saint Vincent and the Grenadines, Guyana, Suriname, Belize, Dominica, Bahamas and Trinidad and Tobago. In Saint Lucia, however, an unusually high percentage (80%) of the stakeholders identified having high interest and power from the public sector. In Saint Kitts and Nevis, most of the stakeholders having high interest and power also came from the public sector. The scenario in the Dominican Republic and Cuba remains unchanged in relation to the majority of the countries listed. Most of the stakeholders from the public sector are to be closely managed and, thus, have a strong interest and power in the implementation of IWRM in their countries.

The collated and analysed information indicates that the public sector is the critical stakeholder in the 19 countries (i.e., Antigua and Barbuda, Cuba, Dominican Republic, Grenada, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Barbados, Jamaica, Trinidad and Tobago, Guyana, Suriname, Belize, Dominica, Bahamas, Anguilla, British Virgin Islands, Montserrat and Haiti). These stakeholders need to be involved in the entire process for the implementation of IWRM in the region, thus contributing to the development of the IWRM strategy and communication plan because IWRM is the most well-known water management approach.

IWRM implementation is generally low to medium-low within all participating countries mostly due to fragmentation issues (enabling environment and management instruments), economic constraints and lack of public awareness and political commitment, as well as limited stakeholder buy-in. Cuba stands out as the exception; the country has a

singular context regarding IWRM. In comparison to most countries in the Caribbean region, Cuba has a particular advantage of historically prioritising water policy and management at the national level, and it is very well advanced in the IWRM pillar that refers to the enabling environment.

Both the desk review of relevant literature and the expressed view of stakeholders during the national consultations revealed a strong will from the political environment and high interest (from all national actors in the water management sphere) to advance IWRM in the country. This highlights the importance of political will towards effective IWRM implementation. In other instances, there is public concern over the "flip-flopping" nature of prioritisation that results whenever there is a change in government administrations. This is particularly relevant to Antigua and Barbuda, where initial support provided for IWRM was not maintained following a change in administration.

Economic constraints were noted for all participating countries. An apt example of the financial limitation can be seen with Grenada's service provider NAWASA, which is in a weak financial position and is unable to mobilise the financial resources needed to strengthen and implement actions outlined in their national IWRM policy, Suriname and Haiti reported similar challenges capital expenditure on infrastructure is mainly financed externally, through traditional financial instruments such as loans.

Deficiencies in the enabling environment, institutions, participation (including stakeholder engagement), management instruments and financing are presently at the national level among the participating states. These include, but are not limited, to the following:

- Bureaucratic processes stymie effective policy development for an IWRM framework.
- Overlap of responsibilities, resulting in duplication of effort and inefficient use of limited financial resources.
- Inadequate legal and regulatory frameworks for managing the resources.
- The absence of a credible policy framework for involving civil society in the management process and a proper understanding and awareness of the principles of IWRM or institutional arrangements for IWRM are weak/non-existent.
- Limited stakeholder participation in IWRM processes including the participation of women.

- Limited public awareness and education.
- Lack of political will.
- The need for gender mainstreaming.
- Poor land use planning.
- Limited data collection and data sharing.
- Limited monitoring and assessment.
- National investment policies and programmes do not reflect the inter-relationships between quality and quantity.
- Transboundary and regulatory issues (Dominican Republic, Guyana, Suriname, Belize, and Haiti).
- Lack of consideration or inclusion of Indigenous people in decision-making (Guyana and Dominica).

As a case in point, all the analysed countries recognised a lack of data as a major impediment to making realistic, evidence-based decisions to manage their water resources. The data challenge is far-reaching and varies in severity and causes across the targeted islands. Such causes include fragmented mandates, inter-agency communication (a lack of a designated modality for sharing data and heavy reliance on interpersonal relationships/favours), the lack of/inadequate specialised equipment for collecting data (possibly linked to a lack of finance, and procurement and maintenance issues), a lack of trained technical personnel, and the absence of data standards/protocols to ensure that the data collected and processed is useful, among other reasons. Additionally, limited public awareness and education are highlighted as hindrances in all participating countries with the acknowledgement of gender mainstreaming and current ongoing efforts in countries like Cuba, Trinidad and Tobago, Jamaica and Guyana.

Overlapping responsibilities that result in duplications of efforts and losses of financial resources are common to all countries as well. In the Dominican Republic, stakeholder feedback indicated that the legal and policy framework for water management needs to be revised and updated. It is also in urgent need of an update because each user of water resources in the Dominican Republic is managed autonomously under the sectoral system, and this lack of intersectionality leads to uncoordinated development and management of water resources, resulting in conflicts and inefficient water use. However, for the other non-CARICOM countries (i.e., the Republic of Cuba), the scenario is different. The

Republic of Cuba scored over 80/100 in their IWRM implementation since 2017. This is due to the Cuban government having a robust policy framework established and implemented in support of IWRM. Jamaica has advanced progress in creating institutional roles such as the Integrated Water Resources Management Council (IWRMC) which is a multi-sectoral entity comprising varying stakeholders to implement, inter alia, the National Integrated Water Management Programme. This is an approach that can be considered by those who lack such a management instrument.

Some participating countries such as Cuba, Jamaica and Dominica have developed comprehensive policies and plans which recognise water governance, legal instruments, inter-agency coordination and collaboration, planning, economic development, environmental management, participatory approaches, education, research and information management and climate adaptation instruments. However, the implementation of these policies and plans remains a concern in most cases. Others including Trinidad and Tobago appointed inter-ministerial committees to improve coordination and communication. Some other countries have attempted to address fragmentation difficulties by integrating ministerial portfolios. Jamaica, for example, established a Ministry of Water, Land, Environment and Climate Change with responsibility for all water agencies' laws, policies and monitoring.

Cashman et al. (2014) described this integration of water, land, the environment, and climate change under the remit of one clearly defined ministry, as an integrated approach to water management, serving as a leading example for many Caribbean SIDS. Such decisions allow for activities that promote the coordinated development and management of water, land and related resources, to maximise economic and social welfare, in an equitable fashion without compromising the sustainability of important ecosystem services.

2.4 Cross-Cutting Issues in IWRM: A Regional Perspective

2.4.1 Preamble

Sustainable management of water resources is particularly complex and inherently interdisciplinary, requiring the integration of various economic, social and environmental dimensions. Moreover, the management of each component may influence other components of a water resource system in unpredictable or adverse ways. Accordingly, a holistic approach to supply and demand of the individual dimensions of water resource systems and

their emerging systems-level dynamics will lead to more effective and preferable social and environmental decisions.

IWRM recognises that achieving sustainability relies on the interdependencies of economic growth, health, equity and poverty reduction, education, ecosystem services, energy and food security, and water resources. It also accommodates and addresses any emerging or intensifying factors affecting water management, such as climate change, the water-energy-food security nexus, population growth and demographic change, and the need for greener growth. This is accomplished through coordinated policy and regulatory frameworks, management arrangements, and financing. Youth and Indigenous participation, as well as the role of women, must be recognised as cross-cutting themes and incorporated into policy and implementation plans when professionals are addressing IWRM, climate change, disaster risk management, and sustainable development. These themes are strongly related to IWRM across the sustainability dimensions of society, economy and the environment and require alignment to policies or plans directly addressing these themes. Participants in the second round of consultations participated in surveys that were designed to reveal the progress on these critical issues related to IWRM in the respondents' respective countries.

2.4.2 Climate Change and Disaster Risk Reduction

The issue of climate change and climate variability is shared by all Caribbean SIDS, and it is a major internal and external stressor. To this end, climate resilience ought to be given greater prominence in IWRM. Rising sea levels threaten all participating countries, especially their coastal water sources being at risk of saline intrusion; variation in rainfall is expected to affect surface and groundwater resources, coupled with increased occurrence of hydro-climatic extremities and water-related disasters (i.e., hurricanes, tropical storms and excess rainfall events and droughts). Increases in tidal and storm surges, coastal erosion and rising temperatures also loom over the region. These threats have grave implications for the safe and adequate supply of water for domestic consumption.

Literature reveals that climate variability affects the Caribbean region disproportionately due to land territories' small sizes and/or complex topographies; a reliance on climate-sensitive economic activities such as agriculture and tourism; an overwhelming reliance on rainfall for water collection; high public debt; and limited ability to predict

hazards (Taylor, et al., 2018). Whether the global temperature rises to 1.5 or 2.0 degrees Celsius, climate projections for the decades of 2030 and 2050 predict an alarming increase in exposure to climate extremes in the Caribbean SIDS (Stennett-Brown et al., 2019). This issue was also considered during the Second National Stakeholder Consultation to Discuss the Draft IWRM Conceptual Framework.

2.4.3 Gender, Youth and the Role of Women

Gender roles and equity have been recognised in some policy instruments of participating countries. For instance, Jamaica's Gender Policy for Gender Equality (2011) has linkages with the National Water Sector Policy and Implementation Plan which identifies collaborations with the water sector. Antigua and Barbuda's IWRM policy statement also advocates for inclusion and gender equity. Such an approach ensures women and girls have access to sanitation and potable water, equitable distribution of housing solutions, addressing water and sanitation issues for rural women and ensuring the specific health and social needs of both men and women are identified and addressed (FAO, 2021). In addition to women, it is important to acknowledge the role of youth in IWRM processes, as they are significant contributors as stakeholders and decision-makers in water resources management.

Grenada's Equality Policy and Action Plan (GEPAP; 2014-2024) has the overall goal of promoting gender equality, equity, social justice and sustainable development. However, the legislative framework is not yet in place to implement the GEPAP resulting in setbacks. The importance of gender mainstreaming is also highlighted in Trinidad and Tobago's Draft National IWRM Policy (2017) acknowledging that effective, efficient and equitable water management is enhanced, when all individuals, including men, women, children and vulnerable groups, are integrated into the IWRM process. Engaging youth in IWRM can be achieved through educational programmes, youth-led initiatives and mentorship opportunities. The benefits of involving young people in water resources management of Caribbean countries include ensuring the long-term sustainability of water resources in the region.

Likewise, in Saint Kitts and Nevis, the government notes that the update of all corporate processes and implementation of an enterprise management system, that promotes gender equity in the decision-making processes, as well as the participation of civil society was included as a sub-component of the planned Building Resiliency in the water supply

sector in the Saint Kitts and Nevis Project. Saint Lucia's Draft IWRM Roadmap highlighted the need for social assessments to allow for the determination of equitable access to water, through markers such as gender. Literature for Barbados does not note any significant attempts towards mainstreaming gender into IWRM. However, there has been increased sensitisation on the SDGs.

The government of Cuba employed measures to ensure that people in vulnerable conditions (e.g., low-income people, women, the disabled and the elderly) are not discriminated against in access to drinking water and sanitation while in the Dominican Republic, social inclusion, (i.e., community and gender) is mostly depicted in water-related rural projects but requires further incorporation at the national level. The only exception is the national development strategy, which requires all national programmes to encompass the aspect of gender. Despite the aforementioned, there is still a need for further consideration to be given to gender roles in policies directly relating to IWRM.

2.4.4 Land Use and Pollution

Poor land management (land use planning, inappropriate land use and development and limited enforcement of existing regulations) is a significant driver of degradation in Caribbean watersheds. Coupled with improper watershed management, it creates a major risk to the water sector. Activities like illegal quarrying, as noted in Trinidad and Tobago, also pose potential pollution threats to national water resources. Saint Lucia sees similar pollution threats as there is currently only one wastewater treatment facility on the island and the effluent collected from other areas is released directly into the sea with only 7% of the population being connected to one of the three public sewer systems. Grenada experiences similar pollution scenarios. Notably, wastewater management is a major issue confronting Grenada as about 5% of the population is connected to the municipal system and the entire southern part of the island uses marine outfalls, which negatively impacts the marine ecosystem.

In addition, there is an entrenched historic and cultural practice of permitting greywater to be routed to surface drains ultimately finding its way to surface waters which can adversely affect freshwater resources. Similarly, in Barbados, key challenges include land use and attendant changes, inclusive of illegal and unplanned developments. Often as a result of the demand for space and expansion of the tourism and other economic contributing

sectors. Land-based sources of pollution such as agro-chemicals, improper waste disposal and illegal dumping, all pose great water pollution threats to supply systems.

In 2021, a Regional Nutrient Pollution Reduction Strategy and Action Plan for the Wider Caribbean region was introduced by UNEP CEP, with the objective of providing a roadmap of short, medium and long-term actions, targets, and indicators to support countries in the region to reduce pollution from excess nutrients in an integrated manner (UNEP, 2022).

2.4.5 Financing within the Sector

Successful IWRM requires availability and mobilisation of finance. The lack of available and accessible funding for operational activities of the institutions with responsibility for water resources management (WRM), perpetuates other challenges such as inadequate technical capacity, poor data collection and processing, the inability to procure and maintain specialised equipment, and a weak legislative, policy and institutional framework.

This issue has come across in many political scenarios in the region and has limited the conceptualisation, development, and implementation of IWRM in Caribbean countries (Cashman, 2017). Although partnerships have resulted in an effective alternative to obtain funding during emergencies and extreme events, access to a more robust financial system needs to be put in place. Connecting the issue of water management with climate change, SIDS contribute less than 1% of global carbon emissions, therefore when it comes to access to financial instruments there needs to be a consideration for one that allows for grants instead of loans in the Caribbean and respects the “polluter pays” principle of climatic justice (Senecal & Chandra, 2013).

2.4.6 Transboundary Water Management Challenges

Transboundary water management is a critical issue for several countries in the Caribbean region, including the Dominican Republic, Belize, Suriname, Guyana and Haiti. These countries share water resources, such as rivers and aquifers, with neighbouring nations, which requires cooperation and coordination to ensure equitable and sustainable use.

Challenges in transboundary water management include the following:

- Lack of comprehensive agreements or frameworks for shared WRM
- Limited data and information sharing among countries
- Differences in national priorities, policies and institutional arrangements
- Potential for conflicts over water use and allocation

To address these challenges, countries need to develop and implement transboundary water management agreements, establish joint monitoring and data-sharing mechanisms, and promote dialogue and cooperation among stakeholders. Regional organisations such as CARICOM can play a crucial role in facilitating transboundary water cooperation and supporting the development of shared management frameworks.

2.5 Future WRM Challenges

2.5.1 Water Availability, Stress and Access

All 19 of the assessed countries were found to be either water-scarce or borderline water-scarce. Water scarcity was most common in the countries with coralline geology. These countries utilised groundwater stored in aquifers, and desalination as their primary sources of potable water. Conversely, countries with volcanic origins and steep topographies tended to be slightly less water-scarce due to higher precipitation levels. These countries generally utilise surface water (e.g., in rivers, lakes and ponds) as their main source of potable water. Notably, the countries relying on surface water have done minimal exploration into alternative freshwater sources (e.g., groundwater resources). Nonetheless, all countries face water scarcity issues related to WRM (e.g., policy environment, finance, capacity and infrastructure) and the impact of climate change events. All countries reported high levels of access to municipal water supply for domestic and sanitation purposes.

2.5.2 Climate Variability and Change

All the assessed countries identified climate change as a major challenge to their water sector. Climate change is expected to affect water sectors through sea level rise, saltwater intrusion of nearshore freshwater sources, decreased annual precipitation/an increase in drought conditions, an increase in mean annual temperature and increased intensity of tropical storms and hurricanes. A case in point is Antigua and Barbuda where air

temperature is expected to increase by 1.8–4.0 °C by 2099 (refer to the information provided below).

Climate Parameter	Predicted change for the Insular Caribbean	Predicted change for Antigua and Barbuda
Air temperature	Increase of 1.8 - 4.0°C by 2099	Increase of 1.3°C by the 2050s Increase of 1 - 3.5°C by the end of the century
Sea surface temperature	~1.7°C by the end of the century	Up to 2°C by the end of the century
Sea level rise	Rise of 0.18 – 0.59 m by 2099	Rise of 0.24 m by 2050
Carbon dioxide	Reduction in pH of the oceans by 0.14 - 0.35 units by 2099	An increase in carbon dioxide emissions through 2050.
Hurricanes	More intense with larger peak wind speeds and heavier precipitation	More intense with larger peak wind speeds and heavier precipitation. (not necessarily increased frequency)
Precipitation	Unclear	Drier (in the mean) by the end of the century

Source: Government of Antigua and Barbuda. (2015). Third National Communication on Climate Change.

Similarly, models for Jamaica predict reduced rainfall and extended droughts, resulting in an irrigation deficit increasing by 6–10%. Flooding is expected to increase from severe rainfall events. Groundwater is expected to see decreases of up to 5% by 2039. These predictions are worrisome, as Jamaica heavily depends on groundwater from wells and springs, which provide approximately 84% of its water demand. These pose significant risks to water sources, water quality and the supply and distribution infrastructure/systems. Additionally, climate-related stressors on the water sector will impact other critical, water-dependent economic sectors such as agriculture and tourism. Furthermore, climate change is expected to exacerbate existing issues and reveal new ones within social systems such as healthcare, sanitation and social safety nets.

2.5.3 Overcoming Implementation Deficits Water Efficiency

Water efficiency is one of the most important principles for water governance and its inclusion in water management policy is pivotal for the adequate implementation of IWRM at the national and regional level (Rogers, 2002). Sources consulted, indicate that water efficiency in the Caribbean is limited by factors such as water insecurity, inadequacy of

resources, assurance of supply and affordability (Cashman, 2014). The related literature also reveals that inequitable distribution of the region's limited water resources to end users, along with growing volumes of water utilised to produce export goods, will not be sustainable in Latin America and the Caribbean regions in the long term (Mekonnen et al., 2015). Countries should enhance their water productivity to produce more with the limited natural resources, hopefully enabling more goods to be shared regionally in the future.

2.5.4 Non-Revenue Water

Non-revenue water (NRW) is a challenge that produces losses estimated to be 32 billion cubic metres per year globally (World Bank, 2021). Water utilities in most parts of the world have experienced chronic water losses in recent decades, but this issue is intensified specifically in Latin America and the Caribbean, where low investment in water infrastructure, along with the detrimental effects of climate change, has resulted in significantly less water than previously available (Liemberger & Wyatt, 2019). According to a recent study, the revenue water of the region's water utilities was around 57%. This means that nearly half of the water produced was lost due to water theft, metering inaccuracies and unbilled authorised consumptions along transmission mains, storage facilities, distribution mains, or service connections (Mahlknecht & González-Bravo, 2018). In general, the financial sustainability of water utilities, as well as the quality of water and energy use in the Caribbean region, are all harmed by low-revenue water.

2.5.5 Rainwater Harvesting

The related literature reveals that rainwater harvesting, specifically domestic rainwater harvesting (DRWH), is a technology for water collection commonly implemented in rural areas of the Caribbean countries to meet domestic water demands. Self-financing, government subsidies, micro-financing, and external agencies are often used to implement DRWH projects in the region (Peters, 2017). DRWH projects have been implemented with various degrees of success. A recent study in the region identified the following as the top six success criteria for DRWH projects (Peters, 2016):

1. The cost of affordable systems
2. School involvement
3. Technical support, including a maintenance component in the design
4. Community training and follow-up activities

5. The cost of the systems
6. Training and public awareness (TPA)

In Latin America and the Caribbean, DRWH has been identified as a viable alternative for boosting water access, increasing equity and addressing increasing contamination of surface and groundwater resources. After considering arguments in the reviewed literature, we expect that there will be an increase in DRWH projects in the region (World Bank, 2020).

2.5.6 Reform of Water Governance

Governance systems, including institutional arrangements at the national and regional levels, are essential elements for the implementation of a regional IWRM framework. At the regional level, the Council for Trade and Economic Development (COTED), is the primary community organ responsible for promoting and developing policies for the protection and preservation of the environment, and for the sustainable development of natural resources, including water (CARICOM, 2021). The CARICOM Secretariat should re-establish administrative responsibility for regional implementation coordination through the relevant unit. Similar mechanisms are applicable for smaller regional groupings (e.g., OECS) with the requirement for integration and harmonisation.

Participating countries are at various stages of policy development with some having comprehensive IWRM or water policies (e.g., Trinidad and Tobago and Jamaica) while others have no formal policy or roadmap directly related to IWRM. In some cases, these policies are in the draft stages, thus, legislative support is required to enable effective implementation of policy objectives and plans in all participating countries, as most laws are archaic, and enforcement is limited. Additionally, there is an urgent need to incorporate gender considerations in some instances (UN, 2004). Wastewater management and reuse policies, and standards should also be considered in the interest of conservation and establishment of circular economy principles in the water sector. Moreover, in the case of the Dominican Republic, transboundary arrangements are needed.

Examination and reorganisation of institutional arrangements towards identifying or establishing a coordinating entity with a principal focus on IWRM was noted as one of the major institutional factors that could improve coordination at the national level. The expansion of public–private partnerships (PPPs) as a means of enhancing water and

sanitation service is also crucial regarding sustainability and financing—two key areas that require urgent attention. Inter and intra-agency data sharing was found to be limited in all participating countries. The establishment of a regional water information system informed by national counterparts was identified as a potential solution towards improved data sharing, as well as public awareness. Stakeholders also noted that the establishment of national steering committees with relevant stakeholder representation can improve IWRM at various levels.

2.5.7 Ecosystem Services

Ecosystems produce a variety of commodities and services that contribute to human well-being in both direct and indirect ways. These include both formal market products and services, such as food and materials, as well as non-market products and services, such as waste management, climate regulation, coastline preservation and recreational opportunities. Despite the abovementioned, in the Caribbean, the economic worth of ecosystem goods and services is widely unknown (Schuhman & Mahon, 2015). The development of solutions to mitigate the negative environmental impacts of land use across numerous services and scales while retaining social and economic advantages, and balancing short and long-term needs, seems to be the most fundamental challenge in maintaining and enhancing ecosystem services in the Caribbean (Hernández-Blanco et al., 2020). Recent studies indicate that ecosystem services offered by green, blue and grey-hybrid infrastructure in Latin American and Caribbean countries, have the potential to improve water resource sustainability in accordance with the new global urban agenda (Romero-Duque et al., 2020).

Section 3: Framework and Action Plan for the CARICOM Region

3.1 Preamble

Effective use and management of the region's water resources are essential for social and economic growth, as improper management can ultimately undermine the CARICOM's quest for sustainable development and a climate-resilient future, as guided by the United Nations SDGs. Increasing IWRM implementation requires the region to have an effective governance system, which is not fragmented among a suite of governmental ministries, state agencies, institutions, legislations, policies, and frameworks, but rather integrated, harmonised, inter-sectoral and holistic.

A shared IWRM framework for the CARICOM region is an undeniable step towards 'environmental and natural resource' management and an effective way of creating economies of scale and sharing of capacity among member countries. It is absolutely essential for sustained economic and social development. The preceding sections have highlighted that despite a myriad of issues and challenges faced by the targeted countries, there is a general agreement on the need for a regional framework that creates an enabling environment for IWRM in the CARICOM.

One of the purposes of this framework is to promote an enabling environment for IWRM in the CARICOM by addressing the sensitivity and susceptibility of freshwater resources and the vital role water plays in economic, social and environmental development. At its core, the framework seeks to harmonise development and update country-specific national roadmaps and policies to guide the implementation of IWRM. Hence, it serves as an umbrella framework for the sustainable management and use of water resources within the CARICOM. Additionally, the framework aims to create a basis for effective management through mainstreaming of the policy, legislative and institutional instruments and capacity-building for IWRM, taking into consideration cross-cutting issues of climate change, disaster resilience building, data and information management and gender considerations.

Regional stakeholders agreed that education and sensitisation, financial and legal limitations, lack of political will and enforcement were the main barriers. Secondary issues, such as the point source and non-point source pollution of water and unsustainable abstraction of water from surface, ground and coastal sources, were also noted for some participating countries.

3.2 Vision and Mission for IWRM in the Caribbean Vision

A harmonised IWRM model that ensures water security for the CARICOM SIDS.

3.2.1 Mission

To develop a regional IWRM framework that promotes sustainable water governance through creating an enabling environment and building climate and disaster resilience in support of the sustainable development of the CARICOM SIDS.

3.3 Strategic Goals of an IWRM Framework

The overarching goal of the IWRM framework is to strengthen the policy, legislative and institutional mechanisms and capacity-building for IWRM and ecosystem services management while increasing climate and disaster resilience. Regional stakeholder consultations and a gap analysis from a desktop review informed the development of six strategic goals (Table 3).

Table 3: Strategic Goals of the Regional IWRM Framework

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.
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, youth and Indigenous groups 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.

3.4 Roadmap of Actions for IWRM in the CARICOM Region (2022–2028)

The roadmap defines the strategic direction for IWRM development and implementation in the CARICOM region. The strategic goals and specific goals are not placed in any specific order, as they are in the next section (Implementation Plan).

Table 4: Roadmap of Actions for IWRM in the CARICOM Region

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.

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
Specific Goal 1.1: Promote environmental sustainability and improve the resilience of ecosystems to external pressures.	**1.1.1** To reduce negative environmental impacts within the water value chain through increased efficiency.	1. Develop and support the implementation of regional guidelines and communication products on measures to increase efficiency within the water sector at both the household and national levels.	At least two regional guidelines and five different communication products on measures to increase efficiency within the water sector at both the household and national levels are developed and publicly disseminated.	Increased efficiency of water usage at both the household and national levels.	The number of and documentation of regional guidelines and communication products.	GWP-C CCCCC, The Media, the Basel Convention Regional Centre for Training and Technology Transfer for the Caribbean (BCRC-Caribbean), PAHO CARPHA, UWI, EUROCLIMA+	150,000
		2. Provide regional training for water sector personnel on efficiency measures such as demand side management, improved technologies and best practices.	At least two regional workshops were conducted, and 80 water-related professionals were trained in WUE.	Improved overall management and efficiency in the water sector	The number of training workshops and the number of recipients of the training.	CARICOM Secretariat, OECS Commission, national water resources agencies, CAWASA, CWWA, CARPHA	400,000
		3. Promote the use of renewable energy as a measure to reduce operational costs and emissions in the water sector	Development of a regional project on renewable energy uptake in the water sector and provision of financial support for project implementation in at least four countries, using 1 megawatt (Solar Farm) as a reference point.	Greenhouse gas emissions reduction and reduced operational costs in the water sector.	Level of regional renewable energy project uptake and report on operational cost reduction over time	CARICOM Secretariat, CDB, CCCCC, CCREE, PAHO, CARPHA, UWI, EUROCLIMA+, national governments of selected countries	4,000,000
		4. Assist countries with accessing and mobilising resources to climate-proof the water sector and increase efficiency measures.	Preparation and submission of concept note, together with project proposal to climate proof the water sector and increase efficiency	The water sector is climate-proof and efficiency is increased.	Number of countries as recipients of assistance for climate proofing in the water sector and level of efficiency in water sector over time.	CCCCC, water resource management agencies within selected countries, World Bank's Global Facility for Disaster Recovery and Reduction	60,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
			measures in at least four selected countries.			(GFDRR), CDEMA, CAWASA, CIMH	
		5. Develop guidelines and communications material to engage and promote water efficiency measures across all sectors.	Regional guidelines and three different communication materials on measures to engage and promote water efficiency are developed and publicly disseminated.	Adherence to water efficiency measures.	Number of guidelines and communications materials prepared and disseminated. Level of efficiency (related to water use) within identified sectors.	CCCCC, OECS, agriculture ministries, Caribbean Centre for Renewable Energy and Energy Efficiency, FAO, CAWASA, UWI, CARPHA	60,000
	1.1.2 To strengthen and enforce pollution regulations and management.	1. Assist countries to identify (through testing), map the usage of and prioritise highly hazardous chemicals used in watershed areas for urgent control across all sectors -	Identification, mapping, and prioritisation of hazardous chemicals that are currently used and pose risks to watersheds in 80% of CARICOM countries.	Improved understanding of chemical pollution sources across sectors	Number of countries with documentation on prioritised hazardous chemicals	CARICOM Secretariat, OECS Commission, agriculture ministries/agencies at the national level, FAO, CARDI, UNEP Cartagena Convention Secretariat, BCRC, CARPHA	500,000
		2. Assist countries to review and update their lists of registered pesticides and toxic chemicals	Updated and prioritised lists of registered pesticides and toxic chemicals, for all CARICOM countries	Improved pesticide life cycle management	Number of countries with updated registers. Type and level of financial and technical support provided and received and number of countries and recipients of support.	CARICOM Secretariat, OECS Commission, agriculture ministries/agencies at the national level, FAO, CARDI, UNEP Cartagena Convention Secretariat, CARPHA	150,000
		3. Design training programmes and communication materials to build awareness and capacity at the technical management user level on (1) the repercussions of pesticide and toxic chemical use within watershed areas, (2) the improper management of agricultural wastewater from livestock, (3) best practices for managing agrochemicals and waste, (4) mechanisms for successful community	At least one (1) regional formal training programme and one (1) nonformal training programme (through a seminar) are developed and implemented. 3 different communication materials for use during and after the training programmes are prepared, tested and disseminated at	There is increased awareness and capacity at the technical management user level regarding pesticides and toxic chemicals. There is increased awareness and capacity at the technical management user level regarding pesticides and toxic chemicals.	Number of participants as beneficiaries of the training and recipients of the communication materials. Number of communication materials prepared and disseminated. Number of recipients at the technical management level.	CARICOM Secretariat, OECS Commission OECS Commission, agriculture ministries/agencies at the national level, FAO, CARDI, UNEP Cartagena Convention Secretariat, UNEP CAR/RCU, UWI, CARPHA	300,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
		engagement (5) measures for the reduction of saline intrusion (6) monitoring and evaluation of measures implemented etc.	the technical management user level.				
		4. Assist countries to model national legislation and guidelines to bring them in line with international standards and chemical conventions (e.g., the Stockholm, Rotterdam and Basel Conventions) across all relevant sectors	All countries within CARICOM have amended legislation and guidelines that are consistent with international standards and chemical conventions (e.g., the Stockholm, Rotterdam and Basel Conventions).	Improved enabling environment to manage and protect water resources from chemical contamination	Number of CARICOM states that have received financial and technical support to review and revise their legislation guidelines in accordance with international standards and chemical conventions (e.g., the Stockholm, Rotterdam and Basel Conventions). Level and type of support.	CARICOM Secretariat, OECS Commission OECS Commission, agriculture ministries/agencies at the national level, FAO, CARDI, UNEP Cartagena Convention Secretariat, BCRC	250,000
		5. Assist countries to develop, enact or enforce clear guidelines for hotel waste management particularly, for facilities located in or near ecologically sensitive areas.	Regional guidelines are developed, shared, and implemented in at least 75% of CARICOM countries.	Hotel waste for facilities locally in ecologically sensitive areas is managed effectively.	Number of countries with clear guidelines for hotel waste management that are enforced.	CARICOM Secretariat, OECS Commission, CWWA, CTO, national tourism agencies, UNEP Cartagena Convention Secretariat, UNEP CAR/RCU	200,000
	1.1.3 To promote and implement nature-based solutions for water source protection and management.	1. Support and facilitate the adoption and implementation of key strategies intended to at biodiversity and ecosystem conservation and protection such as the CARICOM Biodiversity Strategy.	At least 75% of CARICOM states have adopted and implemented key strategies aimed at biodiversity and ecosystem conservation and protection such as the CARICOM Biodiversity Strategy.	Ecosystems/Biodiversity at all levels is conserved and protected.	Number of countries that have adopted and implemented key strategies aimed at biodiversity and ecosystem conservation and protection.	CARICOM Secretariat, PISLM., OECS, CARPHA	-
		2. Assist countries to harmonise, develop and/or implement national strategies which promote ridge-to-reef resources management.	Development of national strategies and provision of support for the implementation of strategies which promote ridge-to-reef resources management in at least 75% of CARICOM states.	Greater harmonisation and implementation of ridge-to-reef resources management.	The number of countries that have developed harmonised ridge-to-reef resources management.	GWP-C TEC, OECS, CARICOM Secretariat, CARPHA	200,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
		3. Build awareness and promote nature-based solutions for ecosystem management at the national and regional levels.	A comprehensive public awareness programme is developed and implemented in all CARICOM states to promote nature-based solutions for ecosystem management at the national and regional levels.	Improved level of awareness and sensitivity to nature-based solutions for ecosystem management.	The number of countries in which the public awareness programme is implemented and the number of targeted stakeholders.	GWP-C TEC, OECS, CARICOM Secretariat, natural resource agencies	3,600,000
		4. Assist countries with accessing and mobilising resources for field implementation of nature-based interventions including protection, restoration and rehabilitation of key areas.	Field implementation of nature-based interventions including protection, restoration and rehabilitation of key areas in three selected countries.	Ecologically sensitive areas, including watersheds, are protected, restored and rehabilitated.	Number of countries that have field implementation of nature-based interventions including protection, restoration and rehabilitation of key areas.	CARICOM Secretariat, CCCCC, IDB, GEF, PISLM	200,000
		5. Encourage and facilitate Public–Private Partnerships for the protection, conservation and sustainable development of natural resources and ecosystems.	Private sector representatives are included in the National Water Councils in each CARICOM State and MOUs are developed and implemented.	Greater level of involvement of the private sector in the protection, conservation and sustainable development of natural resources and ecosystems.	Level of private sector involvement in the protection, conservation and sustainable development of natural resources and ecosystems in named participating states.	WRM agencies and private sector organisations at the national level	-
		6. Develop and support the implementation of regional guidelines and communication products on measures to sustainably use ecosystem goods and services to maintain and enhance the water provisioning service of watersheds.	At least one (1) set of guidelines and two communication products on measures to sustainably use ecosystem goods and services to maintain and enhance the water provisioning service of watersheds and resources to support implementation provided.	Ecosystem goods and services are used more sustainably. The water provision service of watersheds is enhanced.	Set of guidelines and communication products as well as documentation on the support provided for implementation.	GWP-C TEC, OECS Commission, CARICOM Secretariat, CARPHA, natural resource agencies	100,000
	1.1.4 To protect and manage water resources through coordinated data-driven measures.	1. Support countries to conduct and utilise climate modelling in national development planning for the short and long term across all sectors which interact with water resources.	Climate modelling, through training workshops, is a component of a long-term regional capacity-building programme that targets technical personnel across	More countries conduct and utilise climate modelling in national development planning for the short and long term across all sectors which interact with water resources.	Number of participating countries and number of technical personnel as beneficiaries of the training programme.	CCCCC, UWI Climate Modelling Group, national climate change agencies or units, sector agencies within each country	200,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
			sectors in all CARICOM states.				
		2. Support countries to conduct ridge-to-reef vulnerability studies and water value chain assessments using robust and standardised assessment tools to determine key challenges within the water value chain and provide recommendations to bolster resilience.	Ridge-to-reef vulnerability studies and water value chain assessment through training workshops are a component of a long-term regional capacity-building programme that targets technical personnel in the water sector across all CARICOM states.	Greater resilience within the water value chain.	Number of technical personnel in the water sector across all CARICOM states.	CCCCC, UWI Climate Modelling Group, national climate change agencies or units, sector agencies within each country, UNEP Cartagena Convention Secretariat	1,000,000
		3. Assist countries to develop greater inter-agency collaboration for WRM through measures such as redefining agency mandates to reduce grey areas, overlaps, and silo operations and the development of standardised protocols for data collection, processing and sharing.	At least 75% of countries within the CARICOM review and revise/enhance/modernise the legal mandate of ministries/agencies/departments/units that directly or indirectly develop legislation to harmonise institutional functions and responsibilities in the context of IWRM.	A reduction in overlaps, duplication, and conflicts among ministries/agencies/departments/units directly or indirectly.	Number of countries that have revised mandates of ministries/agencies/departments/units that directly or indirectly with WRM at the national level	CARICOM, OECS Commission, CARPHA	200,000
		4. Assist countries through cross-sectoral collaboration to revise land tenure practices within critical watershed areas and develop, revise and enforce land use and land use policies with the aim of managing/regulating activities within the watershed and protecting key ecosystems (e.g., forests, water and biodiversity)	75% of the targeted countries revise land tenure practices within critical watershed areas and develop, revise and enforce land use and land use policies with the aim of managing/regulating activities within watersheds and protecting key ecosystems (e.g., forests, water and biodiversity)	Greater management and protection of watersheds.	Number of countries that have revised land tenure practices within critical watershed areas and developed, revised and enforced land use and land use policies	CARICOM, OECS	300,000
	1.1.5 To minimise damage and losses to critical infrastructure and other assets from climate change,	1. Facilitate the promotion and support of climate-proofing (adaptation and mitigation measures) national water supply and distribution infrastructure and incorporating climate	Regional guidelines and standards for promotion and support for climate proofing (adaptation and mitigation measures) national water supply and distribution infrastructure	Greater uptake of climate proofing and climate resilience of national water supply and distribution infrastructure and future interventions and developments.	Number of countries that have implemented the guidelines and standards.	CDEMA, CARPHA, CARICOM, CCCCC, GWP-C, CWWA, water utilities companies	5,000,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
	natural hazards and disasters.	resilience in all future interventions and developments, for example designing and building infrastructure to withstand extreme or prolonged hydro-climatic hazards, increasing national and household level water storage facilities for drought events, planning for sea level rise, exploration of alternative technologies and water sources (groundwater exploration/desalination).	and incorporating climate resilience in all future interventions and developments in all CARICOM states.				
		2. Assist countries to develop, enact and/or enforce drought and flood management plans for the water sector.	Drought and flood management plans for the water sector were developed and implemented.	Droughts and floods are effectively managed, especially in the water sector.	The number of plans developed.	CDEMA, CCCCC, national disaster management agencies, national UNFCCC focal points, CIMH, World Bank's Global Facility for Disaster Recovery and Reduction (GFDRR), PISLM, CARPHA	5,000,000
		3. Build awareness and promote regional risk insurance for the water sector. Where adequate insurance facilities are unavailable, leverage regional assets, political will and expertise to design and develop a risk insurance product suitable for national and regional needs.	Regional and National Action Plans are prepared and disseminated, plus technical support is provided to all national governments within CARICOM to increase uptake in risk insurance, recognising various contexts and possibilities.	Greater provision and uptake of risk insurance.	Level of risk insurance uptake; number of countries with risk insurance for the water sector	CCRIF, national water resource management agencies, ministries of planning/finance, CIMH, World Bank's Global Facility for Disaster Recovery and Reduction (GFDRR), PISLM	1,000,000
	1.1.6 Facilitate and support a Regional assessment of waste-water infrastructure and services to identify and map the root causes of wastewater management challenges,	1. Procure critical equipment (in bulk) necessary for improved efficiency of waste-water treatment facilities and infrastructure.	National needs assessment reports and procurement documents on critical equipment are prepared.	Reduced fragmentation and efficiencies within the water sector at the national level, as it relates to procurement of equipment, plus more reliable water services	Number of countries with procurement lists prepared at national level.	Water utility companies at the national level	To be determined
		2. Provide resources to countries to develop/improve/update and enact national wastewater policies, strategies, and	All targeted countries develop/improve/update and enact national wastewater policies,	Wastewater is managed more effectively and efficiently.	Feedback on water services reliability from stakeholders.	CARICOM Secretariat, CARPHA OECS Commission Water resources agency,	300,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
	modalities of sanitation across the Region, gaps in the access to services, geographic areas and groups most affected by the lack of access, quantify (in monetary terms) the impact of improper wastewater disposal on human and environmental health including interactions with key economic sectors (e.g., tourism and agriculture) and develop recommendations for improvement.	management plans with clearly defined, fit for purpose and attainable goals, targets and actions and a robust monitoring framework.	strategies and management plans.		Number of countries with functional national wastewater policies, strategies, and management plans	CWWA, UNEP Cartagena Convention Secretariat, IDB	
		3. Coordinate and facilitate a stable regional for water sector stakeholders to share outcomes, best practices, research, models, case studies, traditional knowledge, new technologies and the like from within the Region and the international community.	A regional forum on IWRM to facilitate the sharing of information, experiences and so on by water sector stakeholders at all levels.	Increased knowledge and information exchange, plus networking among the water sector stakeholders regionally and internationally.	Documentation on the institutionalisation of the regional forum; plus, reports on each meeting	CARICOM Secretariat, OECS Commission, National Water Resources agencies, GWP-C, CARPHA	50,000
		4. Build capacity for Wastewater Resources Managers and Technical personnel.	At least one (1) regional capacity-building activity is implemented each year and targets Wastewater Resources Managers and Technical personnel at the national level.	National Wastewater Resources Managers and Technical personnel have enhanced knowledge and skills in WRM.	Number of countries as recipients of annual capacity-building activity.	CARPHA, CARICOM Secretariat, OECS Commission, national IWRM agencies, GWP-C, UN agencies, UNEP CAR/RCU, , IDB	750,000
		5. Encourage and support robust and holistic national development planning, through the use of data/evidence, to adequately plan for demographic and environmental changes and their impact on the demand for wastewater services and facilities and access to sanitation services in marginalised groups/areas etc.	At least 75% of CARICOM states have included the water sector in their national development planning, using robust data and participatory approaches.	National development plans for the water sector are reflective of demographic and environmental changes.	Number of countries that have established a national development planning process with specific reference to the water sector, plus reports on impact.	National planning agencies, water agencies, other national stakeholders, research institutions (nationally and regionally), CCCCC, CIMH, IDB	-
		6. Facilitate the promotion and support of climate proofing (adaptation and mitigation measures) national wastewater infrastructure and incorporating climate resilience in all future interventions and developments.	Regional guidelines and standards for promotion and support for climate proofing (adaptation and mitigation measures) national water supply and distribution infrastructure and incorporating climate resilience in all future	Greater uptake of climate proofing and climate resilience of national water supply and distribution infrastructure and future interventions and developments.	Number of countries that have implemented the guidelines and standards	CDEMA, CARPHA, CARICOM, CCCCC, GWP-C, CWWA, water utilities companies, Organisation of Caribbean Utility Regulators (OOCUR), IDB	See Specific Goal 1.1.5

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
			interventions and developments in all CARICOM states. Greater uptake of climate proofing and climate resilience of national water supply and distribution infrastructure and future interventions and developments. Number of countries that have implemented the guidelines and standards				
	1.1.7 To provide clean and safe drinking water that is accessible and affordable	1. Support countries to build their national capacity for water quality testing and reporting at regular intervals. This may include the bolstering of national technical capacity in testing/data collection, data analysis, reporting of water quality data and, sourcing and procurement of specialised (modern) equipment.	At least one (1) regional capacity-building activity is implemented each year and targets Water Resources Managers and Technical Personnel at the national level. See also Specific Goal 1.1.6	National Water Resources Managers and Technical personnel have enhanced knowledge and skills in WRM.	Number of countries as recipients of annual capacity-building activity.	CARICOM Secretariat, OECS Commission, national IWRM agencies, GWP-C, UN agencies, CARPHA	200,000
		2. Bolster the capacity of a selected regional diagnostic facility which will serve to augment national testing capacity, provide guidance to countries and conduct robust research into issues related to water quality.	Enhanced capacity of a selected regional diagnostic facility to augment national testing capacity, provide guidance to countries and conduct robust research into issues related to water quality.	Improved resilience at regional and national level	An established and functional regional diagnostic facility.	CARICOM Secretariat, CARPHA	3,000,000
		3. Develop regional water quality standards that are in line with accepted international standards (e.g., WHO–guidelines for drinking water quality, ISO 13.060).	Regional water quality standards were revised and amended to reflect international standards.	Internationally acceptable water quality standards implemented in CARICOM.	The number of amended regional water quality standards.	CROSQ, CARPHA and OECS	30,000
		4. Encourage countries to develop/improve and enforce national water quality standards that are in line with accepted regional and	National water quality standards were revised and amended to reflect regional and international standards	Internationally and regionally acceptable water quality standards are implemented at the national level.	Number of amended national water quality standards.	CROSQ, CARPHA and environmental agencies or other national entities (e.g., National Bureau of Standards)	240,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
		international standards (e.g., WHO–guidelines for drinking water quality, ISO 13.060).	in at least 80% of CARICOM states.				
		5. Establish a regional hub for the collection of water data and information and monitoring of regional water resources, including indicators such as water quality which would inform interventions at the national and regional levels.	A regional water information hub is identified and established/strengthened.	Water data and information are centralised.	Established/strengthened regional water information hub	CARPHA, CCCCC, OECS Commission See also under Objective 5.1.1	100,000
		6. Support the development of cross-sectoral management plans for groundwater protection. This will include conducting baseline studies to determine the health of the water source. Where plans have been developed, leverage regional assets and technical capacity to support implementation.	At least 75% of CARICOM states have cross-sectoral management plans for groundwater protection.	Groundwater protection is a shared responsibility among sectors directly and indirectly related to water resources protection and management.	Number of cross-sectoral management plans for groundwater protection.	CARICOM Secretariat, CCCCC, OECS, CARPHA Secretariat and national WRM agencies	250,000

Strategic Goal 2: Encourage coordination among key water stakeholders towards harmonisation, communication, community empowerment and involvement at the national and regional levels.

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
Specific Goal 2.1: Promote cross-sectoral interconnectivity (synergies) and coordination between the various legal, policy and institutional mechanisms for water resource management at	**2.1.1** To promote/facilitate the development of national policies that clarify and clearly outline the roles, responsibilities and functions of each institution within a tiered system of decision-making, to harmonise and	1. Seek endorsement through tangible actions (e.g., financial allocation of funds related to Strategic Goal 6), of this regional IWRM framework at the highest political level.	All CARICOM Ministers with Responsibility for water resources endorse the regional IWRM framework.	An IWRM framework with an overarching political mandate at the regional and national levels.	Number of written letters of endorsement from CARICOM ministers with responsibility for water resources. COTED (Environment) - Endorsement	CARICOM Secretariat, GWP-C, OECS Secretariat, CARPHA, GWP-C National Partners	-
		2. Develop, finalise or enhance current IWRM policies for implementation at	At least 80% of current IWRM policies for implementation, at the	Implementation of IWRM at the national level within the context of the IWRM policies.	Number of countries with draft and/ or approved national	CARICOM Secretariat, GWP-C, OECS Secretariat, GWP-C	250,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
the national level.	consolidate the governance framework for IWRM.	the national level, recognising jurisdictions where there exists a tiered system of decision-making to is that the Integrated WRM plan is implemented efficiently.	national level, are developed, finalised or enhanced.		IWRM policies.	National Partners, UWI, CAWASA, CWWA	
		3. Commit to the implementation of international and regional conventions and agreements that directly and indirectly relate to IWRM to meet national obligations in a cross-sectoral and integrated manner.	At least 80% of the prepared and endorsed IWRM policies at the national level incorporate international obligations that directly and indirectly relate to IWRM.	Integration of MEAs relating to IWRM issues is implemented under national IWRM policies.	The number of IWRM policies that incorporate national obligations to MEAs that directly and indirectly relate to IWRM are addressed and implemented in an integrated manner.	National Governments, CCCCC, UN agencies	-
		4. Mobilise resources to assist CARICOM member states with the development or updating of national IWRM policies, and within the context of this regional framework (in particular, the Vision, mission, principals, strategic goals and pillars).	All CARICOM states are provided with the necessary resources to assist with the development or updating of national IWRM policies and within the context of this regional framework.	Adequate funds are available for the development or updating of national IWRM policies and within the context of this regional framework.	Amount of funds made available and number of recipient countries.	CARICOM Secretariat, CCCCC, GWP-C, OECS Secretariat, CARPHA, National Governments	-
	2.1.2 To create a modern integrated legal framework for IWRM to support IWRM implementation at the national level.	1. Provide support for the review/assessment and reform of national existing laws, regulations, Codes of Practice, rules, agreements, and guidelines (based on contexts) that have direct or indirect implications for or (that) impact water resource management to ensure efficient coordination of the programmes and activities across water-related sectors to foster and promote IWRM.	At least 75% of countries within the CARICOM review/assess and reform their existing laws that have direct or indirect implications for or (that) impact water resource management to ensure efficient coordination of the programmes and activities across water-related sectors to foster and promote IWRM.	A reduction in overlaps/duplications and conflicts brought about by existing legislative framework at the national level, and an overall national legislative framework that supports IWRM.	The Number of countries with revised, consolidated and synergistic national laws, regulations, Codes of Practice, rules, agreements, and guidelines (based on contexts) that have direct or indirect implications for or (that) impact water resource management and support IWRM.	CARICOM Secretariat, Ministries of Legal Affairs, national water agencies	350,000
		2. Review and revise/enhance/modernise the legal mandate of ministries/agencies/departme	At least 75% of countries within the CARICOM review and revise/enhance/modernise	A reduction in overlaps, duplication, and conflicts among ministries/agencies / departments/units that directly	The Number of countries that have revised mandates of ministries/agencies/depa	CARICOM Secretariat, Ministries of Legal Affairs, national water agencies	200,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
		nts/units that directly or indirectly develop legislation to harmonise institutional functions and responsibilities in the context of IWRM.	the legal mandate of ministries/agencies/departments/units that directly or indirectly develop legislation to harmonise institutional functions and responsibilities in the context of IWRM.	or indirectly.	rtments/units that directly or indirectly with WRM at the national level.		
		3. Provide support for periodic review and updating of the national legal framework to support effective IWRM implementation.	All CARICOM countries with revised/enhanced/modernised national legislative framework to support IWRM implementation inclusive of periodic review every 5 years commitment	Existence of a culture of review and update of IWRM policies.	The number of CARICOM countries that held national consultations as part of periodic reviews and have updated policies and legislations.	CARICOM Secretariat, OECS, Ministries of Legal Affairs, national water agencies	120,000
		4. Provide financial and technical support to CARICOM member states to improve compliance and enforcement mechanisms for effective IWRM.	All CARICOM Member states are recipients of financial and technical support for improvement of compliance and enforcement mechanisms for effective IWRM at the national level.	All countries have improved compliance and enforcement mechanisms that promote effective IWRM.	The Number of countries recipients of financial and technical support	CARICOM Secretariat, OECS, Ministries of Legal Affairs, national water agencies, UNEP Cartagena Convention Secretariat EUROCLIMA+, CARPHA	650,000
	2.1.3 To engage leaders and policymakers to prioritise transboundary water cooperation	1. Conduct awareness campaigns and capacity-building programmes for leaders and policymakers on the importance of transboundary water cooperation.	Awareness campaigns and capacity-building programmes are conducted for leaders and policymakers.	Increased understanding and prioritisation of transboundary water cooperation among leaders and policymakers.	Number of awareness campaigns and capacity-building programmes conducted.	CARICOM, GWP-C, UNDP, CAWASA, CWWA, PAHO, CARPHA	100,000
		2. Formation of a technical Advisory committee through CARICOM	Formation of a Regional HLF on transboundary water to review and advise on priority transboundary water cooperation actions	Increased understanding and prioritisation of transboundary water cooperation among leaders and policymakers.	Guidance document /TOR for transboundary cooperation	CARICOM, CWWA, UWI, GWP-C	400,000
		3. Facilitate regional dialogues and negotiations between countries sharing transboundary water resources.	Regional dialogues and negotiations facilitated between countries sharing transboundary water resources.	Improved regional cooperation and collaboration in managing shared water resources.	A number of regional dialogues and negotiations were facilitated.	CARICOM, UNEP, IDB, TNC, CARPHA	150,000
		4. Develop guidelines and frameworks for	Guidelines and frameworks developed for	Establishment of transboundary water	The number of guidelines and	CARPHA UWI, International Union for	200,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
		transboundary water management agreements and cooperation mechanisms.	transboundary water management agreements and cooperation mechanisms.	management agreements and cooperation mechanisms.	frameworks developed for transboundary water management agreements and cooperation mechanisms.	Conservation of Nature (IUCN), World Resources Institute (WRI), GEF	

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, youth and indigenous groups towards improved WRM.

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
Specific Goal 3.1: Improve the quality and reliability of the water supply and distribution services.	**3.1.1** To promote gender mainstreaming and the participation of marginalised groups	1. Review and strengthen regional water and other related policies for gender sensitivity and participation of marginalised groups (including women, Indigenous and local communities, and people with disabilities, among others) using appropriate methods (such as the human rights-based approach) and existing or adapted assessment tools to ensure inclusive and equitable access to resources, equal participation in decision-making and capacity-building by all groups of stakeholders.	Reviewed regional water and other related policies include assessment tools to ensure inclusive and equitable access to resources, equal participation in decision-making and capacity-building by all groups of stakeholders, with special attention given to gender differences and marginalised groups.	Regional policies that are more sensitive to gender and marginalised groups in respect of their access to resources and participation in decision-making and capacity-building measures.	Documentation on revised regional policies	GWP-C, CARICOM Secretariat, Gender Affairs Bureau	120,000
		2. Provide support to countries for the implementation of gender-sensitive and inclusive strategies resulting from participatory engagements.	All countries are beneficiaries of technical and financial support to implement gender-sensitive and inclusive strategies resulting from participatory engagements.	Greater awareness, sensitivity, and implementation of actions/measures regarding gender-sensitive and inclusive strategies.	The number of gender-sensitive and inclusive strategies created and implemented in the region.	CARICOM Secretariat, OECS Commission.	120,000
		3. Assist countries to achieve gender balance in the number of mid and high-level management and technical positions within the water	Provision of opportunities and technical and financial support for capacity-building for more women within the water sector to	Gender balance is achieved in the number of mid and high-level management and technical positions within the water sector.	The number of women who occupy mid and high-level management and technical positions within the water sector	CARICOM Secretariat, OECS Commission, CCCCC, tertiary institutions in CARICOM, GWP-C,	250,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
		sector.	all countries within CARICOM.		at the national level.	UN agencies	
	3.1.2 To improve access to scientific/technical information on water resources	1. Identify and strengthen one regional institution as the clearing house for data and information on water resources, based on regional studies	An identified and collectively agreed upon regional entity is strengthened as the clearing house for data and information on water resources.	A more effective and efficient mechanism for data sharing as it relates to water resources and water resource management.	Report on the process of selection and the TOR for the named entity	CARICOM Secretariat, CCCCC, national governments	50,000
		2. Provide support for the establishment of online national information systems on standardised data and information on water resources provided by different national entities.	National information systems on standardised data and information on water resources provided by different national entities established in at least 75% of CARICOM states.	Standardisation of data and information on water resources provided by different national entities.	Number of countries with standardised data and information on water resources.	CARICOM Secretariat, CCCCC, CARPHA, national water resource management agencies	350,000
		3. Provide support for the strengthening of national monitoring and reporting systems for water resources.	Enhanced national monitoring and reporting systems for water resources by at least 75% of CARICOM states.	More effective monitoring and reporting of water resources at the national level.	Number of countries with enhanced national monitoring and reporting systems for water resources. Periodic reports on the status of water resources, risks, impacts and so on	CARICOM Secretariat, OECS Commission, CCCCC, CARPHA, national governments	300,000
		4. Provide support and facilitate the development of standards for coding, classification, processing of data and methods/procedures for its collection at the national level.	Standardised coding, classification, and processing of water resource data and methods/procedures for collection at the national level.	Standardisation of coding, classification, and processing of water resource data and methods/procedures for collection at the national level.	Documentation on standardised coding, classification, processing of water resource data and methods/procedures for collection at the national level.	CROSQ, Research institutions and National water resource management agencies.	200,000
		5. Provide support for the development of a policy to encourage and facilitate access to the information.	Policy on public access to information at both the regional and national levels.	Increased access to water resource data and information.	Documentation on policy at regional and national levels and levels of support.	CARICOM Secretariat, CCCCC, national water resource management agencies	30,000
		6. Encourage and support partnerships/networking among regional and national stakeholders (including universities, other research	Institutional practice of exchange of data and information on water resources among stakeholders.	Increased availability and access to water resources data and information.	Number of partnerships/networks and extent of data/information exchange	Universities and regional research institutions, national stakeholders	-

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
		institutions, and the private sector) to facilitate the exchange of data and information on water resources.	See information hub.				
		7. Provide support to raise awareness of IWRM at the national level, including the development and dissemination of 'tailored' knowledge products for dissemination to different social groups.	Financial support is provided to all CARICOM states and 'tailored' knowledge products for dissemination to different social groups are development and dissemination.	Increased public awareness of IWRM.	Level of financial support for, and number of beneficiaries of knowledge products on IWRM among for different social groups at the national level.	Research institutions and National water resource management agencies	250,000
	3.1.3 To recognise Indigenous peoples' rights to their traditional knowledge, natural resources and self-governance for inclusive IWRM.	1. Conduct consultations with indigenous communities to understand their traditional knowledge, resources and institutional structures.	National consultations with indigenous communities in CARICOM countries.	Increased recognition and respect for indigenous peoples' traditional knowledge, resources and institutional structures in WRM.	The Number of consultations conducted, reports generated from consultations, and level of Indigenous community participation.	CARICOM Secretariat, Caribbean Indigenous Legacies Project, UNDP, GWP-C, Oxfam, TNC	200.000
		2. Develop guidelines and protocols for incorporating indigenous peoples' traditional knowledge and resources in WRM.	Guidelines and protocols for incorporating indigenous traditional knowledge and resources in WRM.	Improved participation and self-representation of indigenous peoples in WRM decisions.	The number of guidelines and protocols developed adoption rate by water management authorities.	CARPHA, UWI, IUCN, PAHO, Indigenous Peoples' International Centre for Policy Research and Education (Tebtebba)	150,000
		3. Establish mechanisms for direct representation and participation of indigenous institutions in decision-making processes related to WRM.	Mechanisms for direct representation and participation of indigenous institutions in decision-making processes inclusive of the participation of indigenous leaders and representatives in consultations and decision-making processes related to WRM.	Increased indigenous peoples' self-representation and engagement in decisions involving the management of water resources.	The number of Indigenous institutions represented. Frequency of participation in decision-making meetings.	CWWA, IDB, UNEP, International Indigenous Forum on Biodiversity, WRI	250,000
Specific Goal 3.2: Enable inclusive social and economic sustainability.	**3.2.1** To promote participatory management of water resources.	1. Document, disseminate and replicate best practices for stakeholder mapping and engagement within the region, ensuring that all stakeholders from ridge-to-reef are included in the	A Guidance Document on stakeholder mapping and engagement within the region.	All stakeholders from ridge-to-reef in the region are included in the conversation on WRM.	Guidance document on stakeholder mapping and engagement within the region and report on stakeholder mapping and engagement processes on WRM	CARICOM Secretariat and OECS Commission, CARPHA, GWP-C	20,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
		conversation on WRM.			within the region.		
		2. Upscale at the regional level successful national actions to water sector stakeholders throughout the Caribbean.	A programme proposal with successful national actions that are scaled up and replicated within the region.	Increased number of successful actions/measures taken in the water sector within CARICOM.	Documentation on national actions by water sector stakeholders to be scaled up.	CARICOM Secretariat and OECS Commission, CARPHA, GWP-C, and national WRM agencies.	1,000,000
		3. Provide support for the strengthening of national agencies which represent the interests of marginalised groups and women.	All national agencies which represent the interests of marginalised groups and women are provided with technical and financial support.	National agencies which represent the interests of marginalised groups and women have increased capacity to carry out their mandates.	Documentation on the nature and level of capacity-building support provided to national agencies which represent the interests of marginalised groups and women.	CARICOM Secretariat and national governments	300,000
	3.2.2 To foster youth leadership and engagement for inclusive IWRM.	1. Facilitate youth-led regional dialogues and fora on water management issues.	Youth-led regional dialogues and fora facilitated on water management issues.	Enhanced youth engagement and leadership in WRM.	The number of youth-led regional dialogues and fora facilitated; diversity of participants.	Caribbean Regional Youth Council (CRYC), CARICOM Youth Ambassadors Programme, CYEN, UNDP, IDB, CARPHA	100,000
		2. Develop educational materials and digital platforms for youth engagement in WRM.	Educational materials and digital platforms developed for youth engagement in WRM.	Increased access to information and resources for young people on water management.	Number of educational materials created; usage statistics for digital platforms.	Caribbean Natural Resources Institute, UWI, GWP-C, CYEN, United Nations Children's Fund (UNICEF)	120,000
		3. Organise capacity-building workshops and training programmes for young water advocates.	Capacity-building workshops and training programmes organised for young water advocates.	Strengthened the capacity and skills of young people to advocate for WRM.	Number of workshops and training programmes conducted; feedback and evaluation from participants.	CRYC, GWP-C, UNDP, PAHO, TNC, CARPHA	150,000

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.

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
Specific Goal 4.1: Support the establishment of one authority with horizontal linkages and sufficient resources to coordinate the work of other authorities across sectors with specific reference to WRM, and will oversee/coordinate all functions of IWRM, and resolve conflicts among water users.	4.1.1 To promote clear, robust and comprehensive institutional mechanisms for IWRM at the Regional and national levels.	1. Facilitate the review of the utility and functionality of the existing regional mechanism for IWRM and create/resuscitate a 'fit for purpose' CARICOM Ministerial Council for Water Resources that will, among other things, oversee the implementation of this regional framework and provide strategic direction and foster regional collaboration and cooperation regarding IWRM.	A functional and 'fit for purpose' CARICOM Ministerial Council for Water Resources as the 'fit for purpose' regional mechanism for IWRM.	Strategic direction for IWRM is provided by the CARICOM Ministerial Council for Water Resources or any other as the 'fit for purpose' mechanism. Greater regional collaboration on water resource management programmes/projects.	Terms of Reference for the regional mechanism. Number of regional collaborative projects	CARICOM Secretariat, OECS Commission, GWP-C	20,000
		2. Encourage and support the establishment/strengthening of coordination mechanisms among water-related organisations, and key stakeholders to help operationalise IWRM overseen and coordinated by one national authority	A publicly visible established national entity with an overall coordinating role for IWRM in at least 75% of the states within CARICOM, plus explicit mechanisms to promote and foster increased coordination among water users.	Less fragmentation of water resource management initiatives and greater coordination and collaboration among relevant national entities.	The number of countries with an established (existing) entity and with mechanisms for greater coordination and collaboration among water users.	CARICOM Secretariat, Ministries of Legal Affairs/National Governments, OECS	80,000
		3. Establish/Strengthen/Resuscitate a multi-sectoral, multidisciplinary Technical Unit such as a National Water Council, comprising technical personnel representative of key stakeholder institutions involved in WRM, with responsibility for decision-making and supervising all activities within the water sector in an integrated manner.	At least 80% of CARICOM states have established National Water Councils with a membership that represents key stakeholder institutions and clearly articulated TOR.	Establishment of a national technical body empowered to make national decisions concerning water resource management in an integrated manner.	Number of countries with established technical units (National Water Councils).	CARICOM Secretariat, Ministries of Legal Affairs/National Governments, OECS, GWP-C	80,000
		4. Review, revamp, and restructure and strengthen	At least 80% of CARICOM states have	Separation of regulatory and operational functions of	Number of countries that have reviewed,	CARICOM Secretariat, Ministries of Legal	200,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
		(where appropriate) the roles and functions (regulatory versus operational) of water-related agencies based on the national IWRM policy and legislation to promote more efficient and effective IWRM at all levels.	reviewed, revamped, and restructured and strengthened (where appropriate) the roles and functions (regulatory versus operational) of water-related agencies.	national entities with responsibility for water resource management for effective IWRM implementation.	revamped, restructured and strengthened the revised roles and functions of the national entities created.	Affairs/National Governments, OOCUR	
		5. Develop and support a regional comprehensive and ongoing coordinated capacity-building programme, (that incorporates citizen science) with the view to addressing gaps in knowledge and skills for IWRM implementation at the national level, using tools and methodologies already developed and validated.	Development of a regional comprehensive and ongoing coordinated IWRM capacity-building programme.	Increased knowledge and skills of IWRM in CARICOM states.	Level of knowledge and skills related to IWRM among stakeholders.	CARICOM Secretariat, national IWRM agencies, GWP-C	1,000,000

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.

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
Specific Goal 5.1: Strengthen institutional capacity to generate and share IWRM-related knowledge/ information.	**5.1.1** To increase regional and national research output on water resources, including hydrology, climate change impacts, risk modelling, and wastewater recycling, among others through the use of appropriate data processing and information mechanisms.	1. Secure funding for multidisciplinary and interdisciplinary academic and applied research on water resources and water resource management at the regional and national levels to provide a reference for reforms in IWRM.	At least one (1) Concept Note/Proposal for accessing funding for academic and applied research on water resources and water resource management at the regional and national levels.	Increased availability and accessibility to data and information on water resources and water resource management issues at the national and regional levels.	Number of research outputs and utility of such research at the national and regional levels.	CCCCC, The UWI, UG, GWP-C TEC, other research institutions within the Region, CIMH, CARPHA	200,000
		2. Establish networks among tertiary institutions engaged as a 'scientific water community' in research on water resources.	A Regional Cluster of Academic and Research Institutions with a clear mandate for collaborative research.	Increased research output on water resources status and issues, plus greater collaboration among research institutions within the Region.	Number of collaborative research outputs. TOR for Cluster	5Cs, The UWI, UG, GWP-C TEC, other research institutions within the Region, CIMH	50,000
		3. Develop and provide	An established	Increased research outputs on	Number and type of	CCCCC, The UWI, UG,	2,000,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
		support for an IWRM research programme and a system for monitoring performance over time.	participatory and comprehensive IWRM research programme with an accompanying monitoring framework.	and utility of water resources and water resource management issues.	IWRM research programmes and related monitoring framework.	GWP-C TEC, other research institutions within the Region, OOCUR	
		4. Review the utility of research undertaken on water resources and water resource management every 3–4 years.	A quality assurance framework for evaluation of the utility of research undertaken on water resources and water resource management.	Increased utility of research outputs on and utility of water resources and water resource management issues.	Quality assurance report. Level of usage of research output by government agencies.	CCCCC, The UWI, UG, GWP-C TEC, other research institutions within the Region	30,000

Strategic Goal 6: Identify and facilitate the implementation of sustainable financing mechanisms.

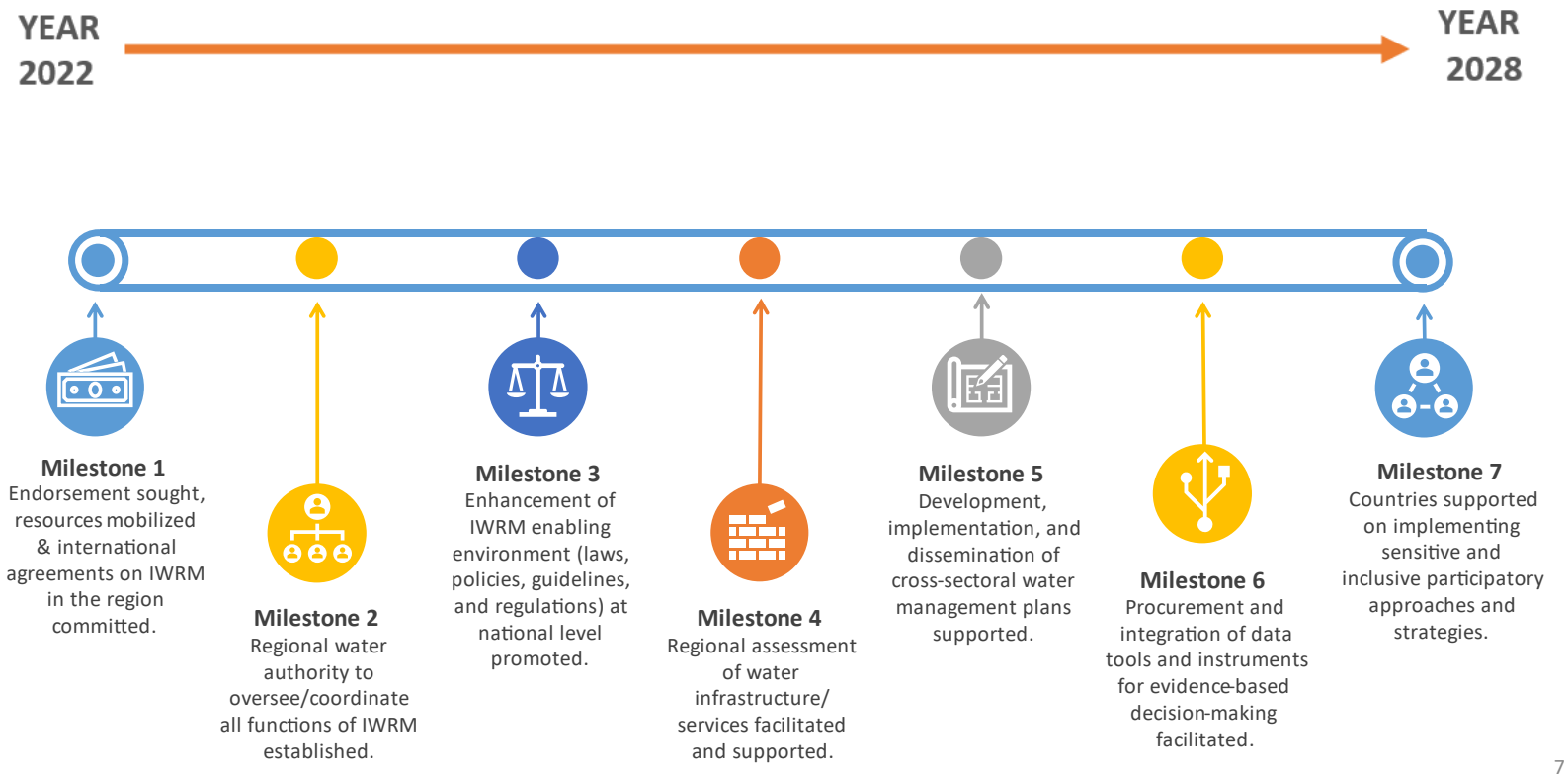
Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
Specific Goal 6.1: To develop sustainable financial mechanisms.	**6.1.1** To increase financial resources for the implementation of sustainable projects within the water sector.	1. Commission a regional study on sustainable financing options for effective implementation of the Regional IWRM framework.	Financing options for effective implementation of the Regional IWRM framework.	Sustainable funding available to the water sector.	Regional study report.	CARICOM, OECS, FAO and. CWWA, Caribbean Development Bank (CDB), CCCCC, CARPHA	50,000
		2. Mainstream IWRM in national plans and programmes.	National plans and programmes integrate IWRM in at least 75% of the targeted countries.	IWRM is integrated in national plans and programmes.	Number of National plans and programmes.	Ministry of Finance/Economic Affairs/Economic Planning, National Water Resource Agency, CCCCC	
		3. Raise revenue for IWRM\adopt realistic water pricing mechanisms through water absorption charges, taxes, tariff structures, PPPs, polluter pays principle and navigation fees.	Revenue for IWRM is raised by 50% in each targeted country.	A greater amount of revenue is available for financing the water sector.	Number of countries in which water pricing mechanisms are adopted (?) Documents.	Ministry of Finance, National Water Resource Agency, CCCCC, Private Sector	
		4. Allocate specific funds for IWRM-related programmes and initiatives at the national level.	All countries have a specific budget line for IWRM-related projects in the water sector.	More financial resources are available for IWRM-related projects at the national level.	Number of countries in which national budgets are inclusive of IWRM-related projects.	Ministry of Finance, National Water Resource Agency, CCCCC	-
		5. Develop and submit proposals for ecosystem services payment with	At least four national proposals for ecosystem services with specific	A greater amount of revenue is available for financing the water sector.	Number of proposals for ecosystem services payment.	Ministry of Finance, CCCCC, National Climate Change Unit,	80,000

Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
		specific reference to water resources.	reference to water resources payment developed.			OECS Commission.	
		7. Explore and formalise opportunities for Public-Private Partnerships (PPPs) in the development of the water sector.	At least 80% of the targeted countries have formal mechanisms for PPPs in the development of the water sector.	Greater access to financial resources for water-related projects.	The number of partnership agreements between the private sector and Government.	Ministry of Finance, National Water Resource Agency and private sector	-

3.5 Milestones as a Component of the Roadmap

3.5.1 Milestones for the Implementation of a Regional Action Framework for IWRM in the CARICOM Region

The following infographic provides a strategic overview of the major milestones in the regional action framework for IWRM in the CARICOM region.



3.6 Critical Elements for the Implementation of the Regional IWRM Implementation Plan and Roadmap

3.6.1 Governance

IWRM must make changes in water management in complex social and political contexts. IWRM as a process has evolved in response to calls from the water resources, scientific and technical community for an approach accounting for the complexity, uncertainty and multidimensional nature of water issues. This calls for IWRM to be a long-term, iterative process that is responsive to changes in its development process and capable of adapting to new economic, social and environmental conditions and changing human values over long-term implementation. Accordingly, IWRM is not just about managing physical resources but requires and promotes positive changes in water governance.

As an iterative, evolutionary and adaptive process, IWRM does not offer a blueprint that can be exported from one place to another. However, there are features of IWRM that are common to all contexts. The GWP, established to foster IWRM, introduced three practical elements that have shaped the agenda on IWRM since 2000 (World Water Council, 2015):

The three key elements of IWRM are interrelated and complementary, and the successful application of one of these operational tools may depend on the simultaneous application of the other elements. An enabling environment should be developed so that management instruments can be effective in the long run. However, having an enabling environment does not guarantee that water management is practised.

The purpose of an enabling environment is to provide a set of solid foundations for establishing the priorities and strategies to help water governance structures reach their goals while balancing out the competing demands for water resources. This involves substantiating the rights and assets of all stakeholders while ensuring environmental health. An enabling environment empowers stakeholders to assume a role in ensuring water resources' sustainable development and management. Stakeholder participation is achieved through the implementation of national, regional, and local policies and legislation that outline the importance of an integrated approach to WRM and constitute the "rules of the game" to achieving a sustainable balance between the social, economic and environmental needs for water. An enabling environment is defined with the use of the following:

- **Policies–setting goals for water use, protection and conservation.** Policy development gives an opportunity for setting national objectives for the management of water resources and water service delivery with concerns for the overall development goals. Water policies are by nature tied to multi-sectoral approaches (GWP, 2021).
- **Legal Frameworks–the rules to follow to achieve policies and goals.** The required water laws cover ownership of water, permits to use (or pollute) it, the transferability of those permits, and customary entitlements. They underpin regulatory norms like conservation, protection, priorities and conflict management (GWP, 2021).
- **Investment and Financing Structures–allocating financial resources to meet water needs.** Water projects tend to be indivisible and capital-intensive, and many countries have major backlogs in developing water infrastructure. Countries need smart national and international financing approaches and appropriate incentives to achieve development goals. Financial resources need to also be allocated to public sector financing (e.g., for the management of the resource), not only the water services. This requires comparatively small budgets, which give huge benefits because proper resource management minimises the risk of misallocations by applying IWRM, securing sound data acquisition and the like. (GWP, 2021).

Notably, stakeholder participation cannot be limited to the realm of governmental institutions if a proper enabling environment is to be set up. Because the "rules of the game" apply to everyone (i.e., private companies, NGOs, community-based organisations, women and disadvantaged groups), as well as other sections of civil society, all stakeholders should be provided with opportunities to actively participate in formulating collective baselines.

All organisations and agencies play an important role because many different perspectives on how to enhance people's access to water, establishing equilibrium between conservation and development and treating water as a social and economic good exist. Accordingly, top-down and bottom-up strategies for stakeholder participation need to be promoted to achieve efficient, equitable and sustainable water management–from the national level down to the catchment or watershed level. Lower authorities should have agency in establishing their own respective "rules of the game" and articulating overarching, high-level policies. Systems of water governance that are well decentralised are conducive to the practical implementation of policies.

3.6.2 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. The highest degree of commitment at the regional level is necessary. There are clear barriers to attaining regional consensus, as the sector is plagued with socio-political issues at the national level. There is also a need for motivation to change existing systems resulting from perceived political risk. Utilising a recognised political figurehead as a champion may assist in raising awareness and coercing support. In a scenario where the framework is accepted, implementation at the national level may prove to be more challenging.

There is an opportunity to leverage public awareness and MEAs where ratified, to ensure that WRM becomes a public issue of political significance. The COTED serves as the regional governance mechanism for natural resource matters but has not been operational for some years. Its reconvening is critical to moving the IWRM regional agenda (CARICOM, 2020).

3.6.3 Legal Framework, Regulations and Institutions

The region lacks an environment for enabling IWRM in law and policy. Despite clear acknowledgement and acceptance of IWRM as a best practice for managing national water resources, most countries lack an IWRM policy, plan, strategy or clear guidance for integrated management and development of the water sector. In most instances, the sector is governed by inadequate legislation, policies and strategies that are archaic or remain in draft form for an extended period. The resulting fragmentation of the mandate across several institutions with no designated responsible/accountable party for WRM leads to inefficiencies and poor execution of the principles of IWRM and the prescribed mandate for managing the sector.

This fragmented legal and policy environment leads to weak institutions in most countries. In addition to the disaggregated mandate for water resources management across several agencies, a lack of technical capacity has been cited as a major hindrance to conducting the business of WRM. The lack of an adequately trained cohort of professionals to manage the countries' water resources is reflected in a lack of innovation, inefficiencies and overall slow progress towards sustainability within the water sector. Additionally, it is

imperative for institutions charged with overseeing WRM to move away from the outdated, fragmented sectoral approach (i.e., the silo approach to operational activities). Effective communication and coordination between responsible agencies and with the private sector and civil society is essential for IWRM implementation.

3.6.4 Capacity-Building

The regional implementation of IWRM is constrained by the social, economic and physical diversity of Caribbean countries. Insufficient expertise further contributes to the difficulty of implementing IWRM at the national level. Examples at institutional and non-governmental levels, provide evidence suggesting that regional coordination through an IWRM framework can enhance WRM. Some of the elements of IWRM function at the institutional level, requiring organisational redistribution and harmonisation, but these are limited by available human resources. For member countries with IWRM policies, the need for a specialised WRM agency is articulated, which will lend support to regional networking and coordination.

Sourcing skilled personnel is a corequisite for implementing the framework. Although human resources are intimately linked with financial capacity, structured action is also required to ensure the region can deliver tailored expertise where financing is available. 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 (e.g., GWP-C, Caribbean WaterNet/Cap-Net UNDP). Additionally, implementation should foster discussions towards the development of a regional water professionals' network.

3.6.5 Public Participation and Stakeholder Engagement

The Dublin principles on equitable and efficient management of water specifically address public participation and stakeholder outreach through three of the four principles:

- **Principle 2:** Participatory approaches
- **Principle 3:** Role of women
- **Principle 4:** Social and economic value of water

Participatory approaches are intuitively inclusive and integrated, implying that everyone is a stakeholder with an opportunity to contribute to planning and implementation, including indigenous groups and youth. True participation requires that stakeholders at all levels of the social structure have an impact on decision-making at different levels of water management. Governments and administrations at all levels have the responsibility to make participation possible (FUB, 2021). Moreover, the public is a key stakeholder in the successful implementation of any IWRM policy or plan and appropriate measures for bi-directional information sharing and communication are important. Facilitation and promotion of public participation should be facilitated by easy access to data and information, as well as opportunities to participate in data collection. An education and awareness programme or plan is required to explain and disseminate the principles of the IWRM policy framework.

Several national and regional entities collect, store, analyse and disseminate water resources data and information independently, with priorities based on specific mandates and objectives. A regional network and information system will assist in consolidating and harmonising information collection and presentation, improving opportunities to share experiences and coordinate regional-level initiatives. Interactive geospatial information systems are supported by monitoring and evaluation indicators for SDG 6, which can facilitate regional-level awareness of water resources issues and serve as a methodology for data collection.

3.6.6 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. Based on the primary focal areas and regional mandate, the following options should be considered:

1. Coordinate through accredited agencies and approach international development funds including GEF, GCF and AF for investing in implementation.
2. Investigate opportunities for public-private investment schemes for activities within priority areas.
3. Commission a study on sustainable financing options for effective implementation of the regional IWRM framework.

3.6.7 Data Collection, Analysis, Reporting and Sharing

All the assessed countries highlighted a lack of data as a major challenge to making practical, evidence-based decisions to manage the water sector. The data challenge is far-reaching and varies in severity and causes across the islands. These challenges may be due to the fragmented mandate, poor inter-agency communication (a lack of a designated modality for sharing data and heavy reliance on interpersonal relationships/favours), the lack of/inadequate specialised equipment for collecting data (possibly linked to a lack of finance, and procurement and maintenance challenges), a lack of trained technical personnel, and the absence of data standards/protocols to ensure that the data collected and processed is useful, among other reasons.

Among member countries, data collection on water resources is varied and fragmented across multiple agencies. Monitoring under SDG 6 has improved the nature and scope of data collected but a systematic approach with the goal of evidence-based decision-making is non-existent. Instilling a culture of systematic monitoring and measurement of water-related data with integration into national information systems is fundamental to successful and sustainable IWRM. Uncertainty and data gaps flourish in the water sector with decisions reliant on anecdotal information and user experiences.

Data provides the necessary evidence for financial decision-making supporting sustainable financing. 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.

3.6.8 Use of Management and Technical Instruments

Water management agencies across the region lack adequate and functional equipment to effectively undertake tasks associated with IWRM implementation. There is a need to secure modern equipment and ensure necessary technical training. Management instruments should also encourage data-driven decision-making and include the production of scientific writing and periodical reports on water resource quality and quantity. Partnerships with research institutions can assist in the assessment and monitoring of water resources and can assist in the collection of environmental data, enhancing hydrological and meteorological networks.

3.6.9 Financing and Environmental Rehabilitation

All participating countries require innovative financing mechanisms in relation to IWRM. Significant losses are incurred because considerable percentages of NRW are associated with ageing infrastructure in most participating countries. Focus should be placed on improving access to finance at a community level to encourage rainwater harvesting systems (RWHS) through cooperative banks or on a micro-finance basis. Emphasis should also be placed on mechanisms to finance municipal corporations for the rehabilitation and construction of small community water supply schemes, such as community catchment tanks and gravity-operated and spring-fed piped systems.

Repurposing the revenues from the central water authorities and electricity service companies (where applicable) to support forestry protection and the conservation of parks and protected areas is essential for WRM. These utilities usually harness water from the catchments within the national forests for potable uses and hydroelectricity generation (in some countries) storage and distribution. The protection and conservation of key catchment areas can help maintain supply for various uses and ensure ecosystem services are not severely compromised. WUE and wastewater management and reuse should also be considered, noting the principles of the circular economy coupled with the plethora of environmental benefits.

3.6.10 Governance Mechanisms

Governance systems including institutional arrangements at the national and regional levels are essential elements for the implementation of a regional IWRM framework (World Water Council, 2015). At the regional level, COTED is the primary community organ responsible for promoting and developing policies for the protection and preservation of the environment and for sustainable development, as well as for promoting measures for the development of natural resources including water on a sustainable basis. The CARICOM Secretariat should assume administrative responsibility for the coordination of regional implementation through the appropriate unit. Similar mechanisms are applicable for smaller regional groupings (e.g., OECS) with the requirement for integration and harmonisation.

The benefit of harmonisation is realised at the national level with similar organisational structures and procedures. The harmonisation of national governance mechanisms would facilitate improved communication, reporting and evaluation at the

regional level. The role of community institutions that operate at the national level should be considered in the implementation of the framework, noting relevant legal principles. A major factor in successful implementation is the provision for regional discussion and strategic development. The preparatory meetings with the COTED served as an accommodating forum.

3.6.11 Monitoring and Evaluation

A robust monitoring and evaluation framework can make the difference between an impactful versus merely conceptual IWRM framework implementation. 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. Monitoring and evaluation involve monitoring the implementation process and outcomes of specific actions. It evaluates progress towards attainment of the objectives while contributing to review and amendments necessary for informed decision-making.

Monitoring requires relevant indicators which should be developed based on specific activities under the framework. Coordination is best managed by the sustainability units of the CARICOM Secretariat and OECS Commission, which can leverage national focal points to ensure the timely delivery of activities and alignment with performance targets. Additionally, revisions to the advancement of the framework can be made annually during the Ministerial High-Level Forum hosted by CWWA. Data will support evaluation, which can be performed internally or externally depending on resources and agreement. The process will rely on ensuring effective data management systems and effective communication and coordination among national competent authorities. Existing mechanisms through the COTED can accommodate policy review and iterative development.

Section 4: Implementation Plan Timeline, Monitoring and Evaluation and Sustainable Finance

Considering the collaborative and mobilisation efforts required to fully implement the regional framework, a timeframe of 20 quarters (5 years) is recommended for complete implementation. A proposed Gantt Chart is provided below.

Table 5: Implementation Plan for Regional Action Framework for IWRM for the CARICOM Region.

Projected Start- July 2022 (1st Quarter - July 2022)								Plan Duration						Actual Start					% Complete						-
Goals, Objectives, and Activities	**PLAN START**	**PLAN DURATION**	**ACTUAL START**	**ACTUAL DURATION**	**Quarters (Starting July 2022)**																				
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Specific Goal 2.1: Promote cross-sectoral interconnectivity and coordination between the various legal, policy and institutional mechanisms for water resource management at the national level.																									
2.1.1 To promote/facilitate the development of national policies that clarify and clearly outline the roles, responsibilities and function of each institution within a tiered system of decision-making, with a view to harmonising and consolidating the gove	1	3	1	3																					
Seek endorsement through tangible actions (e.g., financial allocation of funds related to Strategic Goal 6), of this regional IWRM framework at the highest political level.	1	2	1	2																					
Develop, finalise or enhance current IWRM policies for implementation at the national level, recognising jurisdictions where there exists a tiered system of decision-making to is that the Integrated WRM plan is implemented efficiently.	2	2	2	2																					
Commit to the implementation of international and Regional conventions and agreements that directly and indirectly relate to IWRM to meet national obligations in a cross-sectoral and integrated manner.	3	1	3	1																					
Mobilise resources to assist CARICOM member states with the development or updating of national IWRM policies, and within the context of this regional framework (in particular, the Vision, mission, principals, strategic goals and pillars).	2	2	2	2																					
Specific Goal 6.1: To develop sustainable financial mechanisms.																									
6.1.1 To increase financial resources for the implementation of sustainable projects within the water sector.	1	3	1	3																					
Commission a regional study on sustainable financing options for effective implementation of the Regional IWRM framework.	1	2	1	2																					
Mainstream IWRM in national plans and programmes.	3	3	3	3																					
Raise revenue for IWRMadopt realistic water pricing mechanisms through water absorption charges, taxes, tariff structures, PPPs, polluter pays principle and navigation fees.	3	2	3	2																					
Allocate specific funds for IWRM-related programmes and initiatives at the national level.	3	1	3	1																					
Develop and submit proposals for ecosystem services payment with specific reference to water resources.	1	2	1	2																					
Explore and formalise opportunities for Public–Private Partnerships (PPPs) in the development of the water sector.	3	1	3	1																					

Projected Start- July 2022 (1st Quarter - July 2022)

Goals, Objectives, and Activities	PLAN START	PLAN DURATION	ACTUAL START	ACTUAL DURATION	Quarters (Starting July 2022)
					1
Specific Goal 2.1: Promote cross-sectoral interconnectivity (synergies) and coordination between the various legal, policy and institutional mechanisms for water resource management at the national level.					
2.1.2 To create modern integrated legal framework for IWRM to support IWRM implementation at the national level.	2	3	2	3	
Provide support for the review/assessment and reform of national existing laws, regulations, Codes of Practice, rules, agreements, and guidelines (based on contexts) that have direct or indirect implications for or (that) impact water resource management	2	2	2	2	
Review and revise/enhance/modernise the legal mandate of ministries/agencies/department/unit that directly or indirectly or develop legislation to harmonise institutional functions and responsibilities in the context of IWRM.	3	2	3	2	
Provide support for periodic review and updating of the national legal framework to support effective IWRM implementation.	3	3	3	3	
Provide financial and technical support to CARICOM member states to improve compliance and enforcement mechanisms for effective IWRM.	3	3	3	3	
Specific Goal 4.1: Support the establishment of one authority with horizontal linkages and sufficient resources to coordinate the work of other authorities across sectors with specific reference to WRM, and will oversee/coordinate all functions of IWRM, a					
4.1.1 To promote clear, robust and comprehensive institutional mechanisms for IWRM at the Regional and national levels.	3	3	3	3	
Facilitate the review of the utility and functionality of the existing regional mechanism for IWRM and create/resuscitate a 'fit for purpose' CARICOM Ministerial Council for Water Resources that will, among other things, oversee the implementation of this	3	2	3	2	
Encourage and support the establishment/strengthening of coordination mechanisms among water-related organisations, and key stakeholders to help operationalise IWRM overseen and coordinated by one national authority	3	2	3	2	
Establish/Strengthen/Resuscitate a multi- sectoral, multidisciplinary Technical Unit such as a National Water Council, comprising technical personnel representative of key stakeholder institutions involved in WRM, with responsibility for decision-making a	3	1	3	1	
Review, revamp, and restructure and strengthen (where appropriate) the roles and functions (regulatory versus operational) of water-related agencies based on the national IWRM policy and legislation to promote more efficient and effective IWRM at all leve	3	1	3	1	
Develop and support a regional comprehensive and ongoing coordinated capacity-building programme, (that incorporates citizen science) with the view to addressing gaps in knowledge and skills for IWRM implementation at the national level, using tools and m	4	2	4	2	
Specific Goal 1.1: Promote environmental sustainability and improve the resilience of ecosystems to external pressures.					
1.1.6 Facilitate and support a Regional assessment of waste-water infrastructure and services to identify and map the root causes of wastewater management challenges, modalities of sanitation across the Region, gaps in the access to services, geographic a	5	3	5	3	
Procure critical equipment (in bulk) necessary for improved efficiency of waste- water treatment facilities and infrastructure.	5	3	5	3	
Provide resources to countries to develop/improve/update and enact national wastewater policies, strategies, and management plans with clearly-defined, fit for purpose and attainable goals, targets and actions and a robust monitoring framework.	5	3	5	3	
Coordinate and facilitate a stable regional forum for water sector stakeholders to share outcomes, best practices, research, models, case studies, traditional knowledge, new technologies and the like from within the Region and the international community.	5	2	5	2	
Build capacity for Wastewater Resources Managers and Technical personnel.	6	2	6	2	
Encourage and support robust and holistic national development planning, through the use of data/evidence, to adequately plan for demographic and environmental changes and their impact on the demand for wastewater services and facilities and access to san	6	20	6	20	
Facilitate the promotion and support of climate-proofing (adaptation and mitigation measures) national wastewater infrastructure and incorporating climate resilience in all future interventions and developments.	6	20	6	20	

Projected Start- July 2022 (1st Quarter - July 2022)								Plan Duration						Actual Start					% Complete						-
Goals, Objectives, and Activities	**PLAN START**	**PLAN DURATION**	**ACTUAL START**	**ACTUAL DURATION**	**Quarters (Starting July 2022)**																				
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Specific Goal 1.1: Promote environmental sustainability and improve the resilience of ecosystems to external pressures.																								
11.1.7 To provide clean and safe drinking water that is accessible and affordable	8	3	8	3																				
Support countries to build their national capacity for water quality testing and reporting at regular intervals. This may include the bolstering of national technical capacity in testing/data collection, data analysis, reporting of water quality data and,	8	2	8	2																				
Bolster the capacity of a selected regional diagnostic facility which will serve to augment national testing capacity, provide guidance to countries and conduct robust research into issues related to water quality.	9	2	9	2																				
Develop regional water quality standards that are in line with accepted international standards (e.g., WHO–guidelines for drinking water quality, ISO 13.060).	9	2	9	2																				
Encourage countries to develop/improve and enforce national water quality standards that are in line with accepted regional and international standards (e.g., WHO–guidelines for drinking water quality, ISO 13.060).	8	3	8	3																				
Establish a regional hub for the collection of water data and information and monitoring of regional water resources, including indicators such as water quality which would inform interventions at the national and regional levels.	8	2	8	2																				
Support the development of cross-sectoral management plans for groundwater protection. This will include conducting baseline studies to determine the health of the water source. Where plans have been developed, leverage regional assets and technical capac	8	2	8	2																				
Specific Goal 1.1: Promote environmental sustainability and improve the resilience of ecosystems to external pressures.																								
1.1.1 To reduce negative environmental impacts within the water value chain through increased efficiency.	12	3	12	3																				
Develop and support the implementation of regional guidelines and communication products on measures to increase efficiency within the water sector at both the household and national levels.	12	3	12	3																				
Provide regional training for water sector personnel on efficiency measures such as demand side management, improved technologies and best practices.	12	3	12	3																				
Promote the use of renewable energy as a measure to reduce operational costs and emissions in the water sector	12	3	12	3																				
Assist countries with accessing and mobilising resources to climate-proof the water sector and increase efficiency measures.	12	3	12	3																				
Develop guidelines and communications material to engage and promote water efficiency measures across all sectors.	12	3	12	3																				
Specific Goal 2.1: Promote cross-sectoral interconnectivity (synergies) and coordination between the various legal, policy and institutional mechanisms for water resource management at the national level.																								
2.1.3 To engage leaders and policymakers to prioritise transboundary water cooperation.	13	3	13	3																				
Conduct awareness campaigns and capacity-building programmes for leaders and policymakers on the importance of transboundary water cooperation.	13	3	13	3																				
Formation of a technical Advisory committee through CARICOM	13	3	13	3																				
Facilitate regional dialogues and negotiations between countries sharing transboundary water resources.	6	20	6	20																				
Develop guidelines and frameworks for transboundary water management agreements and cooperation mechanisms.	13	3	13	3																				

Projected Start- July 2022 (1st Quarter - July 2022)								Plan Duration						Actual Start					% Complete						
																									-
Goals, Objectives, and Activities	PLAN START	PLAN DURATION	ACTUAL START	ACTUAL DURATION	Quarters (Starting July 2022)																				
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Specific Goal 3.1: Improve the quality and reliability of the water supply and distribution services.																									
3.1.3 To recognise indigenous peoples' rights to their traditional knowledge, natural resources and self-governance for inclusive IWRM.	13	3	13	3																					
Conduct consultations with indigenous communities to understand their traditional knowledge, resources and institutional structures.	13	3	13	3																					
Develop guidelines and protocols for incorporating indigenous peoples' traditional knowledge and resources in WRM.	13	3	13	3																					
Establish mechanisms for direct representation and participation of indigenous institutions in decision-making processes related to WRM.	13	3	13	3																					
Specific Goal 3.2: Enable inclusive social and economic sustainability.																									
3.2.2 To foster youth leadership and engagement for inclusive IWRM.	13	3	13	3																					
Facilitate youth-led regional dialogues and fora on water management issues.	13	3	13	3																					
Develop educational materials and digital platforms for youth engagement in WRM..	13	3	13	3																					
Organise capacity-building workshops and training programmes for young water advocates.	13	3	13	3																					
Specific Goal 1.1: Promote environmental sustainability and improve the resilience of ecosystems to external pressures.																									
1.1.2 To strengthen and enforce pollution regulations and management.	14	3	14	3																					
Assist countries to identify (through testing), map the usage of and prioritise highly hazardous chemicals used in watershed areas for urgent control across all sectors.	14	3	14	3																					
Assist countries to review and update their lists of registered pesticides and toxic chemicals.	14	3	14	3																					
Design training programmes and communication materials to build awareness and capacity at the technical management user level on (1) the repercussions of pesticide and toxic chemical use within watershed areas, (2) the improper management of agricultural	14	3	14	3																					
Assist countries to model national legislation and guidelines to bring them in line with international standards and chemical conventions (e.g., the Stockholm, Rotterdam and Basel Conventions) across all relevant sectors.	14	3	14	3																					
Assist countries to develop, enact or enforce clear guidelines for hotel waste management particularly, for facilities located in or near ecologically sensitive areas.	14	3	14	3																					
Specific Goal 1.1: Promote environmental sustainability and improve the resilience of ecosystems to external pressures.																									
1.1.3 To promote and implement nature-based solutions for water source protection and management	16	4	16	4																					
Support and facilitate the adoption and implementation of key strategies intended to at biodiversity and ecosystem conservation and protection such as the CARICOM Biodiversity Strategy.	16	4	16	4																					
Assist countries to harmonise, develop and/or implement national strategies which promote ridge-to-reef resources management.	16	4	16	4																					
Build awareness and promote nature-based solutions for ecosystems management at the national and regional level.	16	4	16	4																					
Assist countries with accessing and mobilising resources for field implementation of nature-based interventions including protection, restoration and rehabilitation of key areas.	16	4	16	4																					
Encourage and facilitate Public–Private Partnerships for the protection, conservation and sustainable development of natural resources and ecosystems.	16	4	16	4																					
Develop and support the implementation of regional guidelines and communication products on measures to sustainably use ecosystem goods and services to maintain and enhance the water provisioning service of watersheds.	16	4	16	4																					

Projected Start- July 2022 (1st Quarter - July 2022)								Plan Duration						Actual Start					% Complete						-
Goals, Objectives, and Activities	PLAN START	PLAN DURATION	ACTUAL START	ACTUAL DURATION	Quarters (Starting July 2022)																				
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Specific Goal 1.1: Promote environmental sustainability and improve the resilience of ecosystems to external pressures.																									
1.1.4 To protect and manage water resources through coordinated data-driven measures.	16	4	16	4																					
Support countries to conduct and utilise climate modelling in national development planning for the short and long term across all sectors which interact with water resources.	16	4	16	4																					
Support countries to conduct ridge-to-reef vulnerability studies and water value chain assessment using robust and standardised assessment tools to determine key challenges within the water value chain and provide recommendations to bolster resilience.	16	4	16	4																					
Assist countries to develop greater inter- agency collaboration for WRM through measures such as redefining agency mandates to reduce grey areas, overlaps, and silo operations and the development of standardised protocols for data collection, processing a	16	4	16	4																					
Assist countries through cross-sectoral collaboration to revise land tenure practices within critical watershed areas and develop, revise and enforce land use and land use policies with the aim of managing/regulating activities within watershed and protec	16	4	16	4																					
Specific Goal 1.1: Promote environmental sustainability and improve the resilience of ecosystems to external pressures.																									
1.1.5 To minimise damage and losses to critical infrastructure and other assets from climate change, natural hazards and disasters.	16	4	16	4																					
Facilitate the promotion and support of climate proofing (adaptation and mitigation measures) national water supply and distribution infrastructure and incorporating climate resilience in all future interventions and developments, for example designing an	16	4	16	4																					
Assist countries to develop, enact and/or enforce drought and flood management plans for the water sector.	16	4	16	4																					
Build awareness and promote regional risk insurance for the water sector. Where adequate insurance facilities are unavailable, leverage regional assets, political will and expertise to design and develop a risk insurance product suitable for national and	16	4	16	4																					
Specific Goal 3.2: Enable inclusive social and economic sustainability.																									
3.2.1 To promote participatory management of water resources.	16	4	16	4																					
Document, disseminate and replicate best practices for stakeholder mapping and engagement within the region, ensuring that all stakeholders from ridge-to-reef are included in the conversation on WRM.	16	4	16	4																					
Upscale at the regional level successful national actions to water sector stakeholders throughout the Caribbean.	16	4	16	4																					
Provide support for the strengthening of national agencies which represent the interests of marginalised groups and women.	16	4	16	4																					
Specific Goal 3.1: Improve the quality and reliability of the water supply and distribution services.																									
3.1.1 To promote gender mainstreaming and the participation of marginalised groups	16	4	16	4																					
Review and strengthen regional water and other related policies for gender sensitivity and participation of marginalised groups (including women, indigenous and local communities, people with disabilities, among others) using appropriate methods (such as	16	4	16	4																					
Provide support to countries for the implementation of gender-sensitive and inclusive strategies resulting from participatory engagements.	16	4	16	4																					
Assist countries to achieve gender balance in the number of mid and high-level management and technical positions within the water sector.	16	4	16	4																					

Projected Start- July 2022 (1st Quarter - July 2022)								Plan Duration						Actual Start					% Complete						
																									-
Goals, Objectives, and Activities	PLAN STAR T	PLAN DURATION	ACTUAL START	ACTUAL DURATION	Quarters (Starting July 2022)																				
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Specific Goal 5.1: Strengthen institutional capacity to generate and share IWRM-related knowledge/ information.																									
5.1.1 To increase regional and national research output on water resources, including hydrology, climate change impacts, risk modelling, wastewater recycling, among others through the use of appropriate data processing and information mechanisms.	16	4	16	4																					
Secure funding for multidisciplinary and interdisciplinary academic and applied research on water resources and water resource management at the regional and national levels to provide a reference for reforms in IWRM.	16	4	16	4																					
Establish networks among tertiary institutions engaged as a "scientific water community" in research on water resources.	16	4	16	4																					
Develop and provide support for an IWRM research programme and a system for monitoring performance over time.	16	4	16	4																					
Review the utility of research undertaken on water resources and water resource management every three to four years.	16	4	16	4																					
Specific Goal 3.1: Improve the quality and reliability of the water supply and distribution services.																									
3.1.2 To improve access to scientific/technical information on water resources	16	4	16	4																					
Identify and strengthen one regional institution as the clearing house for data and information on water resources, based on regional studies.	16	4	16	4																					
Provide support for the establishment of online national information systems on standardised data and information on water resources provided by different national entities.	16	4	16	4																					
Provide support for the strengthening of national monitoring and reporting systems for water resources.	16	4	16	4																					
Provide support and facilitate the development of standards for coding, classification, processing of data and methods/procedures for its collection at the national level.	16	4	16	4																					
Provide support for the development of a policy to encourage and facilitate access to the information.	16	4	16	4																					
Encourage and support partnerships / networking among regional and national stakeholders (including universities and other research institutions, and the private sector) to facilitate exchange of data and information on water resources.	16	4	16	4																					
Provide support to raise awareness of IWRM at the national level, including the development and dissemination of "tailored" knowledge products for dissemination to different social groups.	16	4	16	4																					

4.1 Monitoring and Evaluation

The monitoring and evaluation framework specifies the indicators to be monitored for assessment of strategic objectives and measurement of progress while contributing to continued feasibility and adaptation to evolving conditions and use. Adaptation should be triggered in part by ongoing learning through the systemic monitoring and evaluation of the performance of the framework under implementation. Monitoring and evaluation is an important process in the policy lifecycle, providing an evidence base for public resource allocation decisions.[1] Monitoring and evaluation provide a standardised link and measure of success, noting that the relationship between policy implementation and expected outcomes and impacts is not clearly defined.

Monitoring refers to a continuous function that uses the systematic collection of data on performance indicators to inform ongoing developmental interventions as a component of evaluation. Evaluation involves the systematic and objective assessment of the intervention based on collected data and information, against a baseline and towards a target. Indicators are integral to monitoring and evaluation and represent criteria that provide an accurate and reliable means to measure progress and/or performance and reflect those changes as connected to an intervention. Noting the complexity of the water sector and the multi-sectoral orientation and management, the identification and selection of IWRM indicators must consider human and financial resources and capacity-building needs, responsible authorities and relevance to targets.

The GWP[2] stated that monitoring and evaluation involve the following:

- Monitoring the process of implementation. Defined by process indicators intended to aid in the assessment of implementable actions, including taking stock of the inputs used to achieve the actions
- Monitoring the outcomes of actions through outcome indicators that expand beyond the direct impact of the action and may include changes in policy, institutional frameworks and management instruments.

[1] Department of Water and Sanitation (DWS), 2017. Water Quality Management Policies and Strategies for South Africa. Report No. 4.3: Monitoring and Evaluation Framework. Water Resource Planning Systems Series, DWS Report No.: 000/00/21715/20. Pretoria, South Africa.
[2] GWP, 2006. Monitoring and evaluation indicators for IWRM strategies and plans. Technical Brief 3. https://www.gwp.org/globalassets/global/toolbox/references/monitoring-and-evaluation-indicators-for-iwrm-strategies-and-plans-gwp-2006-english.pdf

- Evaluating progress towards achievement of goals and objectives.
- Review and revision of monitoring and evaluation frameworks and stakeholder engagement and communication to inform decision-making.

Within the region, some countries possess national monitoring and evaluation systems or other coordinating mechanisms that combine measurement systems, data collection and management and reporting systems. National IWRM policies should integrate and align with these overarching frameworks, supporting a central but inter-sectoral and inter-departmental approach to monitoring and evaluation.

The development of the monitoring and evaluation framework for IWRM took into account existing monitoring and reporting modalities and systems while exploring opportunities to harmonise and integrate at all scales across sectors. The plurality of areas covered by IWRM supports multiple actors with defined mandates and sometimes unconnected monitoring systems and poorly integrated indicators. Thus, coordination is required to improve evaluation functions, which can be best addressed through the creation of a national monitoring and evaluation taskforce composed of active actors (defined in IWRM policy). National (appointed) focal points can serve on the regional taskforce with secretariat support from CARICOM. Alternatively, the region has an established water and wastewater authority association, which can proxy at the regional level through formal arrangements or recognition under CARICOM.

Monitoring and evaluation within the IWRM framework should support countries in their effort to achieve the SDGs, specifically target 6.5 “by 2030, implement IWRM at all levels.” Indicator 6.5.1, which is a measure of the degree of IWRM implementation should be seen as a strategic target complementing other national targets defined in IWRM policies or implementation plans. The monitoring and evaluation framework recognises the relationship between strategy, implementing instruments and associated monitoring levels and timescales, ensuring that short, medium and long-term, objectives are measured. It is expected that the iterative process will further shape the nature and scope of indicators associated with medium to long-term targets. Table 6 shows a sample strategic monitoring and evaluation framework inclusive of indicators and targets aligned to developmental goals.

Table 6: Strategic Monitoring and Evaluation Framework aligned to SDGs.

Outcome	Indicators	Targets	Source of Evidence
Aligned policy, legislation and strategy	The degree to which policy, legislation and strategy across different sectors include core concepts that underpin IWRM.	By 2030, national policy, legislation and strategy instruments for WRM incorporate concepts of IWRM.	Review of policy, legislation and strategy instruments; inter-departmental committees provide qualitative input.
Good governance strengthened	The degree to which joint and integrated decision-making is translated into strategy and implementation.	By 2030, all identified sectoral plans and strategies reflect IWRM as a key consideration in decision-making. By 2030, all sectors have regular engagement with Water Resources Authorities through intergovernmental platforms.	Review of policy, legislation and strategy instruments. inter-departmental committees (task force) provide qualitative input.
Efficient and effective IWRM practised	Improvement in the implementation of all priority components year on year.	By 2030, 50% of activities implemented.	National performance review report, Ministry and statutory authority annual performance reports.
Innovative financing secured	The level of funding/Financing of IWRM Investment Framework.	50% of IWRM Investment Framework initiatives are funded/financed.	Water Resources Authorities' financial analysis, Ministry and statutory authority annual performance reports.
Effective knowledge and information management enhanced	The level of improvement in the development of knowledge products.	By 2030, 50% increase in the development of IWRM knowledge products.	National Survey Quantitative assessments through the National monitoring and evaluation frameworks.

4.2 Sustainable Finance

Matthieu et al. (2010) contended that the sustainability of IWRM requires a clear policy framework for water financing, including the identification of financing sources and the definition of principles that guide financing and specification of the different economic and financing instruments. The sectoral connectivity and multi-level management of water resources require the use of diverse and varied financing frameworks. Based on the *user and polluter pay principles* the cost of water services should be recovered, noting that variability at the country level would require greater detail and sectoral analysis. The integrated nature

of water also places reliance on contributions from other economic sectors, particularly those dominants as water sinks. This signals the need for coherence between IWRM and other sectoral policies, for example, agriculture and how it is financed.

Assessing financing needs requires accounting for all costs and all sources of finance. Based on national circumstances and IWRM activity, different financing options are possible. Financing sources are mostly public, associated with national budgets, funded by taxes, with contributions from other traditional instruments including tariffs and transfers. Lindgaard-Jørgensen et al. (2012) highlighted the following additional mechanisms of public finance:

- Loans for infrastructure development from government or public development banks.
- External finance channelled through government.
- Public guarantees for commercial loans or private equity.
- Subsidies targeted at water users or specific service providers.

The application of the three Ts (i.e., taxes, tariffs and transfers), particularly tariffs, is mainly associated with user services and is limited in other elements of IWRM. Instruments targeting environmental issues, use efficiency and circularity are important considerations. Water reuse is a useful case, which can ensure a reliable and quality supply of water for sectoral stakeholders not requiring potable water quality. However, instrument specificity requires system analysis at the national level.

Because the bulk of finance for IWRM comes from public sources as part of a national allocation system, improving the effectiveness of allocations should be given priority. The criteria for allocations should be based directly on IWRM policy objectives aiming to decrease commonalities among different sector policies that integrate IWRM. Additionally, new sources of finance in instruments such as public-private partnerships (PPPs) should be negotiated and incentivised in agreement with the *cost recovery principle*. PPPs provide a valuable solution for increasing the investment capacity for water infrastructure

4.3 Development of Project Ideas

4.3.1 Preamble

Water is fundamental to sustaining life. Access to safe, affordable and reliable drinking water and sanitation services are basic human rights, and ensuring that these human rights are honoured heavily, relies on the management of available water resources. IWRM has been cited as a best practice for WRM globally as it "*promotes the coordinated development and management of land, water and related resources in order to maximise economic and social welfare in a manner that is equitable and does not compromise sustainability."* The approach is well suited for and easily adaptable to emerging and ongoing issues such as those discussed in Section 3.

4.3.2 Rationale

By virtue of their geophysical characteristics, vulnerabilities and development trajectory of the SIDS of the Caribbean, the need for robust WRM has become increasingly important. Notwithstanding, the review of the status of WRM in the Caribbean region revealed that the rate of implementation of IWRM in the Caribbean region was determined to fall under the "medium-low" rate of implementation bracket, with no significant progress between the year 2017 (baseline) and the first progress assessment conducted in 2020 (See Section 1).

The slow uptake of IWRM in the Caribbean has been attributed to several ongoing issues which include but are not limited to, weak or fragmented water resources governance (i.e., the legislative, policy and institutional environment), a lack of engagement and participation of civil society within the water sector, data limitations, a lack of financing for IWRM, weak regional governance of the sector, limited trained technical personnel, environmental challenges including climate change, poor land use planning, a lack of gender mainstreaming and limited monitoring and evaluation. The national and collective challenges faced by the countries of the Caribbean region are fully detailed in Section 2. It is, therefore, imperative for it to be crafted to address the prioritised issues outlined in this report in a pragmatic and holistic manner. The section below presents project ideas and concepts to achieve the overall outcome of increased IWRM uptake in the region by addressing current issues and creating a stable foundation for future IWRM.

4.3.3 Project Areas

Section 3 contains the IWRM framework that includes six strategic goals. Importantly, these goals are associated with five priority areas: (1) governance, (2) water allocation, use, quality, assessment, development and protection, (3) climate change, drought, flooding, disaster risk reduction, land use/land use change, (4) participatory management, gender mainstreaming, equitable access and (5) research and information exchange. This subsection contains project ideas based on each priority area.

1. Governance

Objective: To promote cross-sectoral interconnectivity and coordination between the various legal, policy and institutional mechanisms for water resource management at the national level

Proposed project interventions:

a. Conduct institutional review assessment to take stock of the strengths and weaknesses (including gaps and opportunities) of national institutions with responsibility for WRM and provide country comprehensive, country-specific recommendations for strengthening and streamlining national WRM, (2) provision of capacity-building on governance for water resources managers and technical personnel.
b. Strengthening the legislative, policy and coordinating mechanisms for IWRM– Provide legislative and technical expertise to support the development/update and/or harmonisation and enactment of national WRM (cross-sectoral) policies and legislation.
c. Decentralisation of governance: (1) support the capacitation of resource managers and users at the local level (e.g., training in best practices-methods and tools for facilitators in stakeholder management) for the active engagement of civil society organisation in water governance, (2) provision of support for the development and/or strengthening of existing civil society organisations within the water sector.

Expected outcomes:

d. Greater harmonisation of the legislative and policy environment for IWRM, i.e., a reduction in fragmentation, grey areas, gaps and overlaps.
e. Institutions with clear mandates, operating procedures, communication channels and increased coordination and collaboration between agencies for IWRM strengthened.
f. Inter-agency collaboration improved.

g. Decision-making of water resources managers and technical personnel on issues related to water governance and stakeholder management improved.
h. Equitable and inclusive decision-making within the water sector.
i. Capacity and involvement of civil society organisations to provide guidance on the governance of water resources improved.

2. Water Allocation, Use, Quality, Assessment, Development, Protection

Objective: To improve the quality and reliability of the water supply and distribution services

Proposed project interventions:

a. Infrastructure development: (1) Conduct resource mapping/regional assessment of water supply infrastructure and services to identify and map the causes of inefficiencies in the water supply, including sources of water loss (NRW), identify and map challenges of communities with no or low access to water, vulnerability/risk mapping to climate change and other environmental hazards and develop recommendations for improvement, (2) national needs assessment (e.g., inclusion of water resources assessment regarding surface water, groundwater quantification and abstraction), (3) revision of procurement protocols with recommendations for streamlining and regional bulk procurement.
b. Source Sustainability: (1) capacity-building on IWRM for cross-sectoral stakeholders involved in national development planning, (2) capacity-building for technical personnel and water resources managers, (3) National Diagnostic Centre/Laboratory is upgraded to provide high-quality water testing, data analysis and reporting aligned with established international standards/protocols.
c. Regional Standards: (1) development of regional water quality standards,
d. (2) provision of technical and legislative support to countries for the adoption and adoption of the regional standards

Expected outcomes:

e. Access to and availability of water resources to meet the national water demand increased
f. Water supply and distribution infrastructure/production and distribution systems optimised
g. National development and water use planning for water resources, supply and distribution improved

h. Water quality through enhancements in the national capacity for testing and water quality standards improved

3. **Climate Change, Drought, Flooding, Disaster Risk Reduction, Land Use/Land Use Change**

   Objective: To promote environmental sustainability and improve the resilience of ecosystems to external pressures

   Proposed project interventions:

   a. Sustainable Energy: (1) conduct a rapid assessment to determine the feasibility of incorporating RE into water production and distribution networks and cost-benefit economic analysis. (2) Support the uptake of renewable energy and/or hydroelectricity (where possible) to power operations, conduct energy audits to guide improvements in energy efficiency in selected facilities, and provide basic maintenance training for officers.
   b. Pollution prevention: (1) provision of technical support to countries to update their pesticide lists and provision of legislative and technical support to review and update national pesticide legislation and policies including guidelines for procurement, bringing them in line with international standards and conventions (MEAs), (2) provision of training to agriculture and forestry extension officers on the proper use and impacts of pesticides and suitable biopesticides, (3) provision of legal and technical expertise to develop and/or implement waste management guidelines for the tourism sector.
   c. Nature-based solutions: (1) Ridge-to-reef vulnerability studies, (2) ridge-to-reef demonstration project with a focus on nature-based solutions for biodiversity conservation, watershed protection, restoration and rehabilitation and PPPs.

   Expected outcomes:

   d. Carbon emissions and operational costs reduced through the utilisation of sustainable energy measures.
   e. Improved water quality through a reduction of land-based sources of pollution from the agriculture and tourism sectors.
   f. Ecologically sensitive areas are protected restored and rehabilitated.
   g. Increased public awareness and participation in conservation efforts.

4. **Participatory Management, Gender Mainstreaming, Equitable Access**

   Objective: To enable inclusive social and economic sustainability

Proposed project interventions:

a. Participatory management: (1) the development of a toolkit for ensuring inclusive and equitable engagement of all stakeholders from ridge-to-reef (ensuring gender mainstreaming and participation of marginalised groups), (2) the provision of capacity-building to government and civil society organisations to represent the interests of women and marginalised groups. Interventions geared to addressing gender equity should be cross-cutting and included in all elements of IWRM.

Expected outcomes:

b. Improved participation of women and marginalised/minority groups in IWRM.
c. Inclusive and equitable policies are developed and implemented.

5. Empowering Women, Youth and Indigenous Groups in IWRM

Objective: To promote inclusive and equitable participation of women, youth and Indigenous groups in IWRM decision-making and implementation processes

Proposed project interventions:

a. Conduct a baseline assessment to identify barriers and opportunities for the engagement of women, youth and indigenous groups in IWRM in the Caribbean region.
b. Develop a toolkit for ensuring inclusive and equitable engagement of women, youth and indigenous groups in IWRM planning, implementation and monitoring processes.
c. Provide capacity-building and leadership training for women, youth and indigenous representatives to effectively participate in IWRM decision-making bodies and processes.
d. Support the establishment of women, youth and Indigenous groups' networks and platforms for knowledge-sharing, advocacy and collaboration on IWRM issues.

Expected outcomes:

a. Increased understanding of the barriers and opportunities for engaging women, youth and indigenous groups in IWRM in the Caribbean region.
b. Enhanced capacity of women, youth and indigenous groups to effectively participate in IWRM decision-making and implementation processes.
c. Strengthened networks and platforms for women, youth and indigenous groups to advocate for their interests and collaborate on IWRM issues.

6. Strengthening Transboundary Water Cooperation in the Caribbean

Objective: To enhance transboundary water cooperation among Caribbean countries for sustainable and equitable management of shared water resources

Proposed project interventions:

a. Conduct a regional assessment of transboundary water resources, identifying key challenges, opportunities and priorities for cooperation.
b. Facilitate the establishment of a regional platform for dialogue and collaboration on transboundary water issues, involving relevant stakeholders from participating countries.
c. Support the development of bilateral or multilateral agreements on transboundary water management, setting out principles, objectives and mechanisms for cooperation.
d. Provide technical assistance and capacity-building to participating countries on transboundary water management, including data and information sharing, joint monitoring and dispute resolution.

Expected outcomes:

- Improved understanding of the status, challenges and opportunities for transboundary water cooperation in the Caribbean region.
- Establishment of a functional regional platform for dialogue and collaboration on transboundary water issues.
- Development and adoption of bilateral or multilateral agreements on transboundary water management among participating countries.
- Enhanced capacity of participating countries to effectively manage transboundary water resources through cooperation and collaboration.

7. Research and Information Exchange

Objective: To strengthen institutional capacity to generate and share IWRM-related knowledge/ information

Possible project ideas:

a. Institutional Strengthening/Standards Development: (1) provision of technical support for the development of standards for data management (e.g., collection, coding and classification), (2) capacity-building for technical officers on standards, (3) development/upgrading of a platform/mechanism (e.g., Water information management system) to facilitate access to water sector data by institutions and civil society (also see pillar 2–c).

Expected outcomes:

b. Standardisation of water data and information at the national level.
c. Improved access to water sector data and information.

d. Enhanced evidence-based decision-making for national planning and development.

CONCLUSION

Water is life. With many of the islands in the Caribbean region already facing some degree of water scarcity due to external threats, such as climate change and internal inefficiencies, ensuring the sustainability of the Caribbean region's water sector requires urgent action. Moreover, prudent management and the protection of water resources through the effective implementation of IWRM are indispensable to overall sustainable development in the region.

Currently, countries within the region are at different stages of development and practice regarding IWRM, due to institutional, financial, human and physical constraints. Additionally, WRM initiatives are, to a large extent, uncoordinated and unsustainable. It is crucial to recognise the importance of inclusive participation of marginalised groups, such as women, youth, and indigenous communities, in the decision-making processes related to WRM. Their unique perspectives, traditional knowledge, and stake in the sustainable management of water resources must be valued and incorporated into IWRM strategies and actions. Furthermore, for countries sharing transboundary water resources, such as the Dominican Republic, Belize, Suriname, Guyana and Haiti, it is essential to develop and strengthen cooperation mechanisms for the equitable and sustainable management of these shared resources. Transboundary water cooperation can help prevent conflicts, optimise benefits and ensure the long-term sustainability of water resources in the region.

The proposed regional IWRM framework seeks to address the challenges facing the sector through the promotion of the principles of IWRM while charting the way forward for a holistic and balanced approach to the management of water resources. Importantly, the framework calls for the effective participation of all stakeholders from government agencies to community and grassroots organisations to ensure the sustainability of actions. Several critical elements for ensuring success, including an enabling environment, data and information sharing, financial support, capacity-building and increased public awareness, have been outlined. Therefore, once there is political will and financial support for IWRM implementation at both the regional and national levels, significant changes to the current status of WRM are guaranteed. Importantly, monitoring and evaluation of the achievement of specific goals and the established milestones must become an institutional practice in the region. Moreover, given the implications of climate change (and specifically, global warming), taking no action is not an option. The time to act is now!

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