

DELIVERABLE 5



Action Framework for Integrated Water Resources Management (IWRM) for the CARICOM Region

Consultancy to Develop an Action Framework for Integrated Water Resources Management (IWRM) for the CARICOM Region

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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
ICWE	International Conference on Water and the Environment
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
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
TPA	Training and Public Awareness
UNCED	United Nations Conference on Environment and Development
UNEP	UN Environment Programme
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 2015 World Water Development Report asserts 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 (3) 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 where 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, the 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 more 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.

At the same time, indiscriminate use of forests and encroachment on protected areas of watersheds 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, acknowledged since the early 2000s.

Even in places where water is physically available, there sometimes is a lack of the necessary legal and institutional framework and infrastructure 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 the Latin America and Caribbean Region nor 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 at the same time 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.

As per the results from the latest (2020) monitoring and reporting on SDG Indicator 6.5.1, it was determined that globally, the average score of IWRM implementation was 54% (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). As the CARICOM Region is vulnerable 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 (4) interconnected components:

1. Development and implementation of integrated targeted innovative, climate-change resilient approaches in Sustainable Land Management (SLM), Integrated Water

Resources Management (IWRM) including Water Use Efficiency (WUE), Integrated Coastal Zone Management (ICZM) and maintenance of ecosystem services.

2. Strengthening of the SLM, IWRM and Ecosystems Monitoring, and Indicator's 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 (policy & legislation), which falls under the development of a Regional Action Framework for Integrated Water Resources Management (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 Integrated Water Resources Management (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 the year 2017 (baseline) and the first progress assessment conducted in 2020. This level of implementation is due mostly 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 Integrated Water Resources Management (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 objectives of the consultancy are listed as follows:

1. **To develop a Regional Action Framework for Integrated Water Resources Management (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 ten (10) IWEco participant member states (Antigua and Barbuda, Cuba, Dominican Republic, Grenada, Saint Lucia, Saint Kitts and Nevis, Saint Vincent

and the Grenadines, Barbados, Jamaica, and Trinidad and Tobago) 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 (energy, climate change, disaster risk management, tourism, agriculture, public health, among others) 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 IWRM Regional Framework.

After an intensive desktop review and national consultative process (where the main challenges of IWRM at the national and regional levels were identified and discussed), the Conceptual Framework of IWRM was developed with the following Vision, Mission, and Primary Objective:

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

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

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

For regional attention and execution, focus is given to **four (4) priority areas** (Policies, Regulations and Plans; Institutional Frameworks; Management and Technical Instruments; and Financing). Prioritising the framework's above-mentioned 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 (3) of the four (4) 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. Therefore, adequate mechanisms for bi-directional information sharing and communication are crucial.

4. The preparation of the Draft Regional IWRM Framework recognised the guiding concepts emerging from discussions at the international conferences. These concepts coincide 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 in order to maximise economic and social welfare in a manner that is equitable and does not compromise sustainability (World Water Council, 2015; GWP, 2021).

Emerging Principles of IWRM

There has been a gradual transformation in expectations for water resource management. Prior to IWRM, economic growth and development generally followed water infrastructure construction once rivers and natural hydrology were tamed. Stakeholders benefitted from lower risks, more wealth and better health as benefits seemingly outweighed costs and any lost rights. There was centralised, top-down control with water resource development vested in government bureaucracies and justified by both calls to action of political leaders and 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 that was attended by water experts and international, intergovernmental, and non-governmental organisations. Keynote papers from the conference describe 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 (6) 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 undertaking the path to adopt 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:

Principle 1: Water is a finite and vulnerable resource

Freshwater is a finite and vulnerable resource, essential to sustain life, development, and the environment (Kanda, 2021). This principle seeks to highlight the many different purposes, functions and services for which water is required. Noting this, management must be holistic, and consideration given to the respective sectoral and environmental demands placed on the resource and the associated threats to it.

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 in that 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, empowers individual interest groups and is 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.

Principle 3: Role of women

Women play a central part in the provision, management and safeguarding of water. Despite the acknowledgment 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 when compared to 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 management and sustainability of water resources, as it allows for distinct perspectives to be considered (IRC International Water and Sanitation Centre, 2004).

Principle 4: Social and economic value of water

Water is a public good and has a social and economic value in all its competing uses. Managing water as an economic good is crucial towards achieving social objectives, such as efficient and equitable use, and of encouraging 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 (4) 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, in terms of 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.

As 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:

- 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
- Good basin level knowledge of natural resources
- Comprehensive monitoring and evaluation

Before embarking on the IWRM process, the context should be assessed 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 in terms of 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 through 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. As 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 political will and leadership from the top leaders, as well as stakeholders.** As the IWRM concept challenges existing ways of doing things, building awareness, and understanding of the needs for change and the potential solutions among the highest political decision-makers, managers, practitioners, and other stakeholders is needed. Commitment from stakeholders is necessary, as 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.

As awareness raising and multi-stakeholder involvement are critical to the success of IWRM planning processes, it is necessary to put in place a communication strategy on 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 adaption of best management practices to reflect local conditions.

Having recognised the need for an IWRM approach, the fostering of political will and commitment for 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 socio-economic 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.

In the following table, the phases, and steps of IWRM are listed:

Table 1: Phases and steps of IWRM implementation

Steps	Phase
<ul style="list-style-type: none"> • Issue identification • Detailed planning and coordination • Development of strategic planning instrument(s) • Revision and validation of instrument(s) 	Conceptualisation Phase
<ul style="list-style-type: none"> • 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 the individual or multiple competing human-related economic, social, and demographic factors. These drivers of change: governance, demography, land use, economy, social conditions, technology and 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.
- Promotion of the pursuit of better solutions that adapt 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.

2.2 Advancement of IWRM in the Region: A Summary

2.2.1 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 Caribbean Community (CARICOM), a significant regional entity, is working in favour to acquire a more comprehensive influence on 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.

In the longer term, 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. 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 Global Water Partnership-Caribbean (GWP-C), the Caribbean Water and Wastewater Association (CWWA), and the Caribbean Water and Sewerage Association Inc. (CAWASA), have also been involved in initiatives in the region.

Regional bodies tend to focus their attention 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 re-ordering the national level institutional framework.

One such intervention, the Global Environment Facility's (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. This provided a platform to aid IWRM implementation and specifically the Land-Based Sources and Activities Protocol (LBS Protocol) of the Cartagena Convention. Notably, the development of the Regional Strategy and Action Plan for the Valuation, Protection and/or Restoration of Key Marine Habitats in 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 (SPA) Sub-Programme of the United Nations Environment Programme (UN Environment) - 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 (RSAP) (IDB, CWWA, UNEP, PAHO, 2019).

The Toolkit was designed for technocrats, policymakers, planners, developers, and legislators and provided model examples and laws, including legislative drafting guidelines for the GEF-IWCAM project. In addition, national and sub-national 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.

More recently, in 2012, the Secretariat of the Organisation of Eastern Caribbean States (OECS) commissioned the development of a model water policy and legislation on behalf of its Member States. The two (2) model documents are based on IWRM principles and incorporate climate change and LBS Protocol to address the issue of pollution control.

In addition, they 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

Multilateral Environmental Agreements (MEAs)	Regional Guidance Documents
<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 • Organisation of Eastern Caribbean States (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).

2.2.2 National Setting

Within the Region, there is a continuum of progressive forms of water policies, laws, and institutions. There have been, for some states, substantial changes in water governance in line with the prevailing thinking advocated by such bodies as UN-Water and the Global Water Partnership (GWP). For most, 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 respective governments' policy-making frameworks.

The Central Government of each country, via ministries or deconcentrated 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 (1) ministry spearheads policymaking for the water sector in Barbados. Sub-national 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. Sub-national development is adversely impacted as opportunities to maximise efficient and effective cross-sectoral public services is 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 sub-national 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 good 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 from centralized 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 and 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, Jamaica, Antigua and Barbuda, Grenada, and Saint Kitts and Nevis are also faced with the problem. 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 post-colonial 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. While 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.

For states with underdeveloped water legislation, although attempts have been made to adopt water resource legislation to address the array of issues in the water sector, their water governance system has 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 is dispersed across and within a number of 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 for the most part and insufficient, if not absent. In Saint Vincent and the Grenadines, there is no water resource management policy or legislation that defines and elaborates the management of water resources. Legal provisions for the development of water resources is 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, 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 a degree of independent oversight and evaluation of tariffs, the responsible Ministry does have the final say when it comes to approving any tariff adjustments.

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 Minister responsible, with the last water price reviews conducted in 2007 yet to be adopted.

Grenada is also moving towards a system of oversight. 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.

2.2.3 Regional Progress in Implementing Integrated Water Resources Management

A stakeholder mapping exercise was carried out in the ten (10) participating countries under the Integrating Water, Land and Ecosystems Management in Caribbean Small Island Developing States – IWECO Project (Antigua and Barbuda, Cuba, Dominican Republic, Grenada, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Barbados, Jamaica, and Trinidad and Tobago). The stakeholders identified the level of power and interest of a wide range of institutions, from public sector agencies that are local, and 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 ten (10) stakeholder maps, one (1) for each beneficiary country. The information in the maps was illustrated utilising the Interest/Power Matrix. On one (1) 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 (1) of the following groups based on their position: keep satisfied, manage closely, monitor, and keep informed.

In Antigua and Barbuda, most of the stakeholders identified 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 managed closely also came from the public sector. The same can be inferred for Saint Vincent and the Grenadines 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 majority of the countries listed, with most of the stakeholders coming from the public sector to be managed closely, and thus having a strong interest and power in the implementation of IWRM in their respective countries.

The information collated and analysed, indicates that the public sector is the critical stakeholder in the ten (10) participating IWEco countries (Antigua and Barbuda, Cuba, Dominican Republic, Grenada, Saint Lucia, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Barbados, Jamaica, and Trinidad and Tobago). 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 of IWRM being 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. A good 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. Capital expenditure on infrastructure is mainly financed externally, through traditional financial instruments such as loans.

Deficiencies in the enabling environment, institutions, and participation (including stakeholder engagement), management instruments, and financing are present at national level within 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 engendering 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).

As a case in point, all of 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, and Jamaica. Overlap of responsibilities, resulting in duplication of effort and loss of financial resources is common to all countries as well. In the Dominican Republic, stakeholder feedback indicated that the legal and policy framework for water management in the Dominican Republic is outdated.

Additionally, that it is in urgent need of an update, as 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 country (The Republic of Cuba), the scenario is different. The Republic of Cuba scored 70/100 (Medium-High) in their enabling environment and UNEP (2017) notes that the Cuban government has a robust policy framework established and implemented in support of IWRM. It is noteworthy that 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, have developed comprehensive policies and plans which recognise water governance, legal instruments, inter-agency co-ordination and collaboration, planning, economic development, environmental management, participatory approaches, education, research and information management and climate adaptation instruments. However, in most cases, implementation of these policies and plans remain a concern. 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, policy, and monitoring.

Cashman et al (2014) described this integration of water, land, the environment, and climate change under the remit of one (1) clearly defined ministry, as an integrated approach to water management, serving as a leading example for many Caribbean SIDS. Such decisions allow for activities which 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 ecosystems.

2.3 Cross-Cutting Issues in IWRM: A Regional Perspective

2.3.1 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 draws upon the inter-dependencies of economic growth, health, equity and poverty reduction, education, ecosystem services, energy and food security and water resources, while accommodating and addressing any emerging or intensifying vectors for change in water management such as climate change, the water, energy and food security nexus, population growth and demographic change and calls for the greening of growth. This is achieved through coordinated policy and regulatory frameworks, management arrangements and financing.

In addressing IWRM, climate change, disaster risk management, sustainable development and the role of women must be recognised as cross-cutting themes and incorporated in policy and implementation plans. 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 aimed at identifying the progress on these critical issues related to IWRM in their respective countries.

2.3.2 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 to 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 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 of exposure to climate extremes in the Caribbean SIDS (Stennett-Brown, Sthepenson, & Taylor, 2019). This issue was also considered during the 2nd National Stakeholder Consultation to Discuss the Draft IWRM Conceptual Framework.

2.3.3 Gender 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, where it 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 on rural women and to ensure the specific health and social needs of both men and women are identified and addressed (FAO, 2021).

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 Integrated Water Resources Management 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.

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 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.

Cuba employed measures to ensure that people in vulnerable conditions (low-income people, women, disabled, elderly) are not discriminated against in access to drinking water and sanitation, whilst 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 being 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.

2.3.4 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 the nations' water resources. Saint Lucia sees similar pollution threats as there is currently only one (1) 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 (3) 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 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 the year 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).

2.3.5 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, *Why isn't IWRM working in the Caribbean?*, 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 Future Water Resources Management Challenges

2.4.1 Water Availability, Stress, and Access

All ten (10) 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 topography, tended to be slightly less water-scarce due to higher precipitation levels. These countries generally utilise surface water (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 water resources management (policy environment, finance, capacity, infrastructure etc.) and the impact of climate change events. All countries reported high levels of access to municipal water supply for domestic and sanitation purposes.

2.4.2 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 to 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 6-10%. Flooding is expected to increase from severe rainfall events. Groundwater is expected to see decreases up to 5% by 2039. These predictions are worrisome, as Jamaica depends heavily 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.

2.4.3 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).

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 long-term (Mekonnen, Pahlow, Aldaya, & Zarate, 2015). It is suggested for countries to enhance their water productivity in order to produce more with the limited natural resources, hopefully allowing more to be shared regionally in the future.

Non-Revenue Water

Non-Revenue Water (NRW) is a challenge that produces losses estimated to be 32 billion cubic meters per year globally (The 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 percent. 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, it is safe to state that 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.

Rainwater Harvesting

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, Financing Domestic Rainwater Harvesting in the Caribbean, 2017). DRWH projects have been implemented with various degrees of success. A recent study in the region identified the following as the top six (6) 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 literature reviewed, it is safe to state that it is expected that there will be an increase in DRWH projects in the Region (The World Bank, 2020).

Reform of Water Governance

Governance systems, including institutional arrangements at the national and regional level, are essential elements for 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 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 (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 re-organisation of institutional arrangements towards identifying or establishing a coordinating entity with principal focus on IWRM was noted as one (1) of the major institutional factors that could improve coordination at the national level. Expansion of public-private partnerships (PPPs) as a means of enhancing water and sanitation service is also crucial in terms of sustainability and financing; two (2) key areas that required 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.

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, Costanza, Anderson, Kubiszewski, & Sutton, 2020).

Recent studies have shown 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, Trilleras, Castellarini, & Quijas, 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 Caribbean Community’s quest for sustainable development and a climate resilient future, as guided by the United Nations Sustainable Development Goals (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 integration, 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 in spite of 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 Caribbean Community.

This Framework aims to promote an enabling environment for IWRM in the Caribbean Community, as it acknowledges the sensitive and susceptible nature 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 Caribbean Community. 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 point source and non-point source pollution of water, 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 Integrated Water Resources Management model that ensures water security for the CARICOM SIDS.”

Mission

“To develop a Regional IWRM framework that promotes sustainable water governance by creating an enabling environment and building climate and disaster resilience for 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 Integrated Water Resources Management (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 (6) 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 and Indigenous knowledge towards improved water resources management.
- Strategic Goal 4:** Guide the development or strengthening of an independent, overarching water resources entity to govern inter-agency coordination and oversight at the national level, and cooperation at the regional level.
- Strategic Goal 5:** Strategise the introduction of water information systems, with monitoring and evaluation mechanisms to improve data collection, sharing and access at the national and the regional levels.
- Strategic Goal 6:** Identify and facilitate the implementation of sustainable financing mechanisms.

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. 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 (2) regional guidelines and five (5) 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.	Number of and documentation of regional guidelines and communication products.	GWP-C Technical Committee (TEC), 5Cs, The Media, the Basel Convention Regional Centre for Training and Technology Transfer for the Caribbean (BCRC-Caribbean), PAHO	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 (2) regional workshops are held, and eighty (80) water personnel receive training in water efficiency.	Better overall management and improved efficiency in the water sector.	Number of training workshops and number of recipients of the training.	CARICOM Secretariat, OECS Secretariat, national water resources agencies, CAWASA, CWWA	400,000
		3. Promote the use of renewable energy as a measure to reduce operational costs and emissions during water.	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 (4) 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, 5 Cs, CCREE, 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 of a concept note, together with project proposal to climate proof the water sector and increase efficiency measures in at least four (4) selected countries.	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.	5Cs, water resource management agencies within selected countries, World Bank's Global Facility for Disaster Recovery and Reduction (GFDRR), CDEMA, CAWASA, Extreme events in the water sector add The Caribbean Institute for Meteorology and Hydrology (CIMH)	30,000
		5. Develop guidelines and communications material to engage and promote water efficiency measures within the agriculture sector for irrigation, livestock production, fisheries, and aquaculture.	Regional guidelines and three (3) different communication materials on measures to engage and promote water efficiency measures within the agriculture sector for irrigation, livestock production, fisheries, and aquaculture are developed and publicly disseminated.	Water efficiency measures are adhered to within the agriculture sector for irrigation, livestock production, fisheries, and aquaculture.	- Number of guidelines and communications materials prepared and disseminated. - Level of efficiency (related to water use) within the agriculture sector.	5Cs, OECS, agriculture ministries, Caribbean Centre for Renewable Energy and Energy Efficiency	30,000

		6. Develop guidelines and communications material to engage and promote water efficiency measures within the tourism sector.	Regional guidelines and three (3) different communication materials (e.g., for tourists, tour operators, hotel owners) and prepared and disseminated to the stakeholders to promote water efficiency measures within the tourism sector.	There is greater level of efficiency of water usage within the tourism sector	<ul style="list-style-type: none"> - Number of guidelines and communications materials prepared and disseminated. - Level of efficiency (related to water use) within the tourism sector. 	GWP-C, CARICOM Secretariat, CTO, tourism agencies at the national level, Caribbean Centre for Renewable Energy and Energy Efficiency	30,000
1.1.2 To strengthen and enforce pollution regulations and management.		1. Assist countries to identify (through testing), map the usage of and prioritise acutely hazardous chemicals used in watershed areas for urgent control. - Agriculture sector	Identification, mapping, and prioritisation of hazardous chemicals that are currently used but pose risks to watersheds in 80% of CARICOM countries.	A priority list of hazardous chemicals that threaten watersheds at the national level.	Number of countries with documentation on prioritised hazardous chemicals	CARICOM Secretariat, OECS Secretariat, agriculture ministries/agencies at national level, FAO, CARDI, UNEP Cartagena Convention Secretariat	500,000
		2. Assist countries to review and update their lists of registered pesticides and toxic chemicals and prior. - Agriculture sector	Financial and technical support to all CARICOM countries to update their lists of registered pesticides and toxic chemicals, and to prioritise them.	All CARICOM countries have updated registers of pesticides and toxic chemicals that are also prioritised.	Type and level of financial and technical support provided and received and number of countries and recipients of support.	CARICOM Secretariat, OECS Secretariat, agriculture ministries/agencies at national level, FAO, CARDI, UNEP Cartagena Convention Secretariat	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 agro-chemicals and waste, (4) mechanisms for successful community engagement (5) measures for the reduction of saline intrusion (6) monitoring and evaluation of measures implemented etc. - Agriculture sector	<ul style="list-style-type: none"> - At least regional one (1) 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 technical management user level. 	<ul style="list-style-type: none"> - There is increased awareness and capacity at the technical management user level with regard to pesticides and toxic chemicals. - There is increased awareness and capacity at the technical management user level with regard to pesticides and toxic chemicals. 	<ul style="list-style-type: none"> - 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 Secretariat, agriculture ministries/agencies at national level, FAO, CARDI, UNEP Cartagena Convention Secretariat, UNEP CAR/RCU	300,000
		4. Assist countries to model national legislation and guidelines to which will bring them in line with international standards and chemical conventions (e.g., the Stockholm, Rotterdam, and Basel Conventions). - Agriculture sector	Financial and technical support is provided to all CARICOM States to review and revise their legislation guidelines in accordance with international standards and chemical conventions (e.g., the Stockholm, Rotterdam, and Basel Conventions).	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).	<ul style="list-style-type: none"> - 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 Secretariat, agriculture ministries/agencies at national level, FAO, CARDI, UNEP Cartagena Convention Secretariat	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. - Tourism sector	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 Secretariat, CWWA, CTO, national tourism agencies, UNEP Cartagena Convention Secretariat, UNEP CAR/RCU	200,000

		6. Leverage regional goodwill and presence to collaborate with other agencies such as the UNEP CEP to provide support to countries through programme development and implementation. - Tourism sector	Collaborative programme development and implementation through signed and functional MOUs.	Greater level of support is available through collaborative programme development and implementation.	Number of MOUs signed, and number of programmes developed and implemented.	CARICOM Secretariat, UNEP CEP, 5Cs, CCREE, GWP-C, UNEP Cartagena Convention Secretariat, UNEP CAR/RCU	-
	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 aimed 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.	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	-
		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 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.	Number of countries that have developed harmonised ridge to reef resources management.	GWP-C TEC, OECS, CARICOM Secretariat	200,000
		3. Build awareness and promote nature-based solutions for ecosystems management at the national and Regional level.	A comprehensive public awareness programme is developed and implemented in all CARICOM States to promote nature-based solutions for ecosystems management at the national and regional level.	Higher level of awareness and sensitivity to nature-based solutions for ecosystems management.	Number of countries in which the public awareness programme is implemented and 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.	A regional pilot project proposal is developed to mobilise/access resources and for field implementation of nature-based interventions including protection, restoration, and rehabilitation of key areas in 3 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, 5Cs, IDB, GEF	60,000
		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.	Water resources management 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, CARICOM Secretariat, natural resource agencies	100,000
	1.1.4 To protect and manage water resources through coordinated evidence-based 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 sectors all CARICOM States.	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.	5Cs, UWI Climate Modelling Group, national climate change agencies or units, sector agencies within each country	200,000
		2. 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.	Ridge to reef vulnerability studies and water value chain assessment through training workshops, is as 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.	5Cs, 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 water resources management through the 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.	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.	At least 75% of countries within the CARICOM 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.	A reduction in overlaps, duplication, and conflicts among ministries / agencies / department/unit that directly or indirectly.	Number of countries that have revised mandates of ministries / agencies/ department/unit that directly or indirectly with water resources management at the national level	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 watershed and protecting key ecosystems (forests, water, biodiversity etc.)	Conduct national assessment of 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 protecting key ecosystems (forests, water, biodiversity etc.)	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 watershed and protecting key ecosystems (forests, water, biodiversity etc.)	Greater management and protection of watersheds.	Number of countries that have revised land tenure practices within critical watershed areas and develop, revise, and enforce land use and land use policies	300,000
	1.1.5 To minimise damage and losses to critical infrastructure and other assets from climate change, natural hazards, and disasters.	1. 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 and building infrastructure to withstand a Category 5 hurricane, increasing national and household level water storage facilities for drought events, planning for sea level rise, exploration of alternative technologies and water sources (ground water exploration/desalination).	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 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.	CDEMA, CARPHA, CARICOM, 5Cs, GWP-C, CWWA, water utilities companies	5,000,000
		2. Assist countries to develop, enact and/or enforce drought and flood management plans for the water sector.	Financial and technical support is provided to CARICOM countries for which there exist no drought and flood management plans for the water sector.	Droughts and floods are better managed, especially in the water sector.	Number of countries as recipients of support and type of support provided.	CDEMA, 5Cs, national disaster management agencies, national UNFCCC focal points, Caribbean Institute for Meteorology and Hydrology (CIMH), World Bank's Global Facility for Disaster Recovery and Reduction (GFDRR)	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 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, Caribbean Institute for Meteorology and Hydrology (CIMH), World Bank's Global Facility for Disaster Recovery and Reduction (GFDRR)	1,000,000

<p>1.1.6 Facilitate and support a Regional assessment of wastewater 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 areas and groups most affected by the lack of access, quantify (in monetary terms) the impact of improper waste-water disposal on human and environmental health including interactions with key economic sectors (tourism, agriculture etc.) and develop recommendations for improvement.</p>	<p>1. Procure critical equipment (in bulk) necessary for improved efficiency of wastewater treatment facilities and infrastructure.</p>	<p>National needs assessment reports and procurement documents on critical equipment are prepared.</p>	<p>Reduced fragmentation and efficiencies within water sector at the national level, as it relates to procurement of equipment, plus more reliable water services</p>	<p>Number of countries with procurement lists prepared at national level.</p>	<p>Water utility companies at the national level</p>	<p>To be determined</p>
	<p>2. 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.</p>	<p>All targeted countries develop / improve / update and enact national wastewater policies, strategies, and management plans.</p>	<p>Wastewater is managed more effectively and efficiently.</p>	<p>Feedback on water services reliability from stakeholders. Number of countries with functional national wastewater policies, strategies, and management plans</p>	<p>CARICOM Secretariat, OECS Secretariat Water resources agency, CWWA, UNEP Cartagena Convention Secretariat, GEF-CReW+ IDB</p>	<p>300,000</p>
	<p>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 etc. from within the Region and the international community.</p>	<p>Institutionalisation and operationalisation of a regional forum on IWRM to facilitate sharing of information, experiences etc. by water sector stakeholders at all levels.</p>	<p>Increased knowledge and information exchange, plus networking among water sector stakeholders regionally and internationally.</p>	<p>Documentation on the institutionalisation of the regional forum; plus, reports on each meeting</p>	<p>CARICOM Secretariat, OECS Secretariat, National Water Resources agencies, GWP-C, GEF-CReW+</p>	<p>50,000</p>
	<p>4. Build capacity annually for Wastewater Resources Managers and Technical personnel.</p>	<p>At least one (1) regional capacity building activity is implementation each year and targets Water Resources Managers and Technical personnel at the national level.</p>	<p>National Water Resources Managers and Technical personnel have enhanced knowledge and skills in water resources management.</p>	<p>Level or increase of capacity of after each annual capacity building activity.</p>	<p>CARICOM Secretariat, OECS Secretariat, national IWRM agencies, GWP-C, UN agencies, UNEP CAR/RCU, GEF-CReW+, IDB</p>	<p>750,000</p>
	<p>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 marginalised groups/areas etc.</p>	<p>At least 75% of CARICOM States have included the water sector in their national development planning, using robust data and participatory approaches.</p>	<p>National development plans for the water sector are reflective of demographic and environmental changes.</p>	<p>Number of countries that have established a national development planning process with specific reference to the water sector, plus reports on impact.</p>	<p>National planning agencies, water agencies, other national stakeholders, research institutions (nationally and regionally), 5Cs, CIMH, IDB</p>	<p>-</p>
	<p>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.</p>	<p>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 interventions and developments in all CARICOM States.</p> <p>Greater uptake of climate proofing and climate resilience of national water supply and distribution infrastructure and future interventions and developments.</p> <p>Number of countries that have implemented the guidelines and standards</p>	<p>Greater uptake of climate proofing and climate resilience of national water supply and distribution infrastructure and future interventions and developments.</p>	<p>Number of countries that have implemented the guidelines and standards</p>	<p>CDEMA, CARPHA, CARICOM, 5Cs, GWP-C, CWWA, water utilitiescompanies, Organisation of Caribbean Utility Regulators (OOCUR), IDB</p>	<p>See Specific Goal 1.1.5</p>

	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 implementation 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 water resources management.	Number of countries as recipients of annual capacity building activity.	CARICOM Secretariat, OECS Secretariat, 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.	A selected regional diagnostic facility is established.	An established and functional regional diagnostic facility.	CARICOM Secretariat	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 revised and amended to reflect international standards.	Internationally acceptable water quality standards implemented in CARICOM.	Number of amended regional water quality standards.	CROSQ and OECS	30,000
		4. 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).	National water quality standards revised and amended to reflect regional and international standards in at least 80 % of CARICOM States.	Internationally and regionally acceptable water quality standards implemented at the national level.	Number of amended national water quality standards.	CROSQ and environmental agencies or other national entities (e.g., National Bureau of Standards)	240,000
		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 centralised.	Established/strengthened regional water information hub	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 ground water 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 ground water protection.	CARICOM Secretariat, 5Cs, OECS, Secretariat, and national water resources management agencies	250,000
		7. Facilitate and support the improvement and implementation of wastewater policies and management plans.	Financial and technical support given to all CARICOM States for the improvement and implementation of wastewater policies and management plans.	Wastewater policies and management plans are implemented in all CARICOM States.	Number of countries that have implemented wastewater policies and management plans.	Caribbean Water and Wastewater Association (CWWA), national water resource management agencies, IDB	350,000

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,	2.1.1 To promote/facilitate the development of national policies that clarify and clearly outline the roles, responsibilities, 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.	CARICOM Secretariat, GWP-C, OECS Secretariat, GWP-C National Partners	-

policy and institutional mechanisms for water resource management at the national level.	function of each institution within a tiered system of decision-making, with a view to harmonising and consolidating the governance framework for IWRM.	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 ensure that the Integrated Water Resources Management plan is implemented efficiently.	At least 80% of current IWRM policies for implementation, at the national level, are developed, finalised, or enhanced.	Implementation of IWRM at the national level within the context of the IWRM policies.	Number of countries with written national IWRM policies.	CARICOM Secretariat, GWP-C, OECS Secretariat, GWP-C National Partners	250,000
		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 are implemented under national IWRM policies.	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, 5Cs, 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, 5Cs, GWP-C, OECS Secretariat, National Governments	-
		2.1.2 To create 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, etc. 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.	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
		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.	At least 75% of countries within the CARICOM 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.	A reduction in overlaps, duplication, and conflicts among ministries / agencies / department/unit that directly or indirectly.	Number of countries that have revised mandates of ministries / agencies/department/unit that directly or indirectly with water resources management at the national level.	CARICOM Secretariat, Ministries of Legal Affairs, national water agencies	200,000
		3. Provide support for periodic review and updating of the national legal framework to support effective IWRM implementation.	All CARICOM countries with revised/enhance/modernised national legislative framework to support IWRM implementation have made a visible commitment to conduct period reviews.	Existence of a culture of review and update of IWRM policies.	Number of CARICOM countries that held national consultations as part of on 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.	Type and level of support provided.	CARICOM Secretariat, OECS, Ministries of Legal Affairs, national water agencies, UNEP Cartagena Convention Secretariat	650,000

Strategic Goal 3: Promote knowledge-based participatory approaches that incorporate, Traditional Ecological Knowledge (TEK) or Local Ecological Knowledge (LEK), /nature-based solutions, the role of women and Indigenous knowledge towards improved water resources management.							
Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
Specific Goal 3.1: Improve the quality of 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, 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.	Number of gender sensitive and inclusive strategies created and implemented in the Region	CARICOM Secretariat, OECS Secretariat	120,000
		3. Assist countries to achieve gender balance in the number of mid and high-level management and technical positions within the water sector.	Provision of opportunities and technical and financial support for capacity building for more women within the water sector to all countries within CARICOM.	There is gender balance in the number of mid and high-level management and technical positions within the water sector.	Number of women who occupy mid and high-level management and technical positions within the water sector at the national level.	CARICOM Secretariat, OECS Secretariat, 5Cs, tertiary institutions in CARICOM, GWP-C, UN agencies	250,000
	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, 5Cs, 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, 5Cs, 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 status of water resources, risks, impacts etc.	CARICOM Secretariat, OECS Secretariat, 5Cs, 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, processing of water resource data and methods / procedures for collection at the national level.	Standardisation of coding, classification, 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, 5Cs, national water resource management agencies	30,000

		6. 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.	Institutional practice of exchange of data and information on water resources among stakeholders. See information hub.	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	-
		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
Specific Goal 3.2: Enable an 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 conversation on water resources management.	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 water resources management.	Guidance document on stakeholder mapping and engagement within the Region and report on stakeholder mapping and engagement processes on water resources management within the Region.	CARICOM Secretariat and OECS Secretariat, CARPHA, GWP-C	20,000
		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 Secretariat, CARPHA, GWP-C, national water resources management 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 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
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 water resources management, 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 with regard to 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, GWP-C	20,000
		2. Encourage and support the establishment/strengthening of decentralised systems such as Water Users Associations and Community-based water groups to help operationalise IWRM.	A publicly visible established national entity with 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.	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, multi-disciplinary Technical Unit such as a National Water Council, comprising technical personnel representative of key stakeholder institutions involved in water resources management, with responsibility for decision making, and for supervising all activities within the water sector in an integrated manner.	At least 80% of CARICOM states have established National Water Councils with 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 (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.	At least 80% of CARICOM States have reviewed, revamped, and restructured and strengthened (where appropriate) the roles and functions (regulatory versus operational) of water related agencies.	Separation of regulatory and operational functions of national entities with responsibility for water resource management for effective IWRM implementation.	Number of countries that have reviewed, revamped, restructured, and strengthened the revised roles and functions of the national entities created.	CARICOM Secretariat, Ministries of Legal Affairs/National Governments, Organisation of Caribbean Utility Regulators (OOCUR)	200,000
		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.

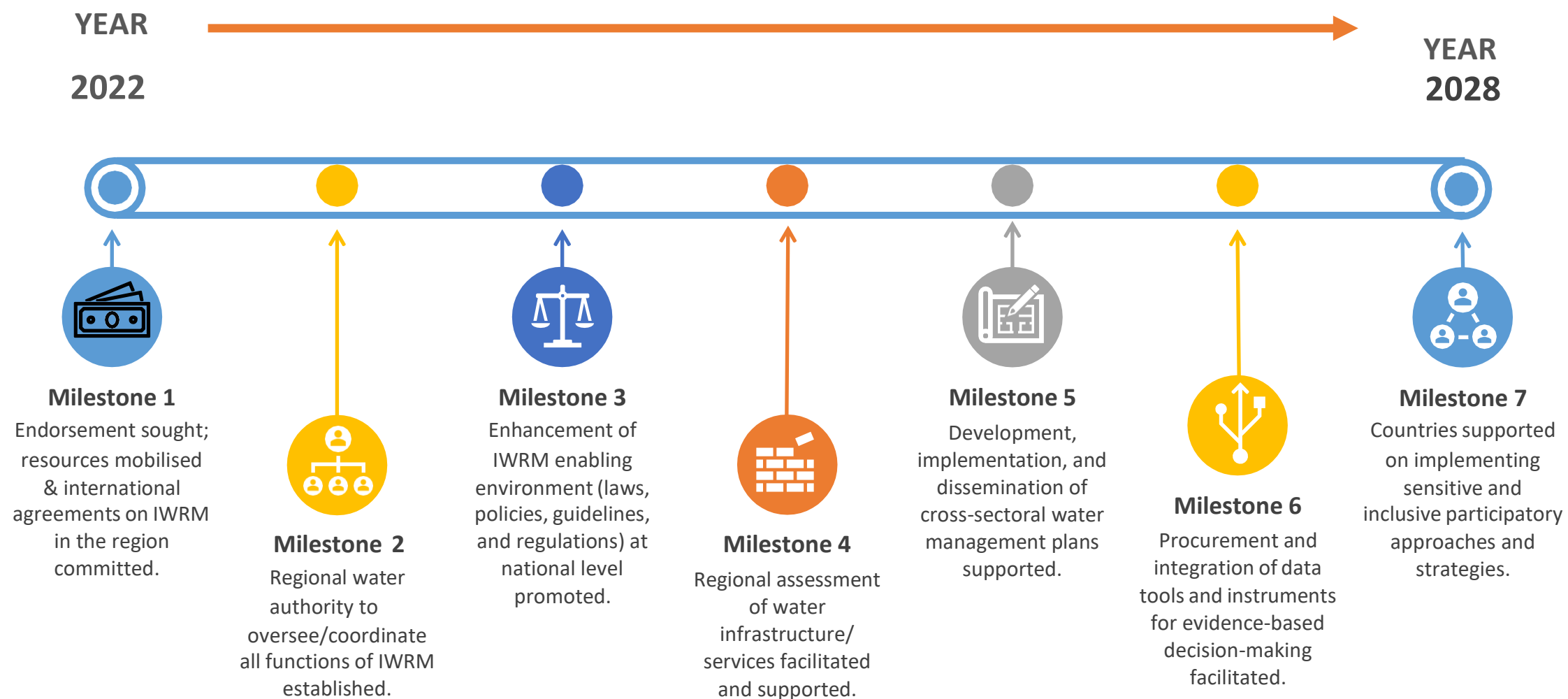
Specific Goals	Objectives	Activities	Output Targets	Outcomes	Output Indicator/s	Collaborating Partners	Financial Resources Required (USD)
Specific Goal 5.1: Strengthen institutional capacity to generate and share IWRM related knowledge/information.	5.1.1 To increase regional and national research output on water resources, including hydrology, climate change impacts, risk modelling, 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.	5Cs, The UWI, UG, GWP-C TEC, other research institutions within the Region, Caribbean Institute for Meteorology and Hydrology (CIMH)	20,000
		2. Establish networks among tertiary institutions engaged as a 'scientific water community' in research on water resources.	A Regional Network 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.	5Cs, The UWI, UG, GWP-C TEC, other research institutions within the Region, UNEP Cartagena Convention Secretariat, Caribbean Institute for Meteorology and Hydrology (CIMH)	50,000
		3. Develop and provide support for an IWRM research programme and a system for monitoring performance over time.	An established participatory and comprehensive IWRM research programme with an accompanying monitoring framework.	Increased research outputs on and utility of water resources and water resource management issues.	Number and type of IWRM research programmes and related monitoring framework.	5Cs, The UWI, UG, GWP-C TEC, other research institutions within the Region, UNEP Cartagena Convention Secretariat, Organisation of Caribbean Utility Regulators (OOCUR)	2,000,000

		4. Review the utility of research undertaken on water resources and water resource management every 3 – 4 years.	A 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.	- IWRM framework for evaluation of the utility of research. - Level of usage of research output by government agencies.	5Cs, 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	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.	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.	Greater amount of revenue is available for financing the water sector.	Water pricing mechanisms 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.	National budgets inclusive of IWRM-related projects.	Ministry of Finance, National Water Resource Agency, CCCCC	-
		5. Develop proposals for ecosystem services payment with specific reference to water resources.	At least four (4) national proposals for ecosystem services with specific reference to water resources payment developed.	Greater amount of revenue is available financing the water sector.	Proposals for ecosystem services payment.	Ministry of Finance, CCCCC, National Climate Change Unit.	80,000
		6. Promote and support financial incentives for countries that decrease the percentage of total Non-Revenue Water (NRW).	At least 75% of the targeted countries have developed legislation/policy that supports financial incentives for countries that decrease the percentage of total Non-Revenue Water (NRW).	A decrease in the percentage of NRW at the national level.	Legislation/policy that support.	Ministry of Finance, National Water Resource Agency	-
		7. Explore and formalize 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.	Partnership agreements between private sector and Government.	Ministry of Finance, National Water Resource Agency, and private sector	-
		8. Develop a baseline study at the national level to determine the status and feasibility of financing options for IWRM.	At least 75% of the targeted countries have conducted studies at the national level to determine the status and feasibility of financing options for IWRM.	Increased accessibility to financing options for IWRM along with a greater level of IWRM implementation.	Number of national studies conducted.	Ministry of Finance, National Water Resource Agency, and private sector	

3.5 Milestones as a Component of the Roadmap

Milestones for the Implementation of a Regional Action Framework for Integrated Water Resources Management (IWRM) in the CARICOM Region

The following infographic provides a strategic overview of the major milestones¹ of the Regional Action Framework for IWRM in the CARICOM Region.



¹ Milestones were identified from activities in the Roadmap of Actions for IWRM in CARICOM Region.

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

3.6.1 Governance

IWRM must make change 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 among 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 Global Water Partnership (GWP), established to foster IWRM, introduced three (3) practical elements that have shaped the agenda on IWRM since 2000 (World Water Council, 2015):

The three (3) key elements of IWRM are inter-related and complementary, and successful application of one (1) 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 the 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 water resources management 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:

- **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 for e.g., 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 etc. (GWP, 2021).

Notably, stakeholder participation cannot be limited to the realm of governmental institutions if a proper enabling environment is to be set-up. As the "rules of the game" apply to everyone – 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 since there exist many different perspectives on enhancing access to water, establishing equilibrium between conservation and development, and treating water as a social and economic good. 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 resultant from perceived political risk. Utilising a recognised political figurehead as a champion may assist in raising awareness and coercing support. While acceptance of the framework may be achieved, implementation at national level may prove more challenging.

The opportunity exists to leverage public awareness and Multilateral Environmental Agreements (MEAs) where ratified, to ensure that water resources management becomes a public issue of political significance. The Council for Trade and Economic Development (COTED) (Environment) 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 water resources management, leads to inefficiencies and poor execution of the principles of IWRM and 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 that institutions charged with the mandate of WRM move away from the outdated, fragmented sectoral approach, i.e., the silo approach to operational activities. Effective communication and co-ordination between responsible agencies and with the private sector and civil society is essential for IWRM implementation.

3.6.4 Capacity Building

Regional implementation of IWRM is constrained by 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 water resources management. 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 water resources management agency is articulated, which will lend support to regional networking and coordination.

Sourcing the skilled personnel is a corequisite for implementing the framework. While 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 considers public participation and stakeholder outreach through three (3) of the four (4) principles vis:

- **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. 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).

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 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 geo-spatial information systems are supported by monitoring and evaluation indicators for SDG 6, which can facilitate regional level awareness of water resources issues and also 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, approach international development funds including GEF, GCF, 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 of 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 framework presented, 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 resources quality and quantity. Partnerships with research institutions can assist in the assessment and monitoring of water resources and can assist in 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 as considerable percentages of Non-Revenue Water (NRW) associated with aging infrastructure in most participation 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 rehabilitation and construction of small community water supply schemes, such as community catchment tanks, gravity-operated and spring-fed piped systems.

Repurposing the revenues from the Central Water Authorities and Electricity Services Companies (where applicable) to support forestry protection and conservation of parks and protected areas management. These utilities usually harness water from the catchments within the national forests for potable uses and hydroelectricity generation (some countries) storage and distribution. Protection and conservation of key catchment areas can help maintain supply for various uses and ensure ecosystems services are not severely compromised. Water use efficiency, 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 level are essential elements for implementation of a Regional IWRM Framework (World Water Council, 2015). At the Regional level, COTED (Environment) 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, through the appropriate unit should assume administrative responsibility for coordination of Regional implementation. 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 regional level. The role of community institutions which operate at 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 to the COTED serve 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 facilitates validation of strategic objectives and measurement of progress while contributing to framework feasibility and adaptation to evolving conditions and use. Monitoring and evaluation involves 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 timely delivery of activities and alignment to performance targets. Additionally, revisions of the advancement of the framework can be done annually during the Ministerial High-Level Forum hosted by CWWA. Data will support evaluation, which can be performed internally or externally dependent on resources and agreement. The process will rely on ensuring good 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 Integrated Water Resources Management (IWRM) for the CARICOM Region.

Implementation Plan Regional IWRM		Projected Start- July 2022 (1st Quarter - July 2022)																				
		PLAN START	PLAN DURATION	ACTUAL START	ACTUAL DURATION	Quarters (Starting July 2022)																
Goals, Objectives, and Activities		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
Strategic Goal 2: Encourage coordination among key water stakeholders towards harmonisation, communication, and community empowerment and involvement at the national and regional levels.	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 governance framework for IWRM.	1	3	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.	1	2	1																		
	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 ensure that the Integrated Water Resources Management plan is implemented efficiently.	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																		
	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																		

4.2 Monitoring and Evaluation

The monitoring and evaluation framework articulates 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 on-going 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 life cycle, providing an evidence base for public resource allocation decisions². Noting that the relationship between policy implementation and expected outcome and impacts are not clearly defined, monitoring and evaluation provides a standardised link and measure of success.

Monitoring refers to a continuous function that uses the systematic collection of data on performance indicators to inform on-going 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 Global Water Partnership³ stated that monitoring and evaluation involves:

- Monitoring the process of implementation. Defined by process indicators aimed at assessing 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.
- 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.

² 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.

³ 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-iwrms-strategies-and-plans-gwp-2006-english.pdf>.

This monitoring and evaluation framework for IWRM considers existing monitoring and reporting modalities and systems, whilst 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 national monitoring and evaluation task force comprised of active actors (defined in IWRM policy). National (appointed) focal points can serve on the Regional task force 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 measures 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	Degree to which policy, legislation and strategy across different sectors include core concepts that underpin IWQM.	By 2030, national policy, legislation and strategy instruments for water resources management incorporate concepts of IWRM.	Review of policy, legislation, and strategy instruments; inter-departmental committees provide qualitative input.
Good governance strengthened	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 inter-governmental platforms.	Review of policy, legislation, and strategy instruments. inter-departmental committees (task force) provide qualitative input.
Efficient and effective IWRM practiced	Improvement in 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	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	Level of improvement in 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.

4.3 Sustainable Finance

Matthieu et al. (2010) contended that sustainability of IWRM requires a clear policy framework for water financing including identification of financing sources, 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 relies on 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 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 circumstance 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 3Ts (taxes, tariffs, and transfers) and in particular tariffs, are 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 national level.

Noting that 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*. Public-Private Partnerships provide a valuable solution for increasing the investment capacity for water infrastructure.

4.4 Development of Project Ideas

4.4.1 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. Integrated Water Resources Management (IWRM) has been cited as a best practice for water resources management 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.

4.4.2 Rationale

By virtue of their geophysical characteristics, vulnerabilities and development trajectory of the Small Island Developing States of the Caribbean, the need for robust water resources management has become increasingly important. Notwithstanding, the review of the status of water resources management in the Caribbean region revealed that the *rate of implementation of IWRM in the Caribbean Region, was determined to fall under the “Medium-Low” level of 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 that interventions 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.

4.4.3 Project Areas

Section 3 presents the IWRM framework that includes six (6) strategic goals. Importantly, these goals are associated with five (5) priority areas: (i) Governance; (ii) Water Allocation, Use, Quality, Assessment, Development, Protection; (iii) Climate Change, Drought, Flooding, Disaster Risk Reduction, Land Use/Land Use Change; (iv) Participatory Management, Gender Mainstreaming, Equitable Access; and (v) Research and Information Exchange. This subsection presents 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/updateand/or harmonisation and enactment of national water resources management (cross-sectoral) policies and legislation.
- c. Decentralisation of governance – (1) support the capacitation 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:

- a. Greater harmonisation of the legislative and policy environment for IWRM, i.e., a reduction in fragmentation, grey areas, gaps, and overlaps.
- b. Institutions with clear mandates, operating procedures, communication channels, and increased coordination and collaboration between agencies for IWRM strengthened.
- c. Inter-agency collaboration improved.
- d. Decision-making of water resources managers and technical personnel on issues related to water governance and stakeholder management improved.
- e. Equitable and inclusive decision-making within the water sector.
- f. 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 of 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 (non-revenue water), 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

- (inclusion of water resources assessment in terms of surface water, groundwater quantification, abstraction, etc.), (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, (2) provision of technical and legislative support to countries for the adoption and adoption of the regional standards.

Expected outcomes:

- a. Access and availability of water resources to meet the national water demand increased.
- b. Water supply and distribution infrastructure/production and distribution systems optimised.
- c. National development and water use planning for water resources, supply, and distribution improved.
- d. 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 audit 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 focus on nature-based solutions for biodiversity conservation, and watershed protection, restoration, and rehabilitation and public-private partnerships.

Expected outcomes:

- a. Carbon emissions and operational costs reduced through the utilisation of sustainable energy measures.
- b. Improved water quality through a reduction of land-based sources of pollution from the agriculture and tourism sectors.
- c. Ecologically sensitive areas are protected restored and rehabilitated.
- d. 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) 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) 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:

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

5. Research and Information Exchange

Objective:

To strengthen institutional capacity to generate and share IWRM related knowledge/information.

Possible projects ideas:

- a. Institutional Strengthening/Standards Development – (1) provision of technical support for the development of standards for data management (collection, coding, classification etc.), (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 (See also pillar 2 – c).

Expected outcomes:

- a. Standardisation of water data and information at the national level.
- b. Improved access to water sector data and information.
- c. 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 effective implementation of IWRM, is indispensable to overall sustainable development in the Region.

Currently, countries within the Region are at different stages of development and practice with respect to IWRM, due to institutional, financial, human, and physical constraints. Additionally, water resources management initiatives are, to a large extent, uncoordinated and unsustainable.

The proposed Regional IWRM Framework seeks to address the challenges facing the sector through the promotion of the principles of IWRM, at the same time, charting the way forward for a holistic and balanced approach to the management of the water resources. Importantly, the Framework calls for 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, 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 water resources management is 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 more specifically, global warming), **NO ACTION is not an option. The time to ACT is NOW.**

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