



# IWRM Practices, Policies and Recommendations Outcomes from National Reports



UNITED NATIONS

ECLAC

Expert Group Meeting to review study titled  
“Synthesis of Policy interventions responding to  
common Integrated Water Resources Management  
Challenges in the Caribbean SIDS”  
Virtual Meeting

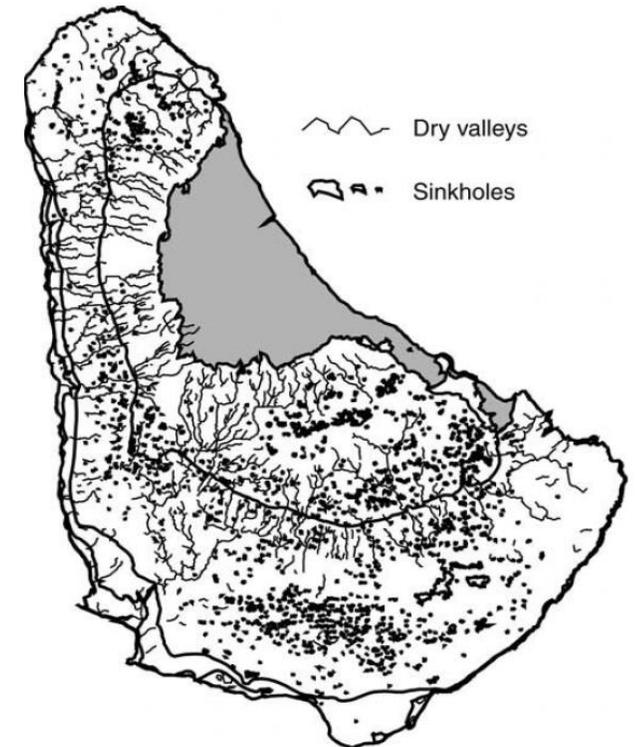
## BARBADOS

### DEGREE OF INTEGRATED WATER RESOURCE MANAGEMENT IMPLEMENTATION

The objective of this presentation is multifaceted as integrated water resources management involves the intricate coordination of efforts among many government ministries, departments and units. Generally, this report has set out to accomplish the following interconnected goals:

- i. **Examine the institutional arrangements** for integrated water resources management in seven selected Caribbean SIDS
- ii. Provide information on the **progress of implementation** of SDG 6 of the 2030 Agenda, using as the frame for measurement Indicator 6.5.1 “Degree of integrated water resources management implementation”
- iii. Evaluate the effectiveness of **national cross-sector coordination** mechanisms, gaps, the identification of successful ones and identify lessons learned and/or success factors that could be replicated in other countries.
- iv. Enquire on recent support and development of the way forward in order to **make recommendations** to reduce the level of duplicity if possible
- v. **Determine the gaps** and identify a position that ECLAC could serve to advance implementation of SDG 6.5.1.

Identify national and Caribbean SIDS regional activities on the water resources management requirements for addressing the COVID-19 pandemic.



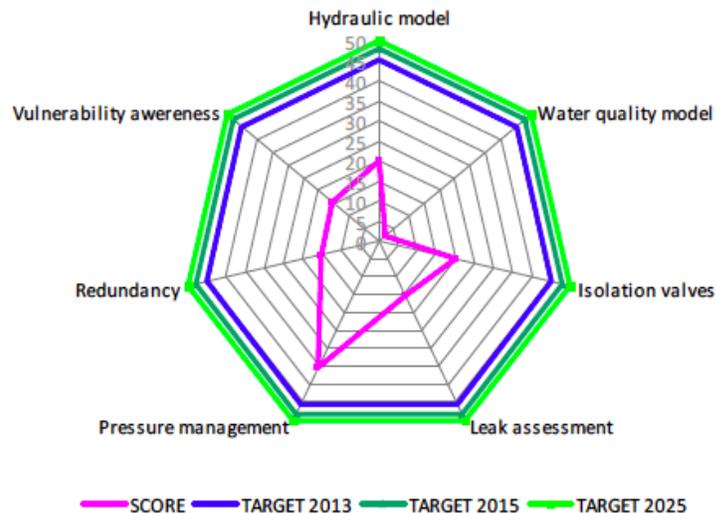
# IWRM PRACTICES

## National Water Vision for Water Management

From the early 1990's until present day, the Government of Barbados had its sights set on the design and implementation of water management at a national scale. The most notable clear mandate is set out in the National Strategic Plan of Barbados 2005-2025 and this document frames the national vision for water management. Goals four and five in this national strategic plan outlines the ideals that the Government of Barbados seeks to achieve them by employing streamlined strategies with targets.

**GOAL FOUR: "These fields and hills":  
Preserving our Environment and Strengthening the Physical Infrastructure.**

**GOAL FIVE: "Upward and onward":  
Enhancing Barbados' Prosperity and Competitiveness.**



Self-Assessment on  
NRW implementation  
Performance

Table 1. Ministries Responsible for the IWRM operations of the BWA

Period	BWA's Parent Ministry
2008 - 2018	Ministry of Agriculture, Food, Fisheries and Water Resource Management (MAFFWR)
2018 - 2020	Ministry of Energy and Water Resources (MEWR)
2020 - Present	Ministry of Transport, Works and Water Resources (MTWWR)

### Renewable freshwater resources:

Precipitation (long-term average)	-	1 422	mm/year
	-	612	million m <sup>3</sup> /year
Internal renewable water resources (long-term average)	-	80	million m <sup>3</sup> /year
Total renewable water resources	-	80	million m <sup>3</sup> /year
Dependency ratio	-	0	%
Total renewable water resources per inhabitant	2013	281	m <sup>3</sup> /year
Total dam capacity	-	-	million m <sup>3</sup>

### Irrigation and drainage

<b>Irrigation potential</b>	-	-	ha
<b>Irrigation:</b>			
1. Full control irrigation: equipped area	2005	5 435	ha
- Surface irrigation	-	-	ha
- Sprinkler irrigation	-	-	ha
- Localized irrigation	-	-	ha
• Area equipped for full control irrigation actually irrigated	2005	5 435	ha
- As % of area equipped for full control irrigation	2005	100	%
2. Equipped lowlands (wetland, ivb, flood plains, mangroves)	2005	0	ha
3. Spate irrigation	2005	0	ha
<b>Total area equipped for irrigation (1+2+3)</b>	<b>2005</b>	<b>5 435</b>	<b>ha</b>
• As % of cultivated area	2005	39	%
• % of area irrigated from surface water	-	-	%
• % of area irrigated from groundwater	1989	90	%
• % of area irrigated from mixed surface water and groundwater	-	-	%
• % of area irrigated from non-conventional sources of water	-	-	%
• Area equipped for irrigation actually irrigated	2005	5 435	ha
- As % of total area equipped for irrigation	2005	100	%
• Average increase per year	-	0	%
• Power irrigated area as % of total area equipped for irrigation	-	-	%
4. Non-equipped cultivated wetlands and inland valley bottoms	-	0	ha
5. Non-equipped flood recession cropping area	-	0	ha
<b>Total agricultural water managed area (1+2+3+4+5)</b>	<b>2005</b>	<b>5 435</b>	<b>ha</b>
• As % of cultivated area	2005	39	%

# IWRM POLICIES

Name	Description	Year	Name	Description	Year
Planning and Development Act	Facilitate land development in Barbados, taking account of all relevant social, economic and environmental factors, so as to ensure that sustainable use is made of public and private land in the interests of present and future generations.	2018	The Town and Country Planning Development Order, 1972		
Draft Marine Pollution Control (discharge) Regulations	Sets standards for effluent discharges into the marine environment	2010	The Health Services Act	Makes the Minister "responsible for the promotion and preservation of the health of the inhabitants of Barbados". The Minister has the power to construct sewers.	1969
Draft Policy Framework for Water Resources Development and Management	Proposals have been made on several occasions for the institutional reform of water sector management. In 1997 following the Water Resource Management Study, in 2002 a draft water policy framework was prepared, in 2008 an IWRM Roadmap was prepared and 2010 the comprehensive review of Groundwater Protection Policy have all set out a vision for the development and management of water resources. However, no action has to date been taken on any of those recommendations.	2010	Disposal of Offensive Matter	Generally used by the EPD to regulate private and public wastewater treatment	1969
Income Tax Act	Grants rebates for wastewater treatment. Provides incentives for farmers to adopt sustainable farming practices	2009	Nuisance Regulation	Generally used by the EPD to regulate private and public wastewater treatment	1969
National Strategic Plan 2005-2025	Promote and facilitate the environmentally sustainable use of natural resources and to maintain a safe and reliable water supply.	2007	Irrigation Act	Allows the Chief Agricultural Officer to order to carry out surveys, investigation or research for irrigation purposes, to distribute water and to control or operate waterworks.	1967
Draft Water Reuse Act	The Act, once finalized, will be incorporated into the draft Environmental Management Act. Modifications to the existing water zoning system are expected to mitigate against unsustainable land use practices and sources of water pollution.	2006			
Tourism Development Act, Cap. 341	Grants rebates for wastewater treatment	2002	National Groundwater Zoning policy	The policy establishes a zone rule for private sewage and industrial discharges to soak-aways. It has been extended several times to take account of special circumstances. A draft revision of the Zones was approved by Cabinet. The new zones have been incorporated into the National Physical Development Plan, published 2018	1963
Utilities Regulation Act	This Act provides for the regulation of utility services. However, at present it does not apply to the provision of water services. Recent developments have brought General Standards of Service under the ambit of the Fair-Trading Commission.	2001			
National Water Conservation Plan	Comprises two parts: long-term ongoing measures such as leakage reduction and universal metering and short-term measures such as temporary shutdown of parts of the system on a rotational basis or temporary license restrictions on private abstractions.	2000			
Integrated Coastal Zone Management Plan	Involves the comprehensive assessment, setting of objectives, planning and management of coastal systems and resources, taking into account traditional, cultural, historical perspectives, cumulative impacts, and conflicting, interests and uses	2000	Groundwater Zoning Policy	Implemented through the Town and Country Planning Office in collaboration with the BWA and EPD, it controls development in areas of groundwater abstraction as a way of protecting groundwater resources	1963
Marine Pollution Control Act (MPA) Cap 392A	Establishes discharge standards for marine environment	1998			
Coastal Zone Management Act Cap.391	Establishes Coastal Zone Management Unit to be responsible for protection of the marine environment	1998	Soil Conservation (Scotland District) Act	The Act grants powers to the Chief Agricultural Officer to carry out water and soil conservation works and other powers.	1959
Prevention of Floods and Highways Act CAP 235	Provides for the management of water courses, flood prevention works and the designation of special flood areas, targeting the maintenance of drainage structures and the clearing of watercourses to prevent flooding.	1998			
Highways Act Cap 289	Governs highways and applies to all highways maintained by the Chief Technical Officer of the Ministry of Public Works. The definition of highways includes watercourse, sewer, embankment, tunnel, drain, gutter or wharf.	1998	Underground Water Control Act	Provides for the control and use of the underground sources of water supply	1953
Draft Environmental Management Act	A comprehensive piece of legislation designed to cover most aspects of environmental management.	1998	Prevention of Floods Act	Makes provision for measures for the prevention of floods.	1951
Town and Country Planning Act, Cap. 240	Regulates developing planning process which includes wastewater infrastructure	1985			
The Factories Act	Addresses a number of environmental considerations including the disposal of wastes and effluents, ventilation, noise, removal of gas, dust or fumes, and special protective equipment.	1984	Porey Spring Act	Allows the vestry of the Parish of St Thomas to construct and maintain works for the collection and delivery of water to persons other than the inhabitants of the parish.	1864
Water Services Regulations (S.I. No. 150)	The Regulations concern the regular supply of water to customers by the Water Authority of Barbados.	1982			
Barbados Water Authority Act	Establishes the Barbados Water Authority. A Comprehensive Review of Groundwater Protection Zoning Policy and System consultancy in 2010 recommended the introduction of a Groundwater Protection Act which would modify BWA's responsibilities for the management of water resources	1980			
Sewerage Regulations (S.I. No. 151)	The Regulations provide for rules concerning the discharge of water through the public sewer system by domestic premises and industries.	1980	Three Houses Spring Act	It allows the inhabitants of the Parish of St Phillip to retain water for use, provided it does not have a negative effect downstream.	1713

# IWRM POLICIES CON'T

Sector	Legislation
Agriculture	Irrigation Act. 1967
Water Supply and Sanitation	Utilities Regulation Order (S.I. No. 65 of 2014). 2014 Barbados Water Authority (Water and Sewerage Rates) Regulations, 2009 (S.I. No. 69 of 2009). June 2009 Barbados Water Authority Act, 1980. 1980 (1989) Health Services Act (Act No. 38 of 1969). 1969 (1998) Utilities Regulation Act. 2001 (2002) Utilities Regulation (Procedural) Rules (S.I. No. 104 of 2003). 2003 Water Services Regulations 1982 (S.I. No. 150). 1982 Sewerage Regulations, 1980, (S.I. No. 151). 1982
Governance	Barbados Water Authority (Amendment) Act, 2010 (No. 4 of 2010). 2010 Barbados Water Authority Act, 1980. 1980 (1989) Utilities Regulation Act.2001 (2002) Underground Water Control Act. 1952 (1973) Utilities Regulation (Procedural) Rules (S.I. No. 104 of 2003). 2003 Utilities Regulation (Procedural) (Amendment) Rules (S.I. No. 82 of 2009). 2009 Water Services Regulations 1982 (S.I. No. 150). 1982
Infrastructure	Irrigation Act. 1967 Prevention of Floods Act.1951 (1998) Barbados Water Authority Act, 1980. 1980 (1989) Utilities Regulation Act. 2001 (2002) Water Services Regulations 1982 (S.I. No. 150). 1982
Water Resources Management and Water Rights	Underground Water Control Act. 1952 (1973) Limitation and Prescription Act. 1891 (1997)
Water and Environment	None available
Water Quality and Pollution Control	Sewerage Regulations, 1980, (S.I. No. 151).1982 Underground Water Control Act. 1952 (1973)
Groundwater	Underground Water Control Act.1952 (1973)
Disaster Resilience	Soil Conservation (Scotland District) Act (Chapter 267).1959 (1967) Soil Conservation (Scotland District) Act. 1959 (1998) Water Services Regulations 1982 (S.I. No. 150). 1982 Prevention of Floods Act. 1951 (1998)
Transboundary Waters	None available (not applicable)

Indicators for Overall Goals		Means of Verification (MOV)
1	Agency for the management of water resources developed and functional.	Agency report
2	Adoption of cross-sectoral approached to the management of water resources	WRM committee meeting reports
Objectives/Results		
1	A holistic and comprehensive national policy and plan for the management of water resources in Barbados.	
2	Legal and regulatory framework for the management of water resources developed and enforced.	
3	Institutional and administrative framework for water resources management improved.	
4	Capacity and capability for the management of water resources enhanced.	

## Result no.1: A holistic and comprehensive national policy and plan for the management of water resources in Barbados.

Ser.	Objectively Verifiable Indicators (OVI).	Means of Verification (MOV)
1	All sectors in Barbados incorporate elements of the IWRM policy and plan within their own policies, plans, and programme by end 2010	Sectoral policies and plans modified
2	Annual budgetary allocation for implementation of the IWRM policy and plan	Annual budget

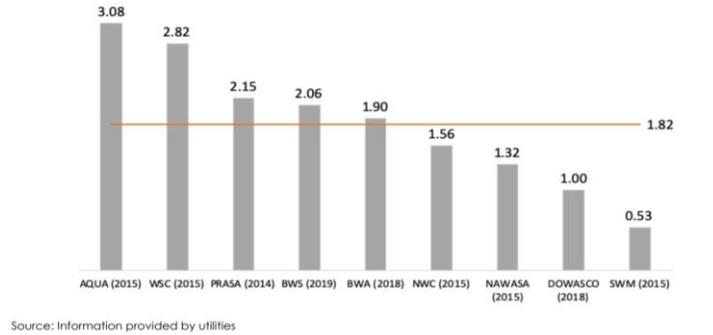
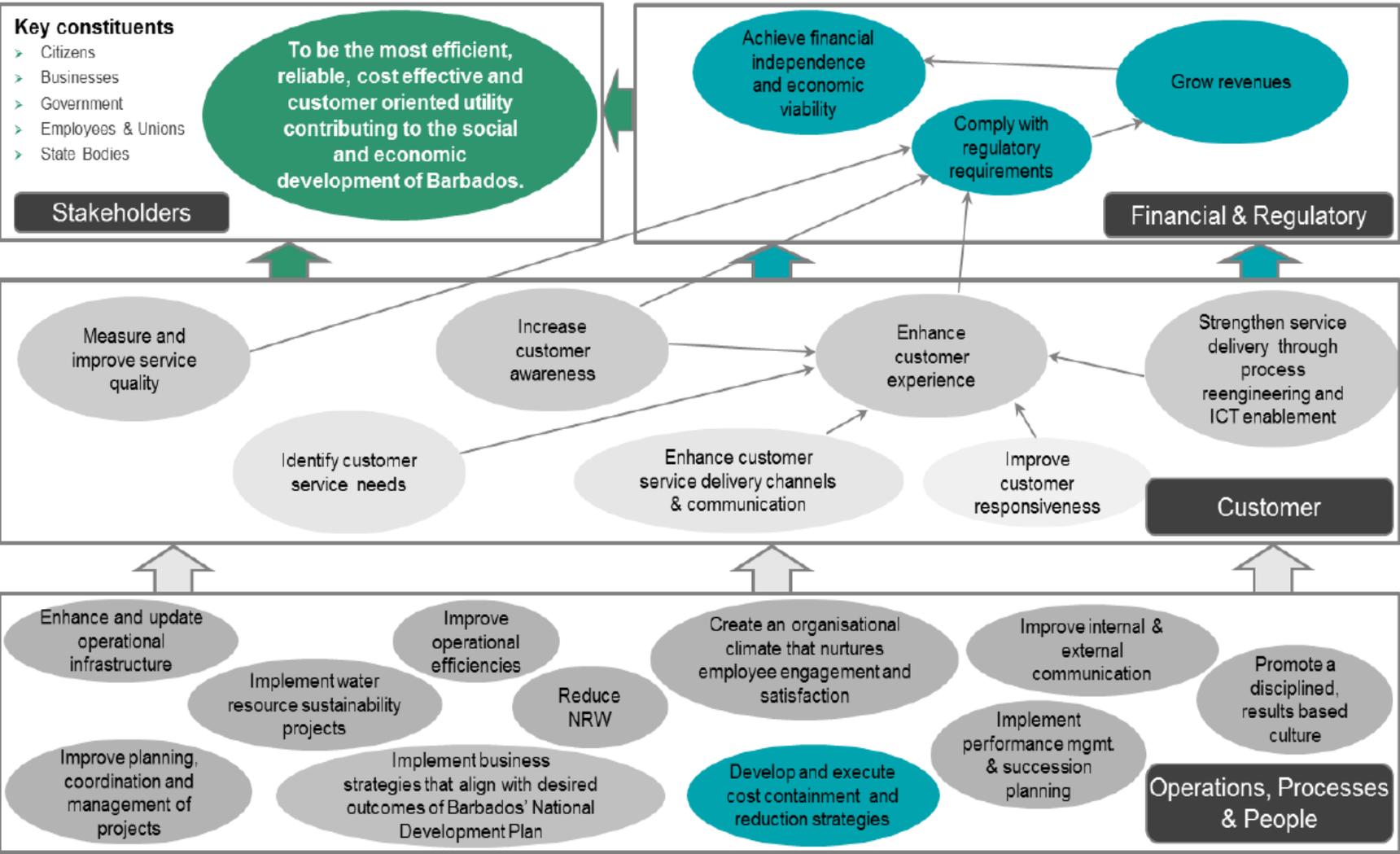
## Result no.2: Legal and regulatory framework for IWRM developed and enforced

Ser.	Objectively Verifiable Indicators (OVI).	Means of Verification (MOV)
1	Legal and regulatory instruments for IWRM in Grenada developed and executed	Available laws
2	Supporting consultative process conducted	Reports
3	Cross-sectoral management of water resources	Reports

## Result no.3: Institutional and Administrative Framework for IWRM established

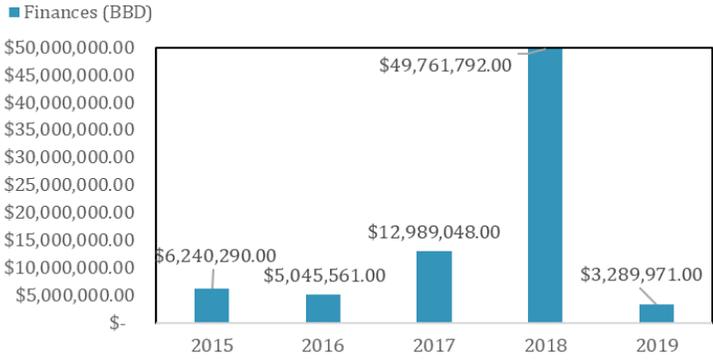
Ser.	Objectively Verifiable Indicators (OVI).	Means of Verification (MOV)
1	Water Resource Agency (WRA) Institution developed and function.	Reports
2	Joint IWRM programming by stakeholder agencies	Implementation programme status reports
3	Annual report by institution	Review of annual WRA reports

# PLAN & INVESTMENT

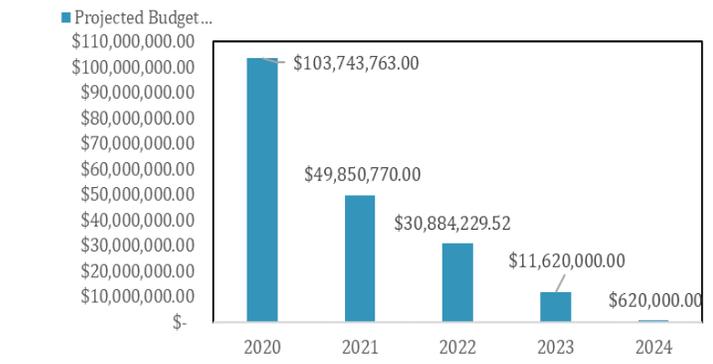


Source: Information provided by utilities

**Average Water Tariffs (US\$)**

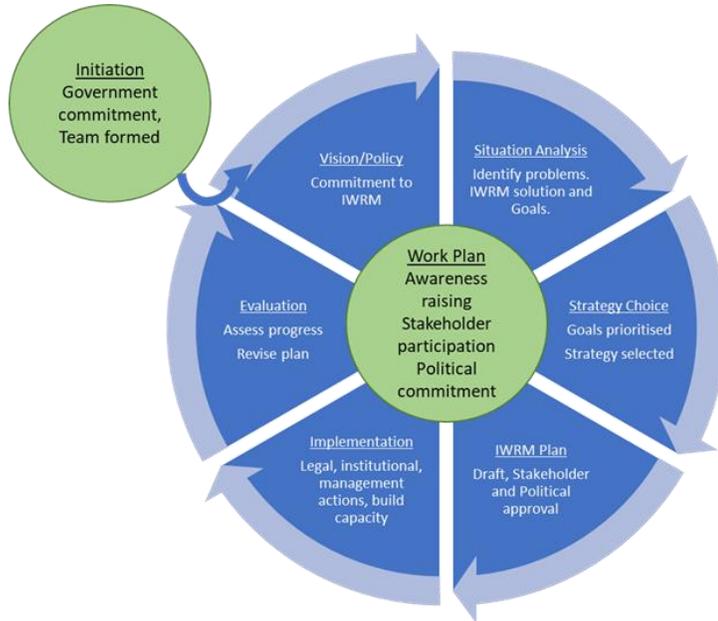


**Funds disbursed on IWRM Capital Projects**

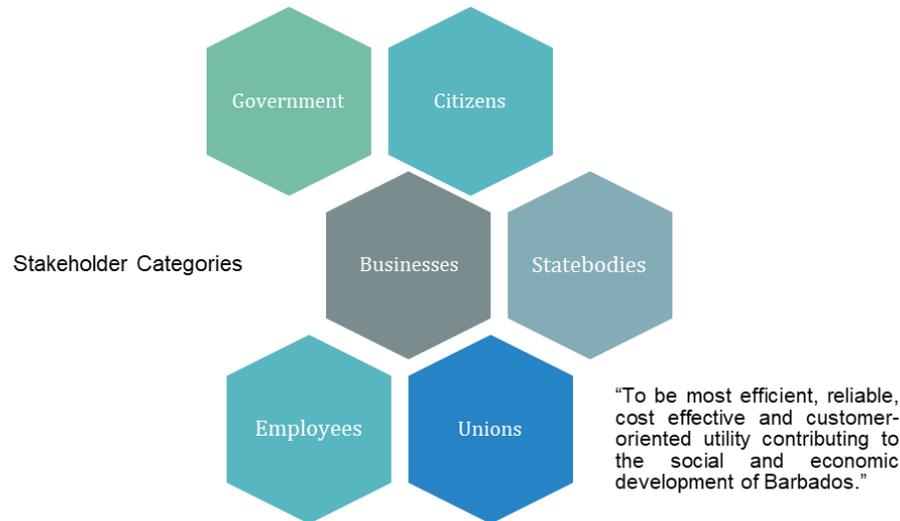


**Projected Budgets for IWRM Capital Projects**

# RECOMMENDATIONS



Cycle for Developing and Adjusting an IWRM Plan



Key constituents for Stakeholder Engagement

SIDS governments consider water resources planning and management to be a central part of government responsibility, as is seen in Barbados. The GoB should promote the concept of its role as a facilitator and regulator, rather than a project implementing agency. The GoB is challenged to establish an IWRM framework which will determine the level at which, in any specific instance, government responsibility should cease, or be partnered by autonomous water services management bodies.

In order to bring IWRM into effect, institutional arrangements are needed to enable:

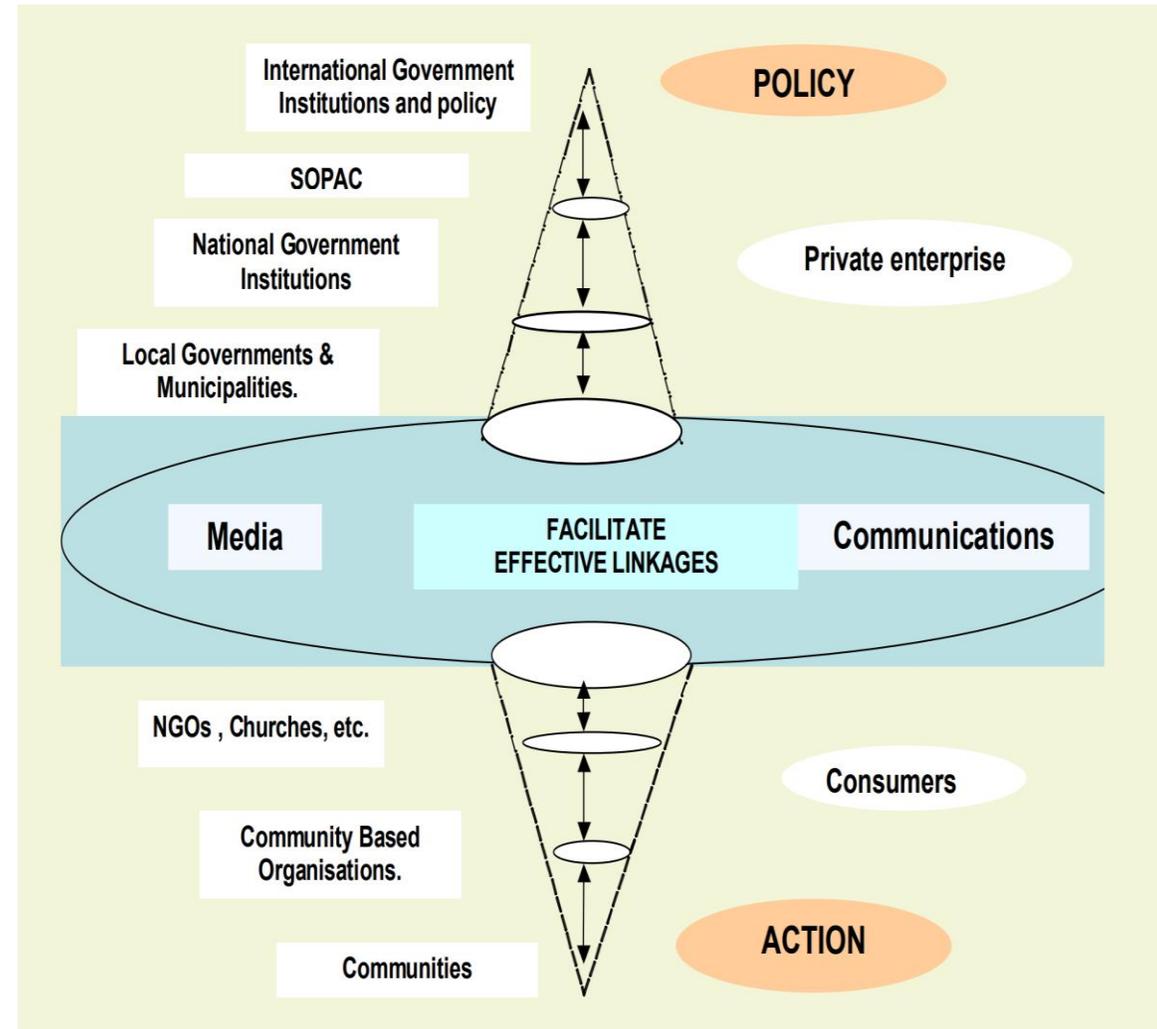
- The functioning of a consortium of stakeholders involved in decision making, with representation of all sections of society, and a good gender balance;
- Water resources management based on hydrological boundaries;
- Organisational structures at basin and sub-basin levels to enable decision making at the lowest appropriate level;
- Government to co-ordinate the national management of water resources across water use sectors.

How can ECLAC intervene to assist with the advancement of IWRM implementation? ECLAC has been constantly working in the optimization of water resources, despite not having a written planning for water management. The distribution and water use optimization of water resources have been defined by international standards for buildings in the case of indoor improvements and for landscaping, maximizing water irrigation. Therefore, the role of ECLAC can be expanded to include the following:

The hosting of regional and national workshops to actively involve the key stakeholders for IWRM implementation to ensure that there is an enhanced coordination at the national and regional level and the promote the exchange of knowledge and lessons that other entities have to draw on the resources in the region.

## RECOMMENDATIONS

- The development of a regional dashboard for the status of IWRM implementation for its member countries. Noting that there will be a requirement for data entry by each country, the data should focus on the current situation and also focus on the realistic goals that can be achieved by the countries in short, medium and long term stages to promote the attaining of targets by the various countries.
- The development of concise focused reports to be used by the national governments that highlight the status of implementation that provides recommendations to the various governments on possible pathways that take into consideration the current efforts of the various IWRM stakeholders.
- The development of protocols or procedures regarding the communication of IWRM related activities to maximise the input and participation from all national stakeholders at all levels.
- Activities on IWRM that target the involvement of the technical officers and policy makers to share information and challenges that can advance IWRM. In this role as a facilitator, ECLAC will then be able to measure the success of these activities towards each country being able to advance their SDG 6.5.1 scores that are reported to the United Nations.



Potential Communication Pathways for IWRM Implementation