K&M ADVISORS

a Dorado Group Company

Governance Position Paper on the Caribbean Water and Sanitation Sector

Final Report and Action Plan

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Abbreviations

AQUA	The Curacao Power and Water Company
BNTF	Basic Needs Trust Fund
BWA	Barbados Water Authority (Barbados)
BWS	Belize Water Services Limited (Belize)
CAPEX	Capital Expenditure
CDB	Caribbean Development Bank
CWSA	Central Water and Sewerage Authority (Saint Vincent and the Grenadines)
CWWA	Caribbean Water and Wastewater Association
DOWASCO	Dominica Water and Sewerage Company Limited
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
EU	European Union
FTC	Fair Trading Commission (Barbados)
GBUC	Grand Bahama Utility Company
GWI	Guyana Water Incorporated (Guyana)
IDB	Inter-American Development Bank
IFI	International Financial Institutions
INE/WSA	Water and Sanitation Division (IDB)
IG	Imperial Gallon
kWh	Kilowatt Hours
m^3	Cubic Meter
NAWASA	National Water and Sewerage Authority (Grenada)
NPDC	New Providence Development Company (The Bahamas)
NRW	Non-Revenue Water
NWC	National Water Commission (Jamaica)
O&M	Operations and Maintenance
OPEX	Operating Expenses
OUR	Office of Utilities Regulation (OUR)
PU	Paradise Utilities (The Bahamas)
PRASA	Puerto Rico Aqueducts and Sewers Authority
PPP	Public Private Partnership
PUC	Public Utilities Commission (Belize, Guyana)
RIC	Regulated Industries Commission (Trinidad and Tobago)
SDG	Sustainable Development Goal
SWM	N.V. Surinaamsche Waterleiding Maatschappij (Suriname)
UNDP	United Nations Development Programme
UNEP	United National Environment Program
URCA	Utilities Regulation and Competition Authority (The Bahamas)
WASA	Water and Sewerage Authority (Trinidad and Tobago)
WASCO	Water and Sewerage Company (St. Lucia)
WB	World Bank
WHO	World Health Organization
WRA	Water Resources Authority (Jamaica)
WSC	Water and Sewerage Corporation (The Bahamas)

Executive Summary

The main objective of this report is to assess the performance of the water and sanitation sector in the Caribbean and provide recommendations to improve governance of the sector in the region. This report is composed of two parts: the baseline report and the action plan. The baseline report assesses the operating efficiency, financial performance, policies, and institutions of the water and sanitation sectors in The Bahamas, Barbados, Belize, Guyana, Jamaica, Suriname, and Trinidad and Tobago. The action plan provides recommendations on how to improve governance of the water and sanitation sector in those countries.

The main findings of the baseline report can be grouped into two categories: performance challenges, and institutional and policy challenges.

The main performance challenges of the water and sanitation sector in the Caribbean are:

- Piped water coverage in some of the assessed countries is below the average coverage for Latin America and the Caribbean
- Collection and treatment of wastewater in most jurisdictions in the Caribbean is noticeably lacking
- The quality of service provided by state-owned utilities is not adequate
- Information regarding quality of service and operating efficiency is poor in many of the water utilities
- Non-revenue water (NRW) levels are high
- Tariffs do not cover the cost of service
- Many water utilities in the Caribbean are not investing enough in their assets.

The main institutional and policy challenges of the water and sanitation sector in the Caribbean are:

- Most countries do not include a long-term financial plan with their sector policies
- Not all countries have established measurable targets for meeting their policy objectives in the water and sanitation sector
- Tariff regimes are often not well developed
- Managerial autonomy is limited in some water utilities
- Lack of a clear approach for setting tariffs, which in many cases does not follow the approach established by law. There is often heavy political influence on the tariffs charged by the utility
- Legal and institutional frameworks are often poorly developed and outdated.

The action plan lists actions that can be taken by governments and utilities to overcome the performance and institutional challenges identified in the baseline report. Because continued underperformance and not having objectives and targets to improve performance diminishes the credibility and the accountability of the water providers, the action plan focuses on actions to improve accountability and credibility of the sector. For this, the action plan suggests:

- Establishing a baseline that identifies the main strengths and weaknesses in the water and sanitation sector
- Stabilizing underperforming utilities
- Setting objectives and multi-year targets and allocating resources to cover the costs of meeting them
- Implementing effective monitoring and enforcement mechanisms to track the meeting of objectives and targets.

By meeting clear objectives and targets, and therefore improving performance, water utilities will improve their credibility, accountability, and autonomy from the government and the public.

1 Introduction

The Inter-American Development Bank hired K&M Advisors LLC (K&M) to update a report on the governance of the English-speaking Caribbean's water and sanitation sector that was prepared in 2017.

This report is composed of two parts: the baseline report and the action plan. The baseline report assesses the performance, policies, institutions, and financing of the water and sanitation sectors in The Bahamas, Barbados, Belize, Guyana, Jamaica, Suriname, and Trinidad and Tobago. The action plan sets out recommendations on how to improve the governance of the water and sanitation sector in those countries.

In this introduction, we present:

- An overview of the assessed countries (Section 1.1)
- An overview of the institutional framework (Section 1.2)
- The main sources we used for the report (Section 1.3)
- An overview of the utilities in the region (Section 1.4)
- The main conclusions of the report (Section 1.5)
- The structure of the report (Section 1.6).

1.1 Overview of the Assessed Countries

This report assesses the water and sanitation sector in the following Caribbean countries: The Bahamas, Barbados, Belize, Guyana, Jamaica, Suriname, and Trinidad and Tobago. The seven countries vary greatly in terms of water consumption, size, wealth, and geography. We considered these differences when assessing the performance of the water sector and creating the action plan.

The assessed countries are:

- **The Bahamas** - an archipelagic state of about 700 islands in the northern Caribbean Sea. The country has a population of about 325,600. About 70 percent of the population lives on the largest island, New Providence. The Bahamas is the wealthiest of the assessed countries and one of the wealthiest in the Caribbean, with a GDP per capita of US$31,858. The main provider of water and sanitation in The Bahamas is the Water and Sewerage Corporation (WSC)
- **Barbados** - an island of about 293,100 people located in the southeastern part of the Caribbean. It is one of the wealthiest assessed countries, with a GDP per capita of US$16,328. The Barbados Water Authority (BWA) is the government-owned water utility
- **Belize** - a country of about 385,850 people located in Central America. It is considered part of the Caribbean for historical and cultural reasons. Belize has a GDP per capita of US$5,025. The country's public utility and main water supplier is Belize Water Services Ltd. (BWS)
- **Guyana** - located on the northern coast of South America and shares borders with Suriname, Venezuela, and Brazil. It has a population of approximately 740,700 people. It has the lowest GDP per capita of all countries in this study, at US$4,635. Guyana Water Incorporated (GWI) is the country's main utility

- **Jamaica** - a large island in the central Caribbean Sea, with a population of 2.8 million. It has a GDP per capita of US$5,356. The National Water Commission (NWC) is the principal water and sanitation service provider
- **Suriname** - located on the northern coast of South America, sharing borders with Guyana, Brazil, and French Guiana. It has a population of about 579,000, and a GDP per capita of US$9,680. The main water utility is the publicly owned N.V. Surinaamsche Waterleiding Maatschappij (SWM)
- **Trinidad and Tobago** - an archipelago in the southern Caribbean Sea located north of South America. About 95 percent of the country's population lives on the main island of Trinidad and the rest live on the island of Tobago. It is one of the larger and wealthier countries in the Caribbean, with a population of about 1.2 million and per capita GDP of US$16,240. The Water and Sewerage Authority (WASA) is the public utility.

1.2 Overview of the Institutional Framework of the Water and Sanitation Sectors in The Caribbean

Most of the assessed countries are islands or island chains, except Belize, Guyana, and Suriname. Their population ranges from about 290,000 (Barbados) to about 2.8 million (Jamaica), as seen in Table 1.1. The countries' wealth varies drastically, with GDP per capita ranging from US$3,853 (Guyana) to US$27,628 (Puerto Rico). The Bahamas is the only country with an investment-grade sovereign credit rating[1]—all other assessed countries are rated below investment grade or are not rated by any ratings agency. All countries are eligible for funding from the Inter-American Development Bank, and some are eligible for funding from the World Bank.

Table 1.1: Overview of Countries in the Caribbean

Country	Population (2018)	GDP per Capita (2017US$)	Debt/GDP Ratio (2018)	Sovereign Credit Rating (Moody's)	Eligibility for Borrowing from IFIs
The Bahamas	332,600	27,484	57.4	Baa3 (2019)	CDB and IDB
Barbados	293,100	16,612	127	Caa1 (2019)	CDB and IDB
Belize	385,850	4,263	93	B3 (2017)	CDB-BNTF, IDB and WB
Guyana	740,700	3,853	45	No rating	CDB-BNTF, IDB and WB
Jamaica	2,800,000	4,776	97	B2 (2019)	CDB-BNTF, IDB and WB
Suriname	597,900	7,967	63	B2 (2019)	IDB and WB

[1] For Moody's, a bond is considered investment grade if its credit rating is Baa3 or higher.

Trinidad and Tobago	1, 200,000	15,288	63	Ba1 (2017)	CDB, IDB and WB

Source: Population data from CIA Factbook 2018. GDP per Capita from World Bank WDI Report and World Statistics Pocketbook 2018 Edition. Debt/GDP Ratio from Caribbean Development Bank 2018 Economic Review. Sovereign Credit Rating from Moody's. Eligibility for Borrowing from Multilaterals from IDB and World Bank

Note: CDB is the Caribbean Development Bank

IDB is the Inter-American Development Bank

BNTF is the Basic Needs Trust Fund

WB is the World Bank

Note: Some of Moody's sovereign credit ratings are:

Baa: obligations are considered to be medium-grade and subject to moderate credit risk and as such may possess certain speculative characteristics

Ba: obligations are considered to be speculative and are subject to substantial credit risk

B: obligations are considered speculative and are subject to substantial credit risk

Caa: obligations are judged to be speculative of poor standing and are subject to very high credit risk.

Most of the assessed countries have state-owned or majority state-owned water utilities. However, some countries also have private providers. This is the case with The Bahamas and Jamaica, which have some small water providers (Table 1.2).

Table 1.2: Organization of the Water and Sanitation Sectors in the Assessed Countries

Country	Utility	Jurisdiction	Ownership	Regulatory Authority
The Bahamas	Water and Sewerage Corporation (WSC)	All, except Grand Bahama and areas covered by NPDC and PU	100% Government	None
The Bahamas	New Providence Development Company (NPDC)	Western New Providence (area owned by NPDC)	Private	None
The Bahamas	Paradise Utilities (PU)	Paradise Island	Private	None
The Bahamas	Grand Bahama Utility Company (GBUC)	Grand Bahama	Private	None
Barbados	Barbados Water Authority (BWA)	All	100% Government	FTC
Belize	Belize Water Services Limited (BWS)	All	Majority Government	PUC
Guyana	Guyana Water Incorporated (GWI)	All	100% Government	PUC
Jamaica	National Water Commission (NWC)	All	100% Government	OUR
Suriname	Suriname Water Supply Company (SWM)	All (except 2 mines and rural areas)	100% Government	None
Trinidad and Tobago	Water and Sewerage Authority (WASA)	All	100% Government	RIC

1.3 Sources of Information

This benchmarking study uses financial, operational, legal, and regulatory information from the utilities and water sector of each country. The sources of the information used to write this report are:

- Data available on the websites of the utilities
- Data provided by the utilities
- Water sector legislation and regulations available in government websites
- IDB water sector studies and project documents
- The "Assessment of the Water Sector in the Caribbean" report (2015) published by Caribbean Development Bank
- Data from the WHO/UNICEF Joint Monitoring Programme (2015)

- World Bank Data Bank.

Water utilities that perform well have an immediate and deep understanding of their business. This includes having accurate and up-to-date information regarding their customer base, the volumes of water they produce and bill, and the condition of their fixed assets. In addition, within an effective governance framework, state-owned utilities make much of this information readily available to their stakeholders, including their customers. For example, well-performing water utilities publish their audited financial statements on their websites within three to four months of their financial year closing. The availability and accuracy of this information is a strong indicator of a well-performing utility within a transparent and accountable governance framework. Therefore, the information available from or provided by each of the five utilities we assessed is a good indicator of the performance of each utility and the effectiveness of the governance framework.

Table 1.3 describes the information available from, or provided by, each of the utilities regarding some of the most important aspects of their business: quality of service, financials, water balance, other operating information, and coverage. For example, BWS has published its annual report for **2019**. That report has the audited financial statements, so it is labeled "Publicly available (2019)" in Table 1.3. We then assessed the availability and recentness of each utility's information. Those with more current and complete data receive a higher rating.

Table 1.3: Information Availability and Disclosure

Country	Utility	Quality of Service	Financials	Water Balance	Other Operating Information	Coverage	Rating
Belize	BWS	Publicly Available (2019)	Publicly available (2019)	Publicly available (2019)	Publicly available (2019)	Provided (2016)	4
Jamaica	NWC	Publicly Available (2018)	Publicly Available (2018)	Publicly Available (2018)	Publicly Available (2018)	Provided (2017)	4
Barbados	BWA	Partially provided (2019)	Provided (2018)	Provided (2012)	Partially provided (2019)	Provided (2013)	3
The Bahamas	WSC	Provided (2015)	Provided (2015)	Provided (2015)	Provided (2015)	Provided (2015)	2
Trinidad and Tobago	WASA	Provided (2016)	Provided (2018)	Not provided	Provided (2018)	Provided (2016)	2
Suriname	SWM	Provided (2019)	Partially provided (2017)	Provided (2015)	Provided (2015)	Provided (2015)	2
Guyana	GWI	Not provided	Not provided	Not provided	Not provided	Not provided	0

Note: The rating for each utility ranges from 0 to 4. A 4 indicates high level of success and a 0 indicates low level of success.

Table 1.4 describes the information that is publicly available for each of the seven assessed utilities. The table shows the most recent year for which the information was publicly available. For example, BWS published its most recent annual report and audited financial statements in 2019. It also provides its key performance indicators and current tariffs schedule, and has an ongoing business plan that is available to the public. Utilities with more current and available data receive a higher rating.

Table 1.4: Public Availability of Data

Country	Utility	Audited financial statements	Annual reports	Key performance indicators	Current tariff schedule	Ongoing business plan	Rating
Belize	BWS	2019	2019	Yes	2015	2015-2020	4
Jamaica	NWC	2018	2018	Yes	2018	2014-2018	4
The Bahamas	WSC	2015	2015	Yes	2015	Yes	2
Barbados	BWA	No	No	No	2009	No	0
Guyana	GWI	No	2008	No	2002	No	0
Suriname	SWM	No	No	No	2016	No	0

Trinidad and Tobago	WASA	No	No	No	1993	No	0

Note: The rating for each utility ranges from 0 to 4. A 4 indicates high level of success and a 0 indicates low level of success.

1.4 Overview of the Water and Sanitation Utilities in the Assessed Countries

This report assesses the performance of water utilities as part of the countries' assessment. The following utilities are assessed in this report:

- **Barbados Water Authority** (BWA) is the government-owned utility in Barbados. It provides water services to 106,580 customers and sewerage services to 2,377 customers
- **Belize Water Services Limited** (BWS) is the sole water utility in Belize. It operates in Belize's urban areas and contiguous rural villages. The Government of Belize owns most of its shares. BWS provides water to 55,492 customers and sewerage services to 10,694 customers
- **Guyana Water Incorporated** (GWI) is the public water utility in Guyana. It provides water services to approximately 183,500 customers
- **National Water Commission** (NWC) is the government-owned utility in Jamaica. It provides water to 368, 590 customers and sewerage services to 132,317 customers
- **Surinaamsche Waterleiding Maatschappij** (SWM) is the state-owned water utility in Suriname. SWM provides water services to 105,054 customers in Paramaribo, Niew Nickerie, and Moengo
- **Water and Sewerage Authority** (WASA) is the government-owned utility in Trinidad and Tobago. WASA provides water to approximately 411,777 customers and sewerage services to 76,080 customers
- **Water and Sewerage Corporation** (WSC) is the water utility in The Bahamas. It operates in New Providence and the Family Islands. WSC provides water services to 59,469 customers and sewerage services to 12,503 customers.

The assessed utilities operate in markets of different sizes and services. Table 1.5 shows the difference in number of customers and services. In addition to the utilities in the assessed countries, this table shows other utilities which were used for benchmarking purposes with the assessed utilities.

Table 1.5: Market Size and Services of Water Utilities in The Caribbean

Jurisdiction	Utility	Number of Water Customers	Number of Wastewater Customers	Wastewater Collection /Treatment
Assessed utilities				
Jamaica	NWC	368,590	132,317	Yes
Trinidad & Tobago	WASA	411,777	76,080	Yes
Guyana	GWI	183,500	TBD	Yes
Barbados	BWA	106,580	2,377	Yes
Suriname	SWM	105,054	TBD	No

The Bahamas	WSC	59,469	12,503	Yes
Belize	BWS	55,492	10,694	Yes
Other benchmarked utilities				
Puerto Rico	PRASA	1,237,935	TBD	Yes
Curaçao	AQUA	79,303	0	No
Saint Lucia	WASCO	47,362	3,242	Yes
Grenada	NAWASA	35,368	2,051	Yes
Dominica	DOWASCO	23,651	2,998	No

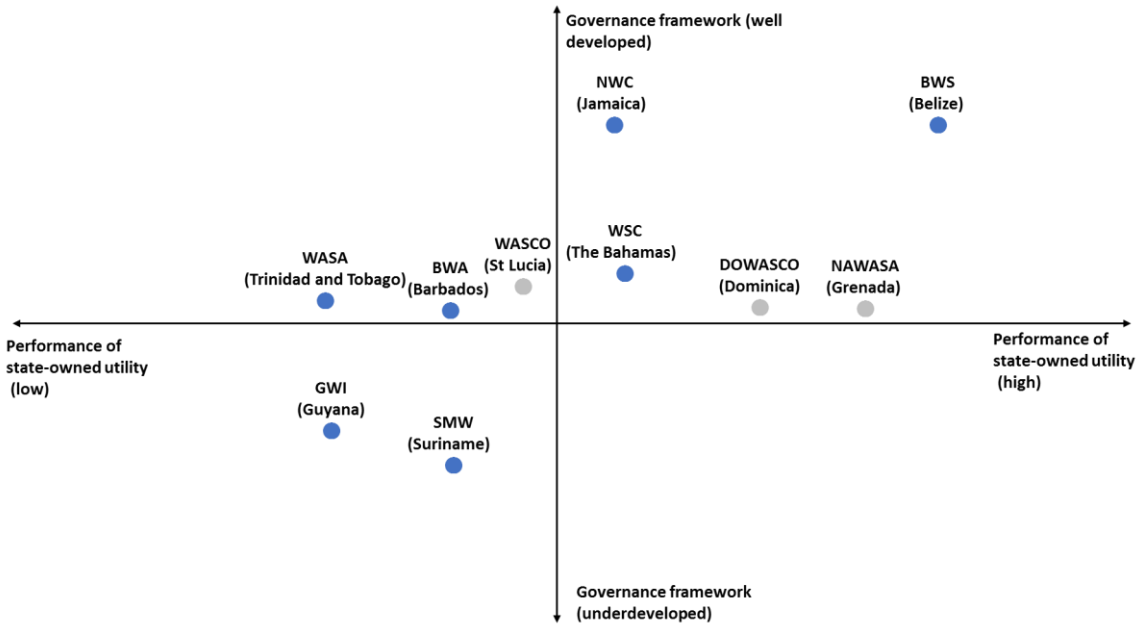
Source: Information provided by utilities

1.5 Main Conclusions

Governance in the water and sanitation sector needs to be improved in the English-speaking Caribbean countries. There is a disparity among governance frameworks across the region. Some countries, for example, Belize, have a strong governance framework with well-developed policies and legal and regulatory frameworks. Others, such as Suriname, have weak frameworks due to unclear sector policies and underdeveloped legal and regulatory frameworks.

Governance and performance of the water and sanitation sector are related. In this study, we find that water utilities operating under well-developed governance frameworks usually perform better than water utilities performing within underdeveloped governance frameworks (Figure 1.1). For example, the water utility in Belize, BWS, operates under a well-developed governance framework. It is also one of the top performing utilities.

Figure 1.1: Level of Development of Governance Framework vs Performance of State-Owned Utilities in the Caribbean



Note: The governance framework considers the country's sector policies and the level of development of its legal, regulatory, and institutional system.
The performance of a state-owned utility is based on its coverage, quality of service, operating efficiency, and financial performance.
The state-owned utilities in blue are the utilities that are assessed in this report. The utilities in gray are other benchmarked utilities.

This study also found that the provision of water and sanitation services needs to be greatly improved. Access, especially for improved sanitation[2], and quality of service expected by households, businesses, and governments is below the regional average.

To improve governance and performance of the water and sanitation sector, the study finds that the following areas could be improved by governments and utilities:

Regarding the adequacy of the governance framework in the water and wastewater sector:

- **Most countries do not include a long-term financial plan with their sector policies**. Limited funding makes planning difficult, which causes governments to focus on resolving short-term problems instead of more comprehensive initiatives that improve the overall sector
- **Not all countries have established measurable targets for meeting their policy objectives in the water and sanitation sector**. We found that several countries did not establish targets for the water and sanitation sector, or they established targets that were not measurable. Setting measurable targets is important to guide policies over

[2] According to the World Health Organization (WHO), improved sanitation services include any type of facility that hygienically separates human excreta from human contact. Facilities using sewer connections, septic tanks, pour-flush latrines, and pit latrines with slabs are considered improved sanitation facilities.

the long term. They also help to quantify the results that the policies are expected to produce

- **Legal and institutional frameworks are often poorly developed and outdated**. The legal and institutional frameworks in some countries, such as Suriname and Barbados, are poorly developed. The responsibilities between bodies are not clearly established, making it difficult to create policies, regulate, and fund the sector. This is important because it does not provide for effective governance and, ultimately, adequate performance in the sector
- **Tariffs regimes are often not well developed.** This is because tariffs are not set per the approach established by law. There is usually heavy political influence on the tariffs charged by the utility. In addition, most bodies with responsibility for setting tariffs do not use public consultations; this raises issues of transparency. In addition, even in cases where sector legislation and regulations establish a clear methodology for setting tariffs, a weak institutional framework may result in a tariff-setting approach that is not consistent with the legal and regulatory framework
- **Managerial autonomy is limited in some water utilities**. Managers in water utilities do not have full managerial autonomy to carry out operations. Some water utilities have little power to preserve their business autonomy from government officials, who usually appoint the members of upper management and the board of directors.[3] Managerial autonomy is important because it ensures that management can make substantial and permanent changes without interference or predation from other parts of government. Otherwise, management may be incentivized by the political system to increase certain types of costs or support commercially unviable, but politically tenable, policy and regulatory decisions.

Regarding the performance of the water and wastewater sector:

- **Piped water coverage in some of the assessed countries is below the average coverage for Latin America and the Caribbean.** Five of the seven assessed countries—Belize, Guyana, Jamaica, and Suriname—have piped water coverage below the Latin American and Caribbean average of 89 percent. Utilities in the region need to increase access to piped water systems. This is important because, in urban areas and some rural areas, piped water systems are the most efficient and effective way to provide potable water. To increase access through piped water systems, utilities must make the necessary investments to extend their coverage and, in some cases, the water supply
- **Collection and treatment of wastewater in most jurisdictions in the Caribbean is noticeably lacking.** Most state-owned water utilities collect less than 20 percent of wastewater. Furthermore, in many cases, adequate treatment of the wastewater collected is limited. Other than the state-owned water utilities, most wastewater collection and treatment is limited. Achieving substantial increases in wastewater collection and treatment will require significant capital investments

[3] Fidel H. Cuellar, "Corporate Governance in Water and Sanitation Enterprises," Inter-American Development Bank, 2001, accessed 3/30/2017, https://publications.iadb.org/bitstream/handle/11319/5420/Corporate%20Governance%20in%20Water%20and%20Sanitation%20Enterprises%20%20.pdf?sequence=1

- **The quality of service provided by state owned utilities is not adequate.** Most state-owned water utilities struggle to provide their customers with the desired level of continuity, pressure, and water quality. To improve the quality of service, state-owned water utilities must have income streams that allow them to cover their costs. This income can come from tariffs or subsidies
- **Information regarding quality of service and operating efficiency is poor in many of the water utilities.** We found that few water utilities measure, collect, or can readily access data on the quality of the services they provide. This lack of information not only affects the assessment of the utility, but also makes it more difficult to develop solutions to improve the quality of service and operating efficiency. The lack of information also reflects poorly on the utility given that it decreases transparency and accountability. To improve their performance, utilities should start to obtain and systematically record information regarding quality of service and operating efficiency
- **NRW levels are high.** Utilities in the region need to reduce commercial and physical losses of water to improve their financial sustainability and the quality of service they provide. A first step to reducing NRW is to gather adequate information, such as comprehensive water balances, to develop effective strategies for reducing NRW
- **Tariffs do not cover the cost of service.** Tariffs charged by most of the state-owned utilities are easily affordable for most customers. The average household expenditure on water as a percent of household income is 1 percent. However, these tariffs do not cover the full cost of service. This cost of service will increase as state-owned water utilities are charged with the responsibility for increasing wastewater collection and treatment
- **Many water utilities in the Caribbean are not investing enough in their assets.** A water utility that is not regularly investing in its assets or that does not have a sufficient asset base will struggle to provide desired levels of access and quality of service. The lack of investment may also negatively impact a utility's operating efficiency. Therefore, governments need to prioritize investment in assets to improve their efficiency, coverage, and quality of service.

1.6 Structure of the Report

The report is composed of two parts: the baseline report and the action plan. These parts contain the following information:

Baseline Report

The baseline report describes trends and best practices of Caribbean institutions responsible for water and sanitation services. The baseline report assesses the following aspects:

- **Performance of the water and sanitation sector in the Caribbean** (Section 2). This section focuses on the performance of water utilities in the sector. It assesses service coverage, quality of service, operating performance, financial performance, and affordability of tariffs in the seven assessed countries
- **Policies in the water and sanitation sector in the Caribbean** (Section 3). This section describes the prioritization of the water and sanitation sector within the governments' national agendas. It also assesses relevant sector policies and strategies

- **Institutions in the water and sanitation sector in the Caribbean** (Section 4). This section focuses on the legal, regulatory, and institutional frameworks of the water and wastewater sector in the seven assessed countries.

Action Plan

The action plan describes a preliminary framework to improve the governance of the water and sanitation sector in the Caribbean. Based on the information and analysis from the baseline report, this preliminary framework presents recommendations on the following elements of governance:

- Regulation
- Financial instruments
- Decentralization
- Fiscal transfers and incentives
- The role of civil society.

The action plan outlines the following main steps:

- **Establish a baseline** (Section 5). This is the first step to improve sector governance and service delivery. This section focuses on how to and who can set the baseline of water supply and sanitation services
- **Stabilize underperforming utilities** (Section 6). This section describes how utilities should stabilize their operations to allow for future investments to be effective. It lists what actions a utility and a government can take to stabilize the utility's operations
- **Set targets and allocate money to reach those targets** (Section 7). This section describes how clear targets provide clarity to set a path for improving utility performance, and improving services in areas where piped services are not viable. It recommends how to set those targets and who should do it
- **Establish monitoring and enforcement mechanisms** (Section 8). This section describes how to establish monitoring and enforcement mechanisms that are essential for improving water-sector governance.

Part A: Baseline Report

The baseline report has the following information:

- Performance of the water and sanitation sector in the Caribbean (Section 2)
- Policies in the water and sanitation sector in the Caribbean (Section 3)
- Institutions in the water and sanitation sector in the Caribbean (Section 4).

2 Performance of the Water and Sanitation Sector in the Caribbean

When using quantitative indicators to assess the performance of a sector or a water utility, the following six aspects are generally considered the most important:

- **Access to water and sanitation services** (Section 2.1)—refers to the water and wastewater service coverage that a utility provides to its customers. This section describes water and sanitation coverage in the region. It also identifies different levels or services provision at the country and at the utility level
- **Quality of service** (Section 2.2)—refers to the reliability, continuity, and responsiveness of the service provided by the utility. It also includes the quality of water provided and the wastewater that is collected and disposed of
- **Operating efficiency** (Section 2.3)—refers to the utility's ability to provide a cost-efficient water and sanitation service. This section focuses on how the levels of NRW, collection efficiency, human capital, and energy efficiency affect the provision of cost-efficient water and sanitation service
- **Financial performance** (Section 2.4)— this section analyses the operating margins, profitability, capital structure, and adequacy of investments, amongst others, of the utilities in the seven assessed countries
- **Paying for and financing sources** (Section 2.5)—refers to who ultimately bears the cost and provides the money upfront for capital investments
- **Affordability of tariffs** (Section 2.6)—refers to the ability of consumers to afford the tariffs charged by the utilities.

We compared the sector and the utilities' performance across these six aspects. Table 2.1 summarizes the performance of the water and sanitation sector. The countries are rated using a range from 0 to 4 to show the extent to which each data point applies. A 4 indicates a high level of success and a 0 indicates a low level of success.

Table 2.1: Summary Performance of the Water and Sanitation Sectors in the Caribbean

Country	Water utility	Improved water coverage	Improved sanitation coverage	Quality of service	Operating efficiency	Financial performance
Belize	BWS	3	2	4	4	4
Jamaica	NWC	3	2	2	1	1
Barbados	BWA	4	3	2	2	1
The Bahamas	WSC	4	3	3	3	0
Suriname	SWM	2	2	3	TBD	1
Trinidad and Tobago	WASA	3	3	3	1	0
Guyana	GWI	2	2	1	TBD	0

Note: In this table we provide a range from 0 to 4 to show the extent to which each data point applies. A 4 indicates high level of success and a 0 indicates low level of success.

As another perspective of performance, we applied the Water Utility Framework published by the World Bank, providing the results shown in Table 2.2.

Table 2.2: Utility performance based on World Bank's Water Utility Turnaround Framework

	Organization and Strategy	HR Management	Financial Management	Tech Ops	Com Ops	Overall
BWA	TBD	2	4	2	3	2?
BWS	TBD	3	4 or 5	3 or 4	4	3 or 4
DOWASCO	TBD	3	1	2	2	2?
GWI	TBD	TBD	1	1	TBD	1
NWC	TBD	3	2	1	2	2
SWM	TBD	2	TBD	2	TBD	TBD
WASA	TBD	1	1	2	1	1 or 2?
WSC	TBD	2	1	3	4	2 or 3?

The values equal 1 = Elementary, 2 = Basic, 3 = Good, 4 = Well-Performing, 5 = World-Class. A question mark indicates that sufficient data is not available to make a full evaluation.

2.1 Water and Sanitation Service Coverage

Improved water coverage at the country level is almost universal in the Caribbean, with all countries serving more than 98 percent of their respective populations (Table 2.3). However, rural areas generally have lower coverage than urban areas. Access to improved sanitation facilities is almost on par with improved water sources, at an average of 96 percent across the region.

Table 2.3: Comparison of Improved Water and Sanitation Services in the Caribbean

Country	Improved Water Sources	Improved Sanitation Facilities
Assessed countries		
Barbados (2017)	99%	98%
Belize (2017)	99%	97%
The Bahamas (2017)	99%	98%
Guyana (2017)	97%	96%
Trinidad and Tobago (2017)	99%	99%
Suriname (2017)	97%	95%
Jamaica (2017)	96%	99%
Other benchmarked countries		
Antigua and Barbuda (2017)	97%	92%
Saint Kitts and Nevis (2017)	NA	NA
Grenada (2017)	97%	94%
Saint Lucia (2017)	100%	99%
Saint Vincent and the Grenadines (2017)	95%	90%
Puerto Rico (2017)	97%	97%
Dominica (2017)	NA	NA
Average	98%	96%

Source: WHO/UNICEF Joint Monitoring Programme, 2017

Caribbean utilities have extensive water supply networks that serve an average of 76 percent of households in the region (Table 2.4). However, coverage varies greatly by utility, from nearly universal (BWA) to less than half of the population in the utility's service area (NWC). On average, sewerage networks reach only 11 percent of households. WASA, the utility with the highest coverage, reaches 18 percent of its service area.

Table 2.4: Comparison of Utility Coverage

Country	Utility	Water Coverage	Sewerage Coverage
Assessed countries			
Barbados	BWA (2013)	100%	2%
Belize	BWS (2015)	96%	17%
Trinidad and Tobago	WASA (2015)	97%	18%
Jamaica	NWC (2015)	35%	10%
Suriname	SWM (2015)	57%	TBD
The Bahamas	WSC (2015)	47%	TBD
Guyana	GWI	TBD	TBD
Other benchmarked countries			
Curacao	AQUA (2015)	100%	0%
St Lucia	WASCO (2015)	70%	4%
Dominica	DOWASCO (2015)	67%	8%
Average		76%	11%

Source: Information provided by the utilities

2.1.1 Water coverage

Most of the population in each of the seven countries we assessed is served through piped systems. However, the proportion of population that is served through piped systems varies greatly from country to country.

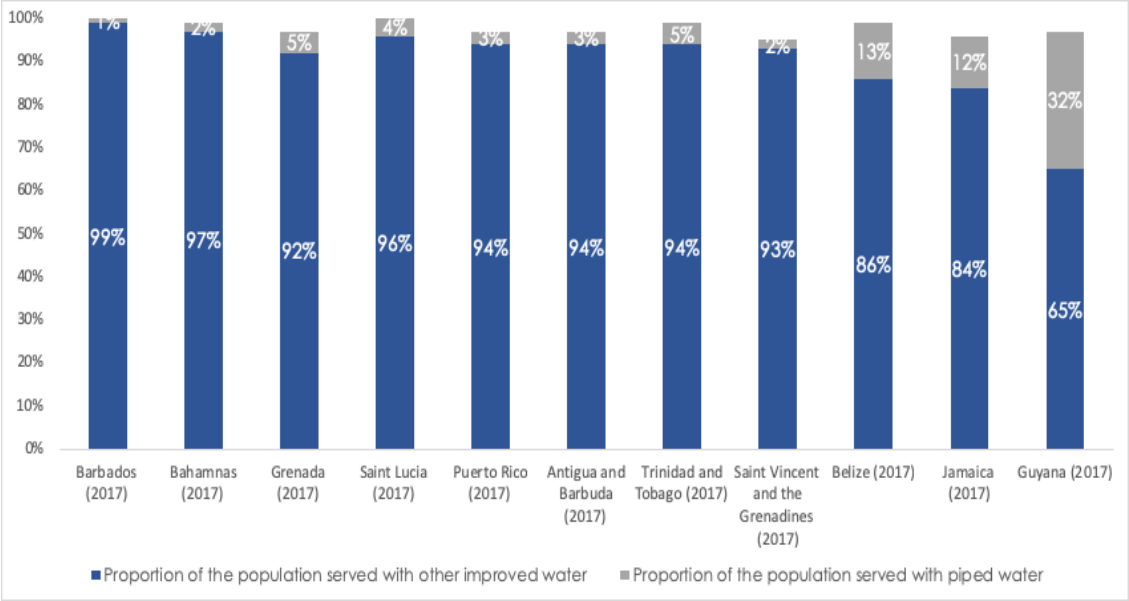
Water coverage at the country level

Access to improved water is high in the participating countries we assessed. Improved water service includes any type of facility that adequately protects water from outside contamination, particularly fecal matter.[4] Improved water services include piped water and other improved water services such as public standpipes and protected wells. Of the Caribbean countries, Belize and Barbados have the highest access to improved water.

Improved water coverage has been benchmarked using data from the WHO/UNICEF Joint Monitoring Programme. Figure 2.1 shows improved water coverage for the benchmarked utilities. For Trinidad and Tobago, WASA indicates that piped water coverage is 93.6 percent, which is higher than the 89 percent coverage reported in the WHO/UNICEF database. Although piped water coverage is high in Latin America and the Caribbean, with an average of 89 percent of the population covered, not all assessed countries provide adequate piped water coverage. Three out of the seven assessed countries—Belize, Guyana, Jamaica—have piped water coverage below the Latin American and Caribbean average of 89 percent.

[4] World Health Organization. 2012. Key Terms. WHO/UNICEF joint monitoring report 2012. Retrieved from http://www.who.int/water_sanitation_health/monitoring/jmp2012/key_terms/en/

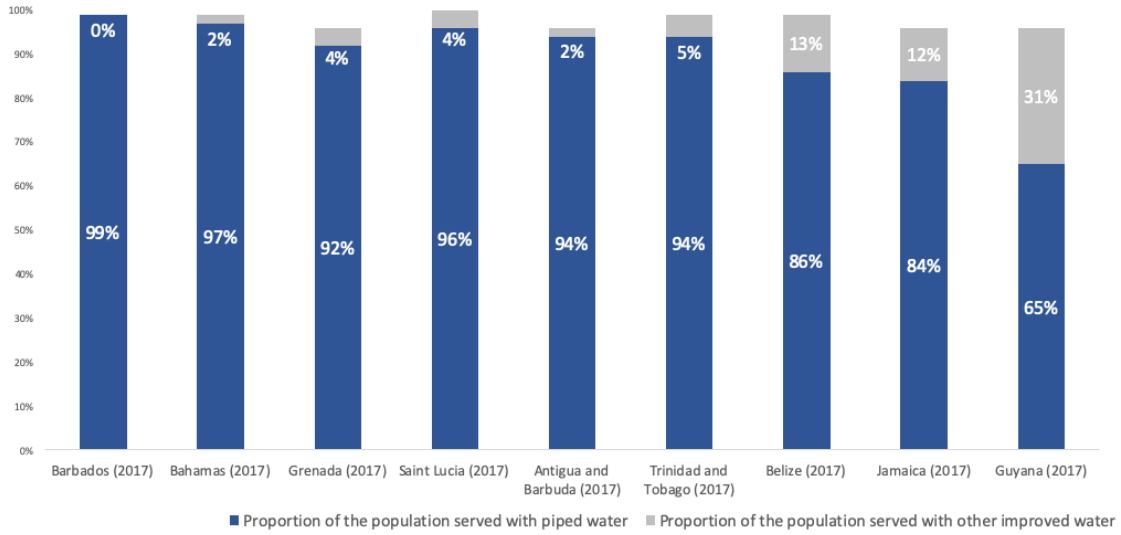
Figure 2.1: Improved Water Coverage in the Caribbean



Source: WHO/UNICEF Joint Monitoring Programme, 2017

Access to improved water is different in urban and rural areas. Except for Belize, rural populations have lower access than urban areas (Figure 2.2). Jamaica and Suriname present the most significant coverage difference, with approximately a ten-percentage point difference between urban areas and rural areas. Nevertheless, access to improved water in the assessed countries is above the average 98 percent for urban populations, except in Jamaica and Trinidad and Tobago.

Figure 2.2: Improved Water Coverage in Urban and Rural Areas



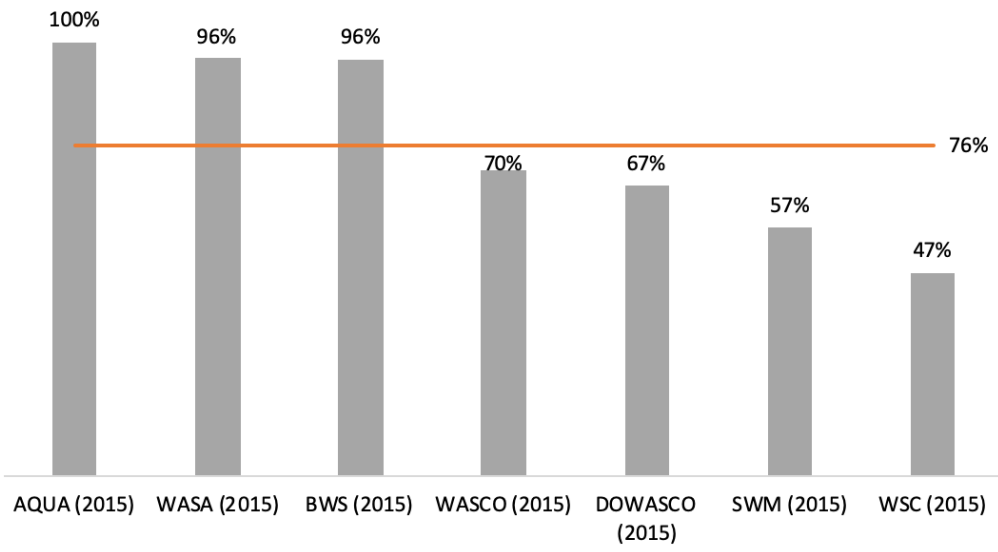
Source: WHO/UNICEF Joint Monitoring Programme, 2017

Water coverage at the utility level

Water coverage varies greatly among utilities in the Caribbean. Service coverage at the utility level is measured as the percentage of people within the utility's service area that received service from the utility.[5] Several utilities provide sufficient service to a large and increasing share of people in the service area, such as AQUA, BWS and WASA. These utilities provide the most extensive coverage, exceeding the Latin American average of 80 percent (Figure 2.3). SWM and WSC rank the lowest, providing service to 57 percent and 47 percent of the population in their service area.

[5] In many cases, the benchmarked utilities do not have a direct way of calculating that value. For those utilities, we calculated the coverage level by multiplying the number of residential customers reported by the utility by the estimated average household density for the utility's service area.

Figure 2.3: Water Coverage by Utility



Source: Calculated by K&M with information provided by utilities

2.1.2 Sanitation coverage

Sanitation coverage level is low in the Caribbean region. The assessed countries need to improve the level of access to improved sanitation, specifically by closing the gaps between service coverage in urban and rural areas. This section describes the difference between coverage at the country level and at the utility level.

Sanitation at the country level

At the country level, we assess sanitation coverage using the proportion of the population within a country with access to improved sanitation services. According to the World Health Organization (WHO), improved sanitation services include any type of facility that hygienically separates human excreta from human contact.[6] Facilities using sewer connections, septic tanks, pour-flush latrines, and pit latrines with slabs are considered improved sanitation facilities.[7]

Belize, Barbados, The Bahamas, and Trinidad and Tobago have a high level of access to improved sanitation. Their service coverage is equal to or greater than the average of 90 percent (Figure 2.4). Of the assessed countries, Barbados has the highest access to improved sanitation with 96 percent of the population served. Suriname has the lowest access to improved sanitation with 79 percent of the population served.

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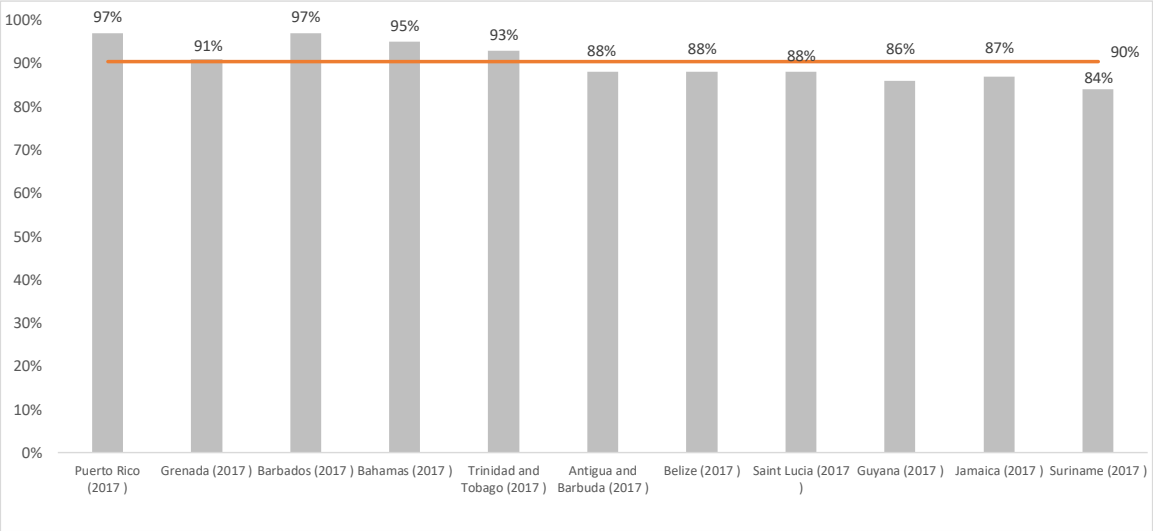
[6] World Health Organization. 2012. Key Terms. WHO/UNICEF joint monitoring report 2012. Retrieved from http://www.who.int/water_sanitation_health/monitoring/jmp2012/key_terms/en/

[7] The United Nation's Joint Monitoring Program (JMP) for Water Supply and Sanitation defines improved sanitation as the following: flush toilets; connections to piped sewer system; connections to a septic tank; flush-pour flush to a pit-latrine; pit latrine with slab; ventilated improved pit latrine; and composting toilet.

See https://www.wssinfo.org/definitions-methods/watsan-categories/ for further information.

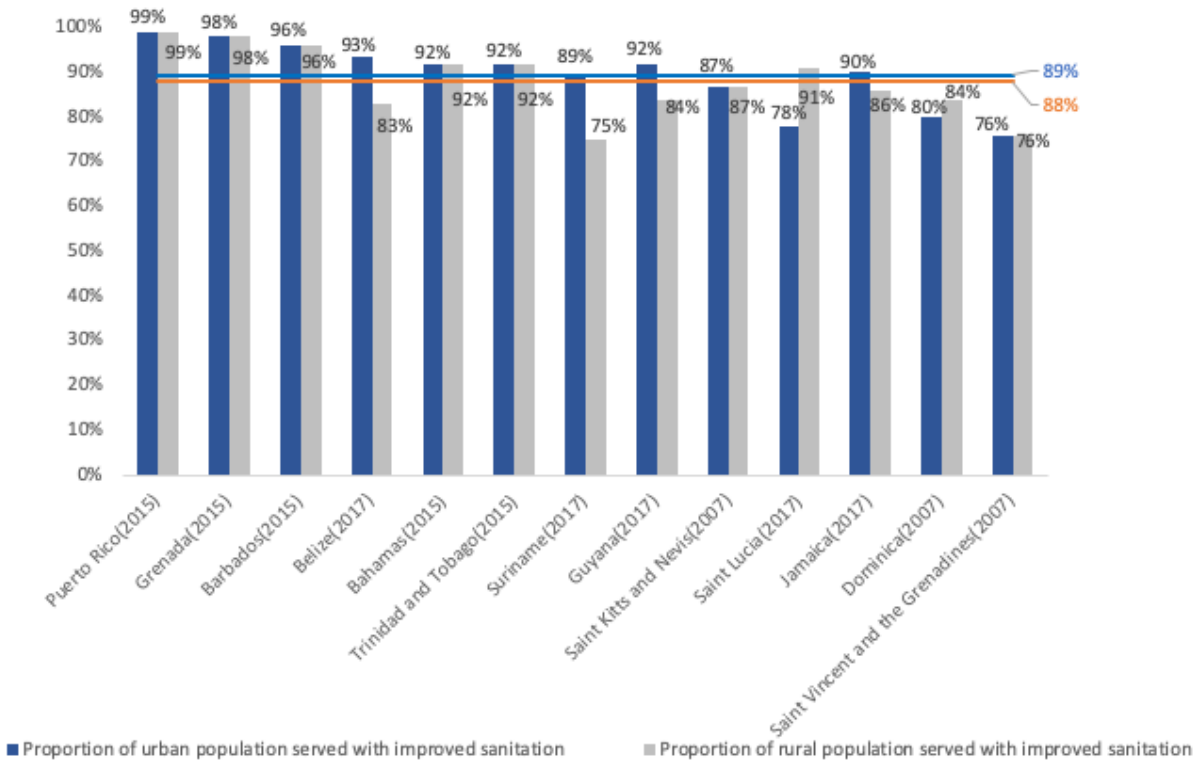
Figure 2.4: Access to Improved Sanitation in the Caribbean



Source: WHO/UNICEF Joint Monitoring Programme, 2019

Though some countries have high access to improved sanitation services, a gap exists between access to improved sanitation services in urban and rural areas. In Jamaica, Guyana, and Suriname the difference of coverage is more than 10 percentage points (Figure 2.5). Suriname's has the most accentuated difference, with 88 percent of the urban population having access to improved sanitation versus 61 percent of the rural population having access to improved sanitation (Figure 2.5). It should be noted also that Jamaica, Guyana, and Suriname have coverage below the average of 89 percent for urban areas and 87 percent for rural areas.

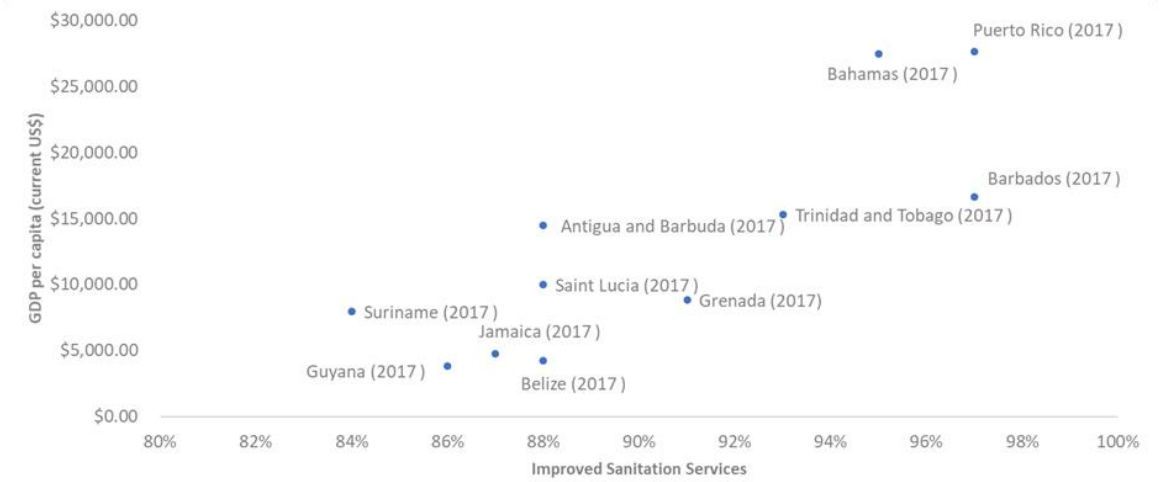
Figure 2.5: Access to Sanitation in Rural and Urban Areas



Source: WHO/UNICEF Joint Monitoring Programme, 2019

Improved sanitation in the Caribbean is loosely correlated with the country's income. High income countries, such as The Bahamas and Trinidad and Tobago have a higher access to improved sanitation. Countries with GDP per capita under US$15,000 have lower access to improved sanitation. This is the case for Suriname, Guyana, and Jamaica. However, it should be noted that this correlation does not apply to Grenada, Dominica, and Belize, that provide access to improved sanitation to more than 90 percent of their respective populations.

Figure 2.6: Improved Sanitation Service v GDP per Capita



Source: GDP per capita (current US$), Trading Economics website.

Improved Sanitation Service, WHO/UNICEF Joint Monitoring Programme, 2019

The most common improved sanitation facilities used are septic tanks and pit latrines. Table 2.5 shows the level of access to improved sanitation facilities in the participating Caribbean countries. Suriname is the country with the highest use of septic tanks. Approximately 85 percent of the population uses septic tanks, while 15 percent use pit latrines (Table 2.5).

The access to centralized wastewater systems is low in the region. Access to a centralized wastewater system is important because it is likely the most efficient and effective method for collecting and treating wastewater in highly populated areas. At 30 percent, the country with the highest proportion of the population connected to a centralized sewerage system is Trinidad and Tobago. The Bahamas and Guyana rank the lowest with 13 percent of the population connected to a centralized sewerage system.

Table 2.5: Types of Sanitation Facilities in Use

Country	Centralized sewerage system	Septic tanks	Pit latrines	Other
Assessed countries				
Trinidad and Tobago (2012)	30%	64%	6%	
Jamaica (2007)	22%	42%	34%	
The Bahamas (2009)	13%	81%	5%	
Guyana (2013)	13%		56%	
Suriname		85%	15%	
Other benchmarked countries				
Belize (2010)	63%	34%		
St Vincent and Grenadines (2012)	12%	57%	30%	
Saint Lucia (2006)	7%	63%	23%	
Grenada (2012)	5%	55%	36%	14%

Source: Health in the Americas 2012 Edition, Regional Outlook and Country Profiles, PAHO http://www1.paho.org/saludenlasamericas/docs/hia-2012-summary.pdf

Baseline Assessment Study on Wastewater Management Jamaica. 2015. Caribbean Regional Fund for Wastewater Management. http://www.gefcrew.org/images/reports/CReW_C2_Jamaica_BaselineAssessment_Report_Final_2015.pdf

Baseline Assessment Study on Wastewater Management Belize. 2015. Caribbean Regional Fund for Wastewater Management. http://www.gefcrew.org/images/reports/CReW_C2_Belize_BaselineAssessment_Report_Draft_2015.pdf

Assessment Report for Select Countries in Respect of the Protocol Concerning Pollution From Land-Based Sources And Activities. 2013. Caribbean Regional Fund for Wastewater Management. http://www.gefcrew.org/images/reports/project_final_reports/CReW_C2_Regional_FINALLBSProtocolAssessmentReportselectedcountries_Final_Jan2013.pdf

Caribbean Development Bank (2015). "Assessment of the Water Sector in the Caribbean"

PAHO/WHO Country Cooperation Strategy Suriname 2012-2016, November 2012

WASA (2015). "Annual Report"

Note: For Suriname, this only takes into account the types of sanitation in the city of Paramaribo

Despite the relatively high level of access to improved sanitation, the lack of treatment and undue disposal of wastewater is still prevalent in the Caribbean. On a regional level, it is estimated that 20 percent of the wastewater that is produced in the Caribbean is collected and five percent of the total wastewater is treated and disposed of appropriately.[8] A 2010 CEP[9] report on water pollution in the Caribbean found fecal coliform bacteria (F-Coli) in water sources, which indicates water is contaminated with fecal material. This is important because higher contamination leads to higher health risks for individuals in contact with contaminated water. In 2010, The Bahamas, Barbados, Guyana, Jamaica, and Trinidad and Tobago ranked as the countries with the highest

8 Pemberton, C., Financing Water and Sewerage Systems—A Caribbean Perspective, http://www.bvsde.paho.org/bvsacd/cwwa/cecil.pdf (accessed on August 23, 2013).

9 Caribbean Environmental Programme Technical Report (November 2010)

pollution levels (Table 2.6). Jamaica has the highest level of water pollution related to fecal material.

Table 2.6: Water Pollution Levels (2010)

Country	BOD[10] (mg/l[4])	TSS[11] (mg/l)	pH	F-Coli[12] (#/100ml)	T-Coli[13] (#/100 ml)
Assessed countries					
The Bahamas	1,154	2,632	1,006	209	44
Barbados	1,050	2,394	968	117	40
Belize	813	1,875	791	100	37
Guyana	2,317	5,272	2,115	254	85
Jamaica	12,413	28,212	11,284	1,354	451
Trinidad and Tobago	4,117	9,416	3,851	472	166
Other benchmarked countries					
Dominica	264	600	240	29	9
Grenada	346	788	317	38	13
Saint Lucia	671	1,526	610	73	24

Source: Caribbean Development Bank (2015). "Assessment of the Water Sector in the Caribbean"

In summary, in all participating countries, wastewater collection needs to be improved and wastewater treatment needs to be increased.

2.1.3 Sewerage coverage

Sewerage coverage is very low in the Caribbean. Of the benchmarked utilities that provided information regarding this indicator, average coverage was 11 percent (Figure 2.7). Of those utilities, WASA (Trinidad and Tobago) is the one utility with the most extensive coverage, reaching 30 percent of the population in its service area.

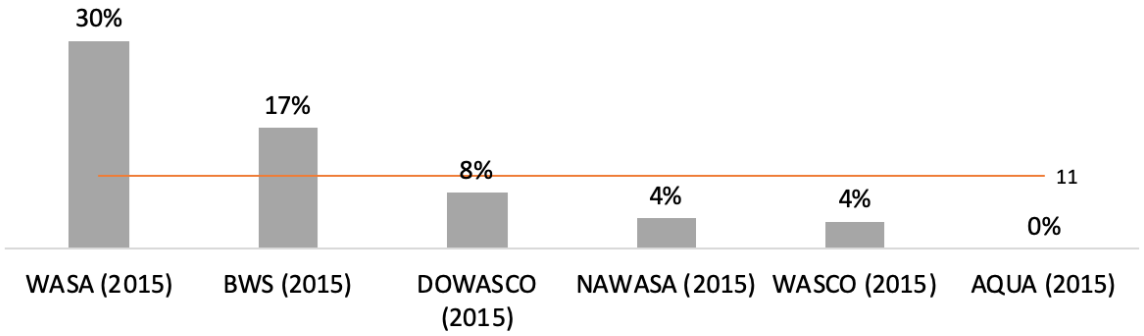
[10] Biochemical oxygen demand measures the amount of dissolved oxygen (DO) that is used by aerobic microorganisms when decomposing organic matter in water. The higher levels of BOD indicate the amount of organic matter available for oxygen consuming bacteria is greater.

[11] Total suspended solids (TSS) are considered conventional water pollutants. They are dry-weight particles that can be found in water.

[12] Fecal Coliform are a group of coliform found in human and animal human material.

[13] Total coliform include that are found in the soil and the environment.

Figure 2.7: Sewerage Coverage by Utility



Source: Information provided by utilities

2.2 Quality of Service

The information we have regarding the benchmarked utilities indicates that the quality of service provided by many water utilities in the Caribbean is generally poor. Few water utilities measure, collect, or can readily access data on the quality of the services they provide (for example, regarding average continuity in their networks). Most utilities we surveyed did not provide information on quality of service. This lack of information is an indicator of poor quality of service. In addition, for those utilities that provided information on their quality of service, the water quality is better than the quality of the service.

Quality of service describes the reliability, continuity, and responsiveness of the service provided by the utility. It also includes the quality of water provided and the wastewater that is collected and disposed of. We assess the quality of service provided by water utilities in the Caribbean using the following indicators:

- Quality of water supplied (2.2.1)
- Continuity of service (2.2.2)
- Average number of complaints per 1000 customers (2.2.3)
- Wastewater treatment (2.2.4).

Of the seven utilities we assessed, BWS seems to provide the best quality of service (See Table 2.7). It provided information on all four aspects of quality of service. The other six utilities provided little to no information. In addition, BWS reported higher levels of quality of service than the other six utilities. BWS and BWA reported similar percentage of water tests that meet WHO standards, at 93 and 94 percent respectively. BWS reported that 100 percent of its wastewater is treated.

Table 2.7: Summary Indicators of Quality of Service

Country	Utility	Quality of Water Supplied (% of water-quality tests meet WHO standards)	Wastewater Treatment (% of wastewater receiving any treatment)	Continuity of Service (average hours of service per day)	Customer Service (complaints per year / 1,000 customers)

The Bahamas	WSC	100%	TBD	24	85
Trinidad and Tobago	WASA	97%	94%	24[1]	TBD
Belize	BWS	93%	100%	24	27
Jamaica	NWC	96%	TBD	16	TBD
Suriname	SWM	95%	TBD	24	TBD
Barbados	BWA	94%	TBD	24	TBD
Guyana	GWI	TBD	TBD	12	TBD

Note: TBD = "To be determined"

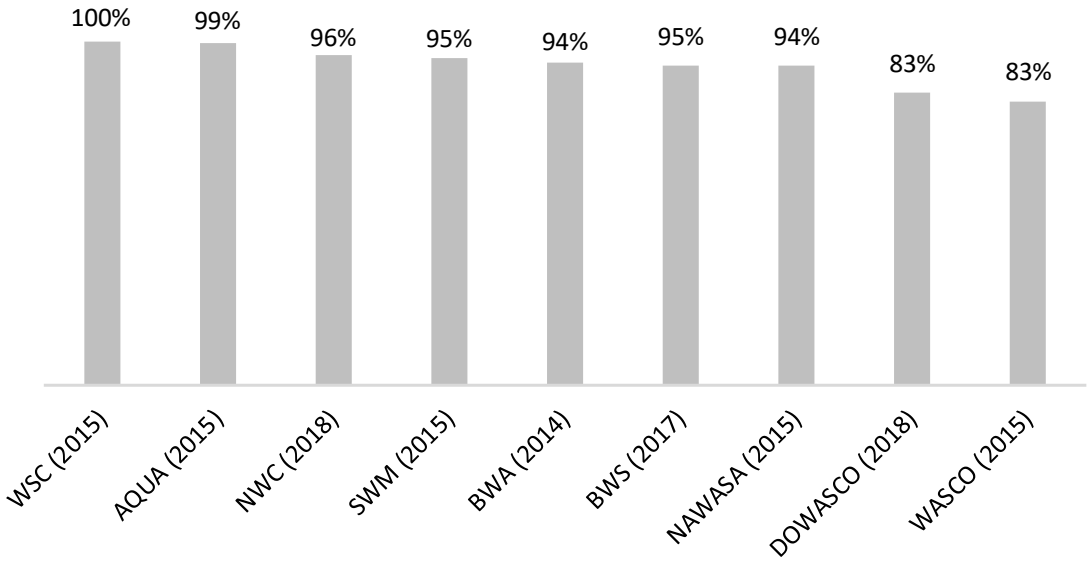
[1] WASA reports that 53.5 percent of the population receives 24/7 water supply.

Source: Information provided by the utilities.

2.2.1 Quality of water supplied

All utilities that provided information reported high levels of quality of water. Quality of water is measured as the percentage of water tested that meets WHO standards of adequate water quality. Specifically, eight utilities—WSC, AQUA, WASA, NAWASA, BWS, SWM, BWA, and WASCO—reported the percentage of water tested that meets standards. Seven out of nine utilities reported at least 94 percent of the water they supplied meeting WHO standards of water quality (see Figure 2.8). An average of 95 percent of water-quality tests meet WHO standards.

Figure 2.8: Quality of Water Supplied



Source: Information provided by utilities.

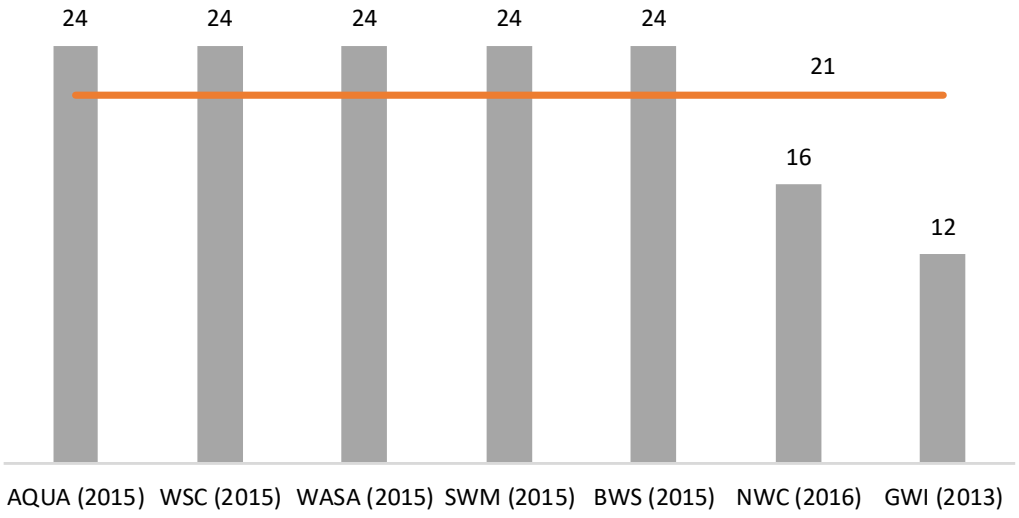
2.2.2 Continuity of service

Most utilities that provided information reported high levels of continuity of service. Continuity of service is measured as the average hours of water service per day. Continuous water service is when a customer receives an average 24 hours of water

service per day, seven days per week (24/7). Intermittent service is anything lower than 24/7. Continuity of service is a particularly important aspect of service quality.

Seven utilities—AQUA, WSC, SWM, BWS, WASA, NWC, and GWI—reported their continuity of service. Except for GWI, six utilities reported having continuous water service. GWI reported having intermittent service, an average of 12 hours of service per day (see Figure 2.9). WASA reported that 53.5 percent of the population receives 24/7water supply.

Figure 2.9: Continuity of Service



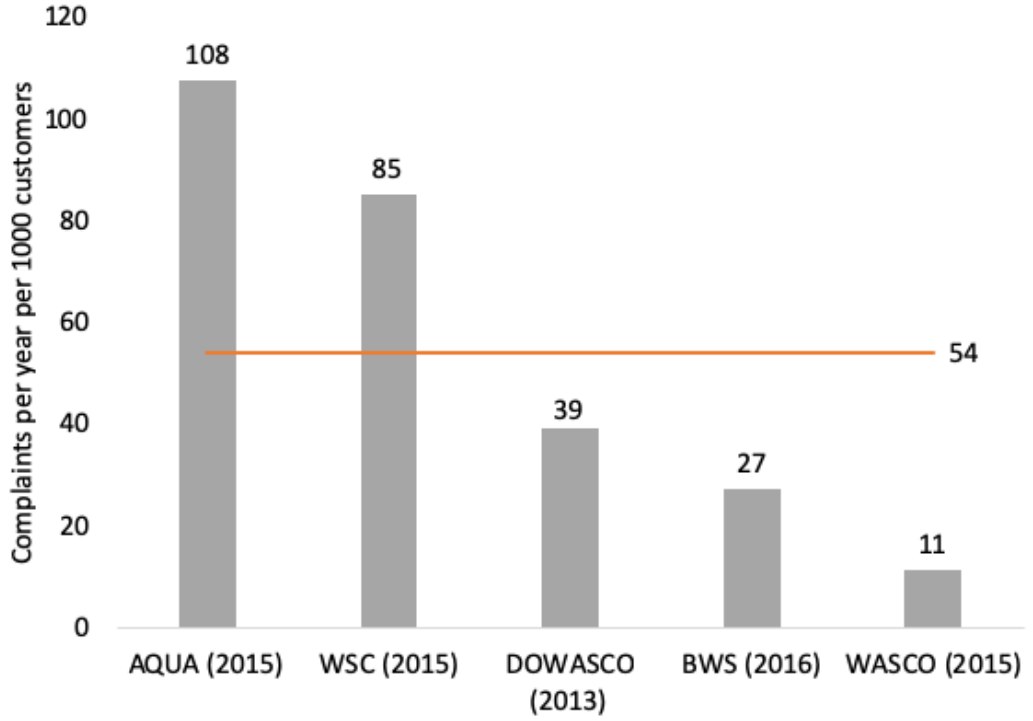
Source for AQUA, WSC, and BWS: Information provided by utilities. Source for GWI, SWM: Caribbean Development Bank, "Assessment of the Water Sector in the Caribbean", 2015.

2.2.3 Customer satisfaction

There was a large variance in terms of customer satisfaction among the utilities that provided information. For this report, we assessed customer satisfaction using the average number of customer complaints per 1,000 customers as reported by the utilities. It is important to note that utilities that are focused on improving customer service may have a higher number of complaints. The reason for this is that they may have better systems in place for collecting and tracking customer complaints. For example, BWS recently installed an upgraded work-order tracking system that monitors customers' complaints and BWS's responsiveness to those complaints.

Five utilities—AQUA, WSC, DOWASCO, BWS, and WASCO—reported this number. There was a lot of variation among these water utilities in terms of customer satisfaction. The average number of customer complaints per 1,000 customers ranged from 108 (AQUA in 2015) to 27 (BWS in 2016) (see Figure 2.10).

Figure 2.10: Average Number of Customer Complaints per 1,000 Customers



Source: Information provided by utilities.

In addition, BWS customers are generally very satisfied with the quality of service they receive. BWS reports the degree to which customers are satisfied with various aspects of quality of service, specifically, continuity of water supply, water pressure, quality of, and responsiveness to customer complaints. Overall, BWS customers are happy with most aspects of service quality. For example, over 80 percent of BWS customers were satisfied with the continuity of service and water pressure. In addition, 80 percent of BWS customers indicated that the utility's responsiveness to customer complaints was either good or excellent.[14]

2.2.4 Wastewater treatment

Wastewater treatment is inadequate in the Caribbean in terms of wastewater treatment rates and poor effluent quality. Wastewater treatment is measured as the percentage of wastewater that receives any type of treatment—primary, secondary, or tertiary. Of the benchmarked utilities, only two—BWS and NWC—reported their wastewater treatment rates. Wastewater treatment rates varied greatly between these utilities. While BWS reported a wastewater treatment rate of 100 percent, NWC reported a wastewater treatment rate of 50 percent.

Poor effluent quality is also prevalent in the region as indicated by the following evidence:

[14] Business Plan Review Report: 2015-2020. November 2014. p. 20-21.

- **The Bahamas—**Studies report high levels of contamination of ground water by fecal coliform in New Providence.[15] This is attributed to a fragmented and dispersed sewerage network, as well as poorly maintained treatment stations. In 2016, the WSC started to push forward an upgrade of its wastewater treatment plants funded by the IDB[16]
- **Barbados—**The main issues with the sanitation sector in Barbados are the inadequate treatment of domestic wastewater and maintenance of wastewater treatment systems.[17] News reports indicate that some of the water treatment plants may not be operating properly. For example, the South Coast Sewerage Treatment Plant has been malfunctioning since 2016. According to the media, over 90 per cent of the sewage entering the plant was diverted "from the influent pumps to the effluent pumps"[18] In 2019, the Minister of Energy and Water Resources, Alfred Abrahams, reported that disposal wells have not been used since December 21, 2018 and that the bypass pump is only used on standby[19]
- **Belize**—Water wells in areas where sewage treatment facilities are located have shown contamination with fecal material.[20] Tests have shown a high presence of E. coli and other coliforms. This has caused swimming to be discouraged in some coastal waters
- **Guyana**—GWI does not treat wastewater, which is pumped into the rivers.[21] This has caused surface water to be contaminated with sewage, particularly in the heavily populated coastal areas
- **Suriname—**According to CREW, [22] water and wastewater run through the same (combined) system of open canals and pipes, which poses the risk of water contamination. The system is poorly structured and tends to overflow during the rainy

[15] Inter-American Development Bank, "WSC Support Program – New Providence Water Supply and Sanitation Systems Upgrade," September 2011, accessed 3/1/2017, http://www.iadb.org/en/projects/project-description-title,1303.html?id=bh-l1028

[16] Bahamas Local, "WSC Signs Contracts to Rehabilitation of Small Pumping Station and Related Works," November 2016, accessed 3/1/2017 https://www.bahamaslocal.com/newsitem/163949/WSC_Signs_Contracts_to_Rehabilitation_of_Small_Pumping_Station_and_Related_Works.html

[17] Caribbean Regional Fund for Wastewater Management. "Barbados", nd, accessed 3/1/2017, http://www.gefcrew.org/index.php/participating-countries/barbados

[18] Barbados Today, "BWA shake-up," 5 January 2017, accessed 3/1/2017, https://www.barbadostoday.bb/2017/01/05/bwa-shake-up/

[19] Barbados Today, "South Coast Sewage Mend." 2 February 2019, accessed 4 November 2019. https://barbadostoday.bb/2019/02/02/south-coast-sewage-mend/

[20] Amandala. 2012. Sewage hazards highlight need for better planning http://amandala.com.bz/news/sewage-hazards-highlight-planning/

[21] Government Information Agency, "GWI prioritises water management treatment," 14 November 2016, accessed 3/1/2017, http://gina.gov.gy/gwi-prioritises-wastewater-management-treatment/

[22] Caribbean Regional Fund for Wastewater Management

season.[23] In addition, wastewater is discharged into the ocean without previous treatment posing health risks to people in contact with the contaminated water

- **Trinidad and Tobago—**some reports highlight that effluent from malfunctioning facilities is often discharged into water sources, posing health and environmental risks. Effluent from treatment facilities is below the quality standard.[24] However, WASA reports that effluent from the Beetham Wastewater Treatment Plant meets local and international effluent quality standards.

2.3 Operating Efficiency

Most water utilities in the Caribbean need to increase their operating efficiency. Many of them have non-revenue water levels above 40 percent, lengthy delays in collecting bills from customers, and are overstaffed. Among the utilities we assessed for this study, BWS has the best operating performance. In particular, BWS has the lowest NRW level (24 percent), the shortest average time to collect bills from customers, and the highest staff productivity (Table 2.8).

[23] Jamaica Observer, "Guyana's complex sewage problem," 29 November 2013, accessed 3/1/2017, http://www.jamaicaobserver.com/news/Guyana-s-complex-sewage-problem_15535971

[24] Inter-American Development Bank, "Wastewater Rehabilitation Program," January 2012, accessed 3/1/2017, http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=36946178

Table 2.8: Operating Performance Status in Caribbean Countries

Country	Utility	Non-Revenue Water	Collection Efficiency	Staffing	Energy Efficiency	Overall
Assessed utilities						
Belize	BWS	4	4	3	3	4
The Bahamas	WSC	3	4	1	3	3
Jamaica	NWC	0	1	3	2	1
Barbados	BWA	1	3	3	2	2
Trinidad and Tobago	WASA	1	0	0	TBD	1
Guyana	GWI	0	TBD	3	0	TBD
Suriname	SWM	2	TBD	1	2	TBD
Other benchmarked utilities						
Dominica	DOWASCO	0	2	2	3	2
St Lucia	WASCO	1	1	1	1	1
Grenada	NAWASA	4	3	1	TBD	3

TBD = To be determined

Harvey Balls are round ideograms used for visual communication of qualitative information. They provide a range from 0 to 4 to show the extent to which each data point applies. A 4 indicates high level of success and a 0 indicates low level of success.

Our assessment of the operating efficiency of these utilities is based on the benchmarking provided in the following sections:

- Non-revenue water (Section 2.3.1)
- Collection efficiency (Section 2.3.2)
- Efficiency of the labor force (Section 2.3.3)
- Energy efficiency (Section 2.3.4).

2.3.1 Non-revenue water

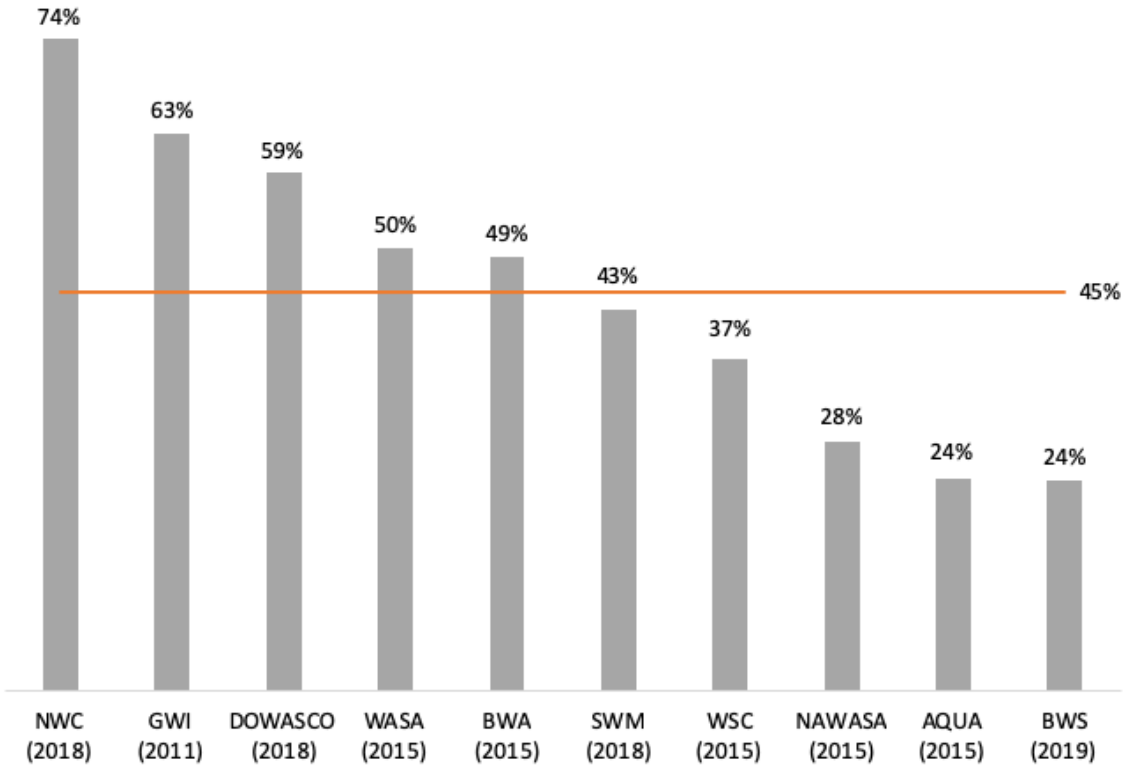
Decreasing NRW is a high priority for increasing the operating efficiency, quality of service, and financial sustainability of water utilities in the Caribbean. NRW is the difference between the volume of water produced and the volume that is billed to customers. Higher NRW can therefore increase operating expenditure (by increasing costs on electricity, chemical costs or purchased water) and decrease revenue (as water that is consumed is not billed).

Among the benchmarked utilities, NRW averaged about 46 percent (Figure 2.11). The optimal NRW value for a water utility depends on the cost of production and distribution of its water supply.[25] However, in general, it is understood that most water utilities with NRW above 30 percent will benefit from reducing it. This indicates that all benchmarked utilities,

[25] For example, a water utility with a high percentage of its water supply produced from desalination (such as WSC) will have a much higher cost of water supply than one with a gravity-fed system.

with the exception of WSC, NAWASA, AQUA, and BWS, would strongly benefit from reducing their NRW.

Figure 2.11: Comparing NRW Across Caribbean Water Utilities



Source: For AQUA, BWA, BWS, NWC, PRASA, SWM, WASA and WSC: Information provided by utilities.

For others: Caribbean Development Bank (2015), Assessment of the Water Sector in the Caribbean.

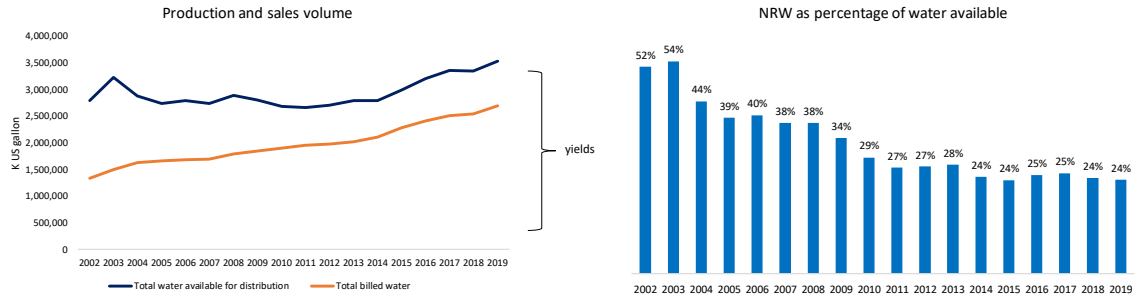
Of the seven utilities that are the focus of this study, NRW levels are especially worrisome in the case of GWI and NWC with NRW at 63 and 72 percent; respectively. For GWI there is limited information about the causes of the losses. In 2015, NWC implemented a program to reduce NRW in the Kingston and St Andrew areas.[26] Nevertheless, this high level of NRW still presents a problem for the utility's financial sustainability. According to its 2017 audited financial statements (Note 2 (b)):

> *"The ability of the group and the Commission to regain and sustain profitability and to generate the incremental cash flows to meet its significant debt service obligations and other operational costs is, therefore, dependent on its ability to successfully minimize operational costs* ***and reduce non-revenue generating water supplied****."*

[26]National Water Commission(NWC) http://www.nwcjamaica.com/Projects

On the other hand, BWS demonstrates that a well-implemented strategy can lead to significant reductions in NRW. Between 2003 and 2019 it managed to reduce NRW from 54 percent to 24 percent. This reduction in NRW allowed BWS to bill 60 percent more water in 2015 than it did in 2003 using the same volume of water produced.

Figure 2.12: BWS' NRW (2002-2019)



Source: BWS

2.3.2 Collection efficiency

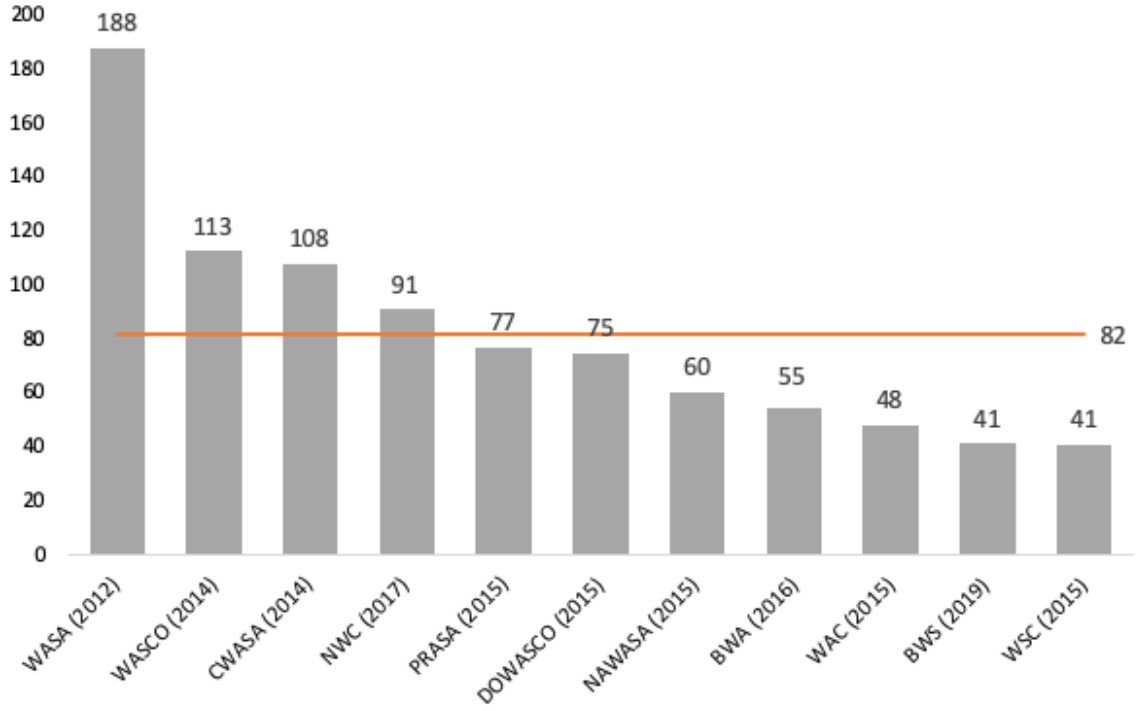
Many water utilities in the Caribbean need to improve their collection efficiency. A water utility's ability to collect bills issued to its customers has a direct and significant impact on its financial sustainability. Only four of the utilities reported the necessary data to calculate the collection rate. We therefore assessed collection efficiency using the ratio of accounts receivable net of provisions for doubtful accounts to revenue. For the benchmarked utilities, it takes an average of about 80 days to collect amounts billed to customers (Figure 2.13), with several taking well over 100 days.[27] For the utilities that are the focus of this study, WASA is of particular concern, since it takes the utility 188 days to collect amounts billed to customers. This may be the result of the lack of a clear disconnection policy. WASA is taking measures to collect its outstanding arrears accumulated over the years, which are estimated to equal about US$250 million.[28]

On the other hand, at 41 days, BWS and WSC appear to have the best collection efficiency of the benchmarked utilities. BWS reports that over the last five years, its collection ratio has ranged from 97 percent to 100 percent.

[27] Accounts receivable/Revenues (days) is calculated by dividing Accounts receivables (net of provisions for doubtful accounts) by revenues.

[28] CN3. http://www.cnc3.co.tt/press-release/wasa-goes-after-delinquents-owing-authority-250-million Recovered 02/25/2017

Figure 2.13: Accounts Receivable/Sales Revenue (days)

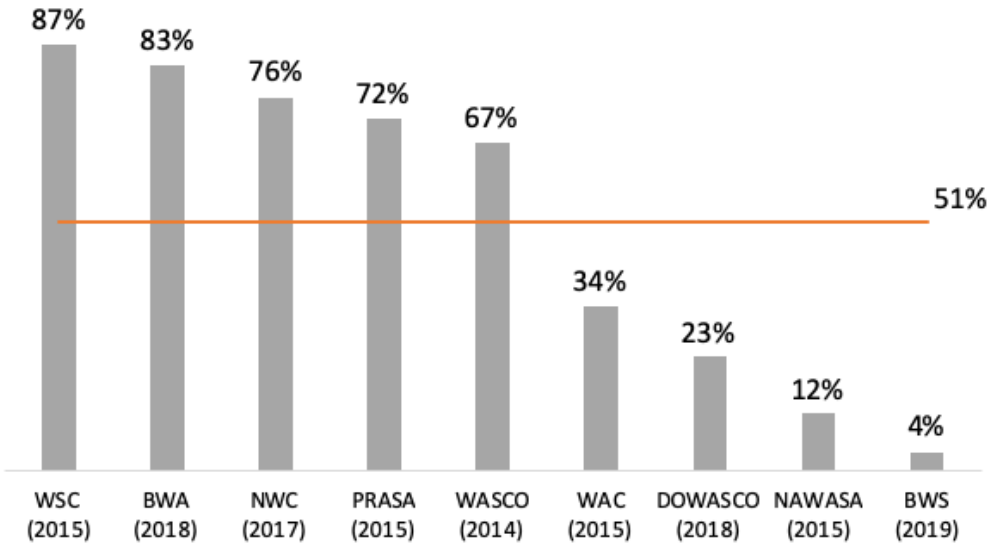


Source: Information provided by utilities.

Another indicator of a water utility's collection efficiency is provision for doubtful accounts as a percent of accounts receivable, gross.[29] Water utilities increase their provisions for doubtful accounts as their confidence in collecting certain bills decreases. Therefore, a utility with lots of bills that it is uncertain these can be collected, will have provisions for doubtful accounts that represent a high percentage of its accounts receivable, gross. For the benchmarked utilities, their provisions for doubtful accounts averaged about 51 percent of their accounts receivable (Figure 2.14). This indicates that over time they have been collecting less than 80 percent of the bills issued to their customers. In comparison, a well-performing utility has a collection rate greater than 90 percent.

[29] For further reference, a utility's balance sheet will show its Accounts receivable, net. This amount is calculated by subtracting Provision for doubtful accounts from Accounts receivable, gross. A utility can thus have a low value for Accounts receivable, net by reducing its Accounts receivable, gross (by increasing its collection of accounts receivable due) or by recognizing that a larger percentage of the bills due from its customers may not be collected (thereby increasing its Provision for doubtful accounts). A utility with a good collection efficiency will therefore have a low level of Provisions for doubtful accounts and Accounts receivable, net.

Figure 2.14: Provision for Doubtful Accounts/Gross Trade Receivables



Source: Information provided by utilities.

2.3.3 Efficiency of the labor force

The indicators for the benchmarked water utilities regarding efficiency of the labor force suggest that most water utilities in the Caribbean could increase their financial sustainability by improving the efficiency of their labor force. For most water utilities, staff costs represent a large share of operating expenditures (OPEX). Therefore, the efficiency of the labor force is an important measure of operating efficiency from a cost perspective.[30] For this study, we assess the efficiency of the labor force of the benchmarked utilities with the following indicators:

- Staff costs as a percent of operating expenditures
- Number of employees per 1,000 water customers
- Average annual compensation per employee (US$).

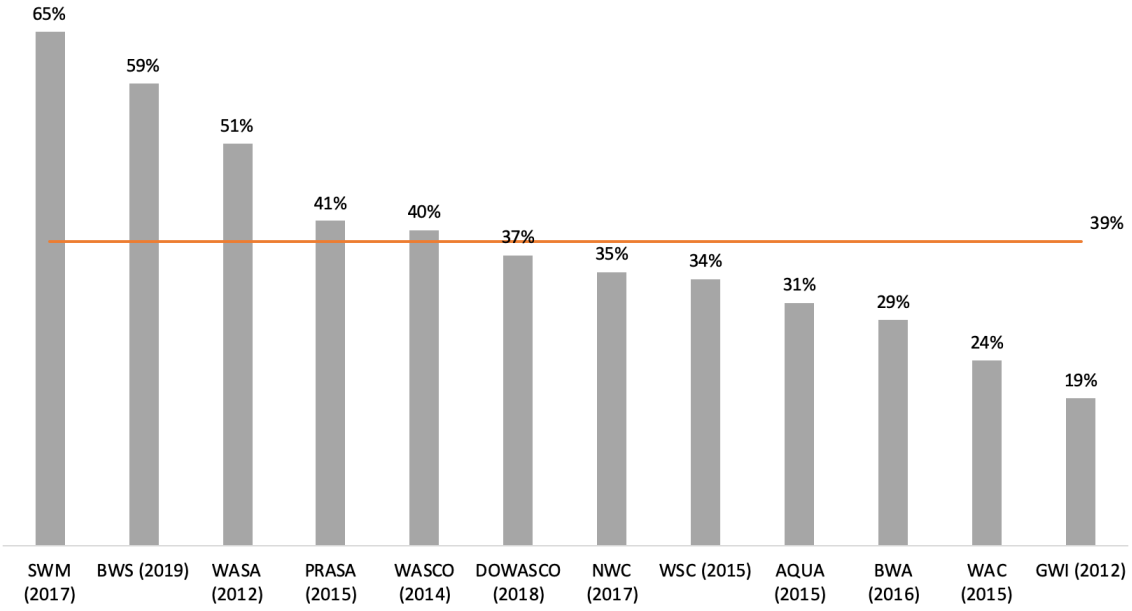
Staff Costs as Percentage of OPEX

For the benchmarked utilities with information available to calculate this indicator, staff costs represent from 19 percent (GWI) to 59 percent (BWS) of OPEX, with the average being 39 percent. As reference, a typical value for water utilities is in the range of about

[30] However, it is important to note that the performance of the water utility is closely linked to the performance of its labor force. For many utilities, it is more important to ensure that it has the qualified staff that it needs than to concern itself with reducing the size of its labor force.

25 to 40 percent.[3132] WSC, NWC, AQUA, WAC, BWA and GWI staff costs make up between 19 and 35 percent of operating costs, which are among the typical levels for this indicator. Staff costs as percentage of operations expense for BWS are high and could be related to low staff productivity.

Figure 2.15: Staff Costs as Percentage of OPEX



Source: Information provided by utilities.

Number of Employees per 1000 Connections

The results from the benchmarked utilities indicate that many water utilities in the Caribbean may be overstaffed. That is, the average water utility in the Caribbean could provide the same quality of service with fewer staff. Labor productivity in water utilities is most commonly measured as the number of employees per 1,000 connections. For the benchmarked utilities with information available, the average value for this indicator is 6.0 (Figure 2.16), with AQUA being the most efficient (3.5) and WASA the least efficient (12.8). In comparison, a World Bank paper suggests, based on staff ratios achieved by the top 25 percent of developing country utilities in a benchmarking study, that a target of 5 or fewer

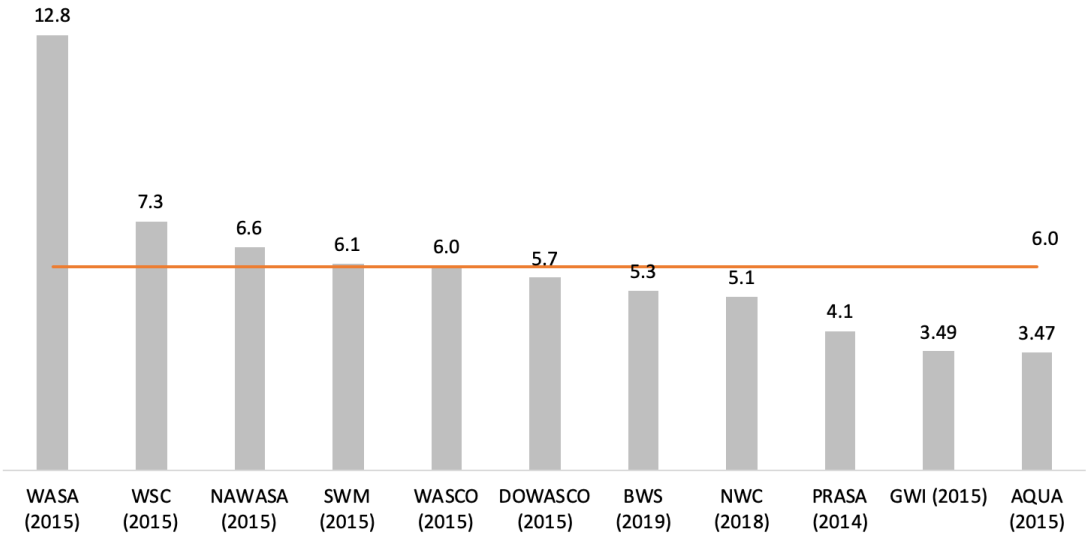
[31] The range is due to other operating expenditures incurred by water utilities depend on the specific characteristics of their service areas. For example, a water utility that must pump all of the water it supplies will spend a significant amount of money on electricity. This will make the cost of electricity a relatively high share of OPEX and thereby decrease the share of staff costs.

[32] In "A Water Scorecard", Public Policy for the Private Sector Note Number 242 (April 2002), Kingdom and Tynan, using data from 246 water utilities in 51 developed and developing countries, found that staff costs represented 39 percent of operating expenditures in the utilities in developing countries and 29 percent in the utilities in developed countries.

staff per 1,000 connections is achievable.[33] Of the benchmarked utilities, AQUA and GWI have values below this target suggested by the World Bank paper.

Of the eight utilities with information available, WASA, WSC, and SWM have the lowest labor productivity with 12.8, 7.3, and 6.1 employees per thousand customers respectively. This is above the target of 5 employees per thousand connections. Among the benchmarked utilities, AQUA and GWI meet the target with 3.5 and 3.5 employees per 1,000 water connections. NWC was close to the average with 5.1 employees per 1000 water.

Figure 2.16: Number of Employees per 1,000 Water Customers



Source: Source: Information provided by utilities.

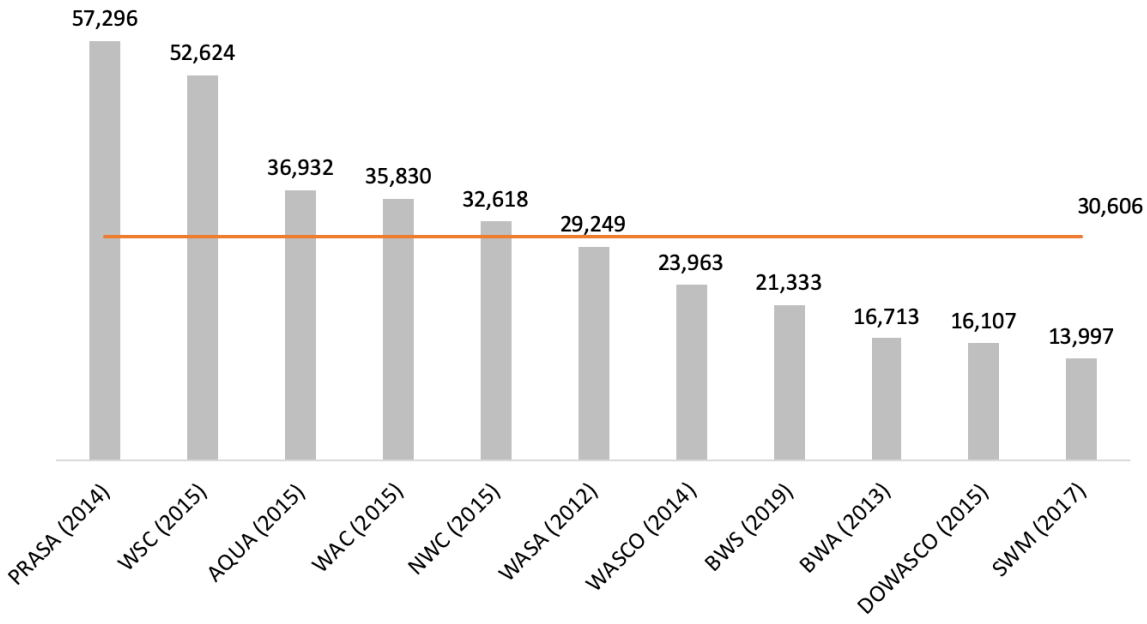
Average Compensation per Employee

Of the benchmarked utilities for which there is information available, the average annual compensation per employee[34] is about US$30,606 (Figure 2.17), with SWM being at the bottom of the range (US$13,997) and PRASA at the top (US$57,296). Of the seven utilities of focus for this study with data available, WSC and NWC's average annual compensation per employee are above the average for the benchmarked utilities ($52,624 and $32,618 respectively).

[33] Kingdom and Tynan, "A Water Scorecard", Public Policy for the Private Sector Note Number 242 (April 2002)

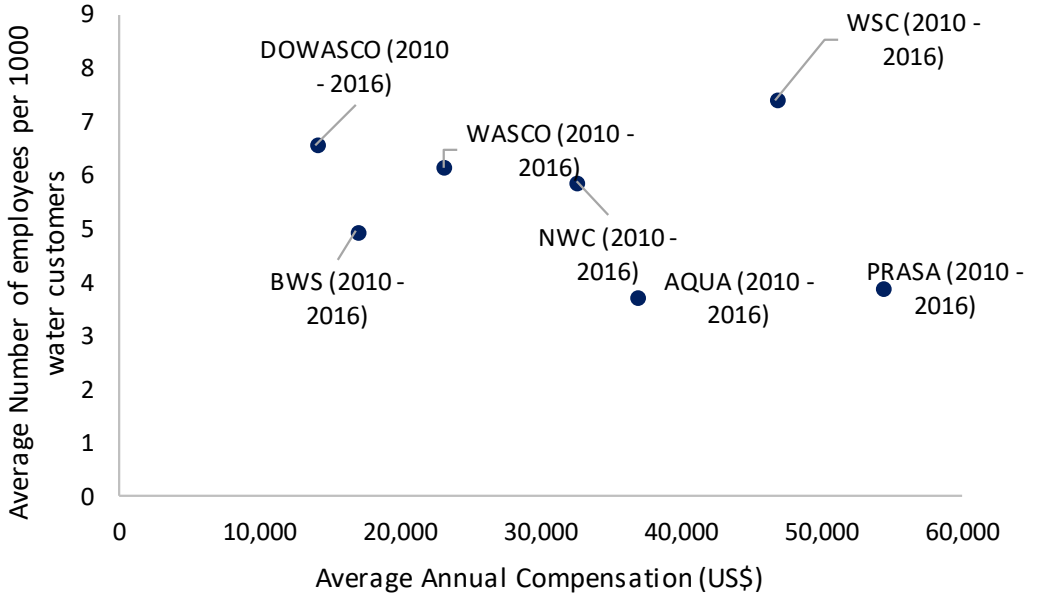
[34] Measured as the total staff costs over the number of employees

Figure 2.17: Average Annual Compensation per Employee (US$)



Source: formation provided by utilities.

Figure 2.18: Employees per 1,000 Connections v. Average Annual Compensation in US$

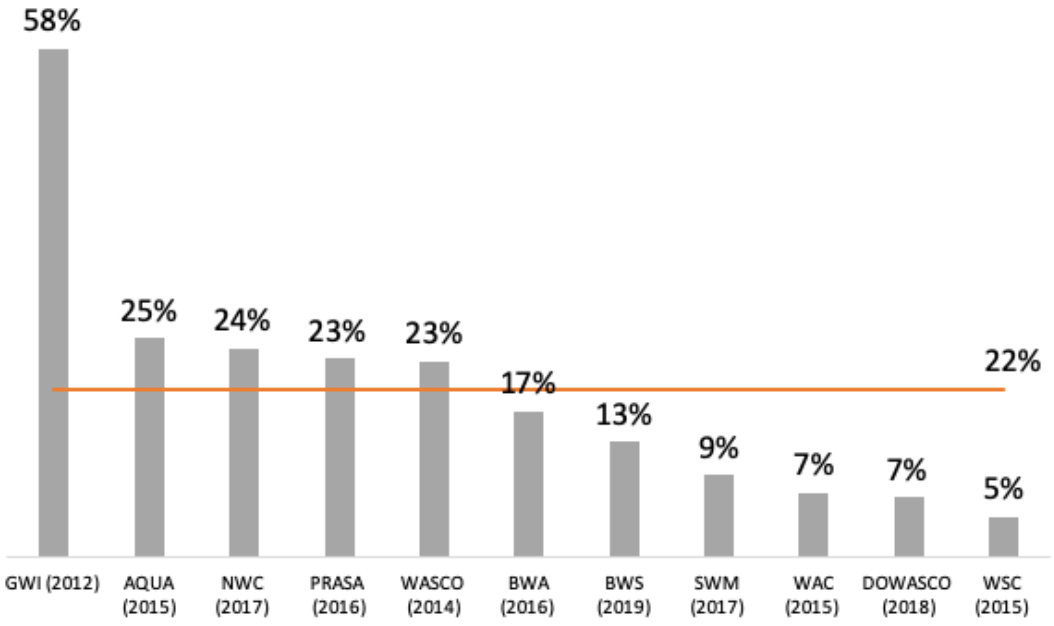


Source: Information provided by utilities

2.3.4 Energy efficiency

Water utilities are large consumers of electricity, so electricity costs usually represent a large share of their operating expenditures. They use electricity primarily for abstracting or treating water and distributing it as well as for collecting and treating wastewater.[35] The cost of energy for water utilities in Latin America and the Caribbean is estimated to represent about 30 to 40 percent of operating expenses.[36] For the benchmarked utilities, electricity costs as a percent of operating expenditures ranged from 5 percent (WSC) to 58 percent (GWI)[37] (Figure 2.19). According to a recent CDB report,[38] NWC's electricity costs are a large share of its operating expenditures (24 percent) because it needs to service high elevated areas and it has a long transmission network.

Figure 2.19: Electricity Costs as a Percentage of OPEX



Source: Information provided by utilities.

2.3.5 Use of private participation to improve operating efficiency

Private sector participation for water utilities can range from full privatization to working with private contractors to design and build new assets. In the English-speaking Caribbean, political desire to explore privatization or concessions to improve or expand services has

[35] The amount of electricity required by a utility will depend on the specific characteristics of its service areas. For example, water utilities that produce water with desalination require a large amount of electricity for that process. Also, water utilities that must pump water across long distances or high areas use more electricity than those that have gravity fed supply and flat service areas.

[36] Watergy, "Seminar: Energy and Water Efficiency from the national to the community level in Latin America and the Caribbean: best practices and lessons learned," September 2,2014, accessed 3/30/2017

[37] The value is particularly low for WSC because most of its water supply comes from desalinated water, which it purchases. The cost of the electricity used for desalination is embedded in the cost of the purchased water.

[38] Caribbean Development Bank (2015). "Assessment of the Water Sector in the Caribbean"

been limited. Nonetheless, utilities in the region are exploring ways to engage the private sector. This could help utilities reduce costs and improve the services they can offer to customers.

Of the utilities we assessed, NWC and WSC have been the most successful in engaging private sector providers to deliver services more efficiently. Both utilities have used performance-based NRW reduction contracts and public-private partnerships (PPPs) to build, operate, and maintain large assets. These projects could be useful models for other utilities in the region.

Performance-based NRW reduction contracts

Both WSC and NWC have engaged Miya, a global water operator, on performance based NRW reduction contracts. The WSC project, begun in 2012, covers all of New Providence, which holds about two-thirds of the population of The Bahamas. When the project began, NRW on New Providence was 6.9 million imperial gallons per day (migd)—58 percent of water produced. By 2015, it had been reduced to 3.0 migd, or 31 percent of water produced.[39]

To finance the project, WSC borrowed US$52 million from the IDB. Over the course of the 10-year project, financial savings will nearly equal this investment, allowing financial benefits to begin accruing after the contract is completed.[40]

NWC's project, the NRW Reduction Programme, which is estimated to cost US$42.5 million and is also financed by the IDB, began in 2015 and focuses on the reduction of water losses in Kingston and St. Andrew. The 5-year project includes significant efforts to train NWC staff to manage NRW. State of the art metering systems have been successfully installed in the Rockfort and Nannyville communities, which has resulted in an average NRW reduction from 80 percent to less than 30 percent over the phased period.[41]

High NRW throughout the Caribbean and the success of the WSC contract suggest that performance-based NRW reduction contracts could be replicated throughout the region. GWI, WASA, and NWC, have NRW over 50 percent, so reducing water losses is among their most important priorities.

PPPs to build and operate large new assets

In this contracting arrangement, utilities engage private providers to design, build, and operate a new asset for a specified period. In some cases, the private operator also owns the asset for a specified period before transferring it to the public utility. In the Caribbean water sector, it has been used to quickly build new desalination and wastewater treatment plants (WWTPs).

Jamaica's largest WWTP, the Soapberry Plant, was designed and built, and is currently operated and maintained by the Central Wastewater Treatment Company, Ltd (CWTC).

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[39] WSC

[40] WSC and IDB

[41] Miya. *Miya Jamaica, joins forces with the National Water Commission (NWC) to reduce severe water losses in Kingston and St. Andrew.* http://www.miya-water.com/en/news/miya-jamaica-joins-forces-with-the-national-water-commission-nwc-to-reduce-severe-water-losses-in-kingston-and-st-andrew/. 25 September 2019, accessed on 14 November 2019.

The Soapberry Plant receives wastewater from the NWC sewerage network, and charges tariffs set by the Office of Utilities Regulation (OUR), the Jamaican regulator. Since 2011, the Soapberry Plant has treated more than 11 million cubic meters of sewage each year.[42] The success of the plant has led to an ongoing study to expand its capacity.[43]

WSC has used desalination on New Providence to eliminate the need to ship in water from Andros island, lowering costs and improving quality. Beginning in 2012, WSC began purchasing water through a water purchase contract at US$6.10/1,000 gallons, compared to the US$7.60/1,000 gallons cost of shipping water. The long-term agreement imposes performance standards on the supplier (and improves water quality from shipped in water, which did not meet WHO standards) and minimum take-or-pay volumes for the WSC.

Divestitures

Even though the political desire to explore outright divestitures seems limited in the assessed countries, divestiture could be considered as an option to improve or expand services. The responsibility for all operations, financing, and execution of investments is transferred to the private sector. A government intending to divest a utility's shares or transfer assets to a special purpose company and sell shares in that company would still retain indirect control or establish a mechanism to regulate the privatized utility through licenses and other regulatory measures without taking any of the financial risks.[44]

2.4 Financial Performance of the Water and Sanitation Sector in the Caribbean

Of the assessed utilities only BWS and NWC demonstrate that they can cover operating expenditures with revenues. In addition, only five of the utilities provided financial statements, and only three of those provide complete and up-to-date financial statements. BWS presents the strongest financial performance with an EBITDA margin of 35 percent[45] and a Debt Service Coverage Ratio (DSCR) of 2.2.[46] BWS, BWA, and NWC are the only utilities with an EBITDA margin above the -1 percent Caribbean average (See Table 2.9). The utilities' financial weakness suggests that Governments' continued support may be essential for them to continue as going concerns.

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[42] Central Wastewater Treatment Company Ltd. Tariff Application Submission to the OUR. February 13, 2013. http://www.our.org.jm/ourweb/sites/default/files/documents/sector_documents/central_wastewater_treatment_company_limited.pdf

[43] Ministry of Finance and Public Service. Jamaica Public Bodies: Estimates of Revenue and Expenditure for the Year Ending March 2017. May 2016. http://www.mof.gov.jm/downloads/publicbodies/esre-2016-2017_0516.pdf

[44] World Bank, "Full Divestiture/Privatization," July 2016, accessed March 2017, https://ppp.worldbank.org/public-private-partnership/agreements/full-divestiture-privatization

[45] EBITDA is 'Earnings before interest, taxes, depreciation and amortization'. It is calculated as revenues minus operating expenses. The EBITDA margin is calculated as EBITDA divided by Revenues. This is related to the Operating Cost Recovery Ratio (which is Operating Revenues divided by Operating Expenses). For example, a 14 percent EBITDA margin is equivalent to an Operating Cost Recovery Ratio of 117 percent.

[46] The DSCR is calculated as EBITDA divided by (Interest Expenses plus Principal Due on Loans).

Table 2.9: Summary of Financial Performance

Country	Water Utility	EBITDA Margin	Net Income / Revenues	Return on Assets	Debt Service Coverage Ratio	Reliance on Government 1/
Assessed utilities						
Belize	BWS (2019)	56%	38	9%	2.9	No
Barbados	BWA (2018)	7%	-2%	-0.4%	-0.3	TBD
Jamaica	NWC (2017)	11%	-7%	-3%	0.60	Yes[47]
The Bahamas	WSC (2015)	-46%	-27%	-4%	-52	Yes
Guyana	GWI (2012)	-55%	-20%	TBD	TBD	TBD
Trinidad and Tobago	WASA (2018)	-220%	-35%	-3%	TBD	Yes
Suriname	SWM (2017)	12%	-3.3%	TBD	TBD	TBD
Other benchmarked utilities						
Dominica	DOWASCO (2018)	-7%	-22.3%	-2%	-0.19	No
Grenada	NAWASA (2018)	29%	22%	7%	TBD	No
St Lucia	WASCO (2014)	22%	14%	5%	6.4	Yes[48]

1/ 'Yes' indicates that the utility's audited financial statements state that the utility may not be able to continue as a 'going concern' without the Government's continued support.

Source: Financial Statements and Information provided by utilities.

Water utilities are capital intensive. This means they depend on a continuous flow of capital expenditures to expand access and improve quality of service. A water utility that is not regularly investing in its assets or that does not have a sufficient asset base will struggle to provide desired levels of access and quality of service. Table 2.10 shows that BWS has the

[47] Note 2(b) of NWC's 2017 audited financial statements state, "The Group and the Commission made a loss for the year of $1,562,584,000 (2016: $4,110,716,000) and $1,787,970,000 (2016: $4,190,997,000) respectively, and, at the reporting date, the Group and Commission had an accumulated deficit of $33,286,182,000 (2016: $31,730,540,000) and $33,573,323,000 (2016: $31,825,764,000) respectively. The ability of the Group and the Commission to regain and sustain profitability and to generate the incremental cash flows to meet its significant debt service obligations and other operational costs is, therefore, dependent on its ability to successfully minimise operational costs and reduce non-revenue generating water supplied. These conditions indicate the existence of a material uncertainty that may cast doubt about the Group's and the Commission's ability to continue as a going concern".

[48] Note 2 of WASCO's 2014 audited financial statements [these were the most current version provided by WASCO] state, '*The Company had a deficit of $117,402,790 at December 31, 2014 (2013 - $123,870,092). The ability of the Company to continue as a viable entity is dependent on improvement of the collection of water and sewerage charges, the successful implementation of mechanisms designed to restructure its operations, and the continued financial support of the Government of Saint Lucia and other financial institutions.*'

strongest performance across measures of financial performance (operating margin, profitability, and solvency), adequacy of CAPEX, and adequacy of fixed assets.

Table 2.10: Financial Performance and Adequacy of CAPEX and Fixed Assets

Country	Utility	Operating Margin	Profitability	Solvency	Adequacy of CAPEX	Adequacy of Fixed Assets	Overall
Assessed utilities							
Belize	BWS	4	4	4	3	3	4
Jamaica	NWC	2	0	1	3	1	1
Trinidad and Tobago	WASA	0	0	1	2	2	1
The Bahamas	WSC	0	0	0	2	3	1
Barbados	BWA	1	0	2	2	2	2
Guyana	GWI	TBD	TBD	TBD	TBD	TBD	TBD
Suriname	SWM	2	0	TBD	TBD	TBD	TBD
Other benchmarked utilities							
Dominica	DOWASCO	0	0	1	3	3	2
Grenada	NAWASA	3	3	3	1	2	3
St Lucia	WASCO	3	3	2	1	1	1

In this table we provide a range from 0 to 4 to show the extent to which each data point applies. A 4 indicates high level of success and a 0 indicates low level of success.

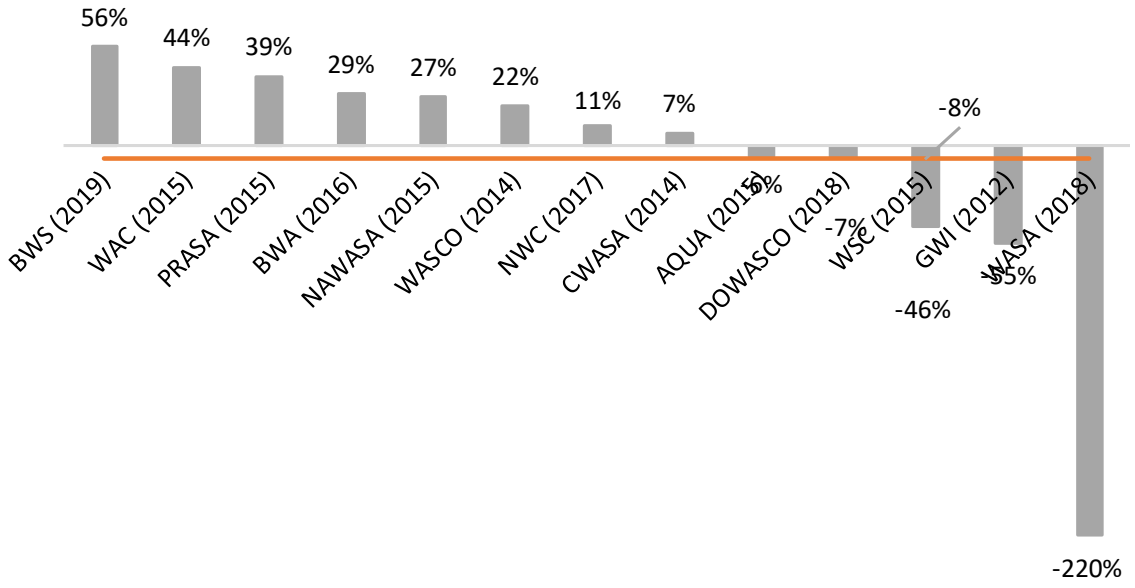
We provide our detailed assessment of each of the elements of the financial performance of the seven utilities in comparison with other Caribbean utilities as follows:

- Operating margin (Section 2.4.1)
- Profitability (Section 2.4.2)
- Liquidity, solvency and capital structure (Section 2.4.3)
- Adequacy of capital investments (Section 2.4.4)
- Adequacy of fixed assets (Section 2.4.5).

2.4.1 Operating margins

Operating margin, as measured by EBITDA margin, is primarily a result of the utility's operating efficiency and the adequacy of its tariffs. For example, a utility with a high EBITDA margin, such as BWS or BWA, will generally have high operating efficiency and tariffs that cover most of its reasonable costs of providing service. Figure 2.20 shows the EBITDA margins for the benchmarked utilities range from -220 percent (WASA in 2018) to 56 percent (BWS in 2019), with the average being -8 percent.

Figure 2.20: Comparison of EBITDA Margins



Source: Utilities' financial statements

Table 2.11 shows how the operating efficiency (see Section 2.3 for the detailed assessment) and adequacy of tariffs for each of the benchmarked utilities combine to produce their respective EBITDA margins. WASA, WSC, and NWC need to increase their operating efficiency and the level of their tariffs to generate EBITDA margins that would enable them to be more financially sustainable.

Table 2.11: Decomposing the EBITDA Margin

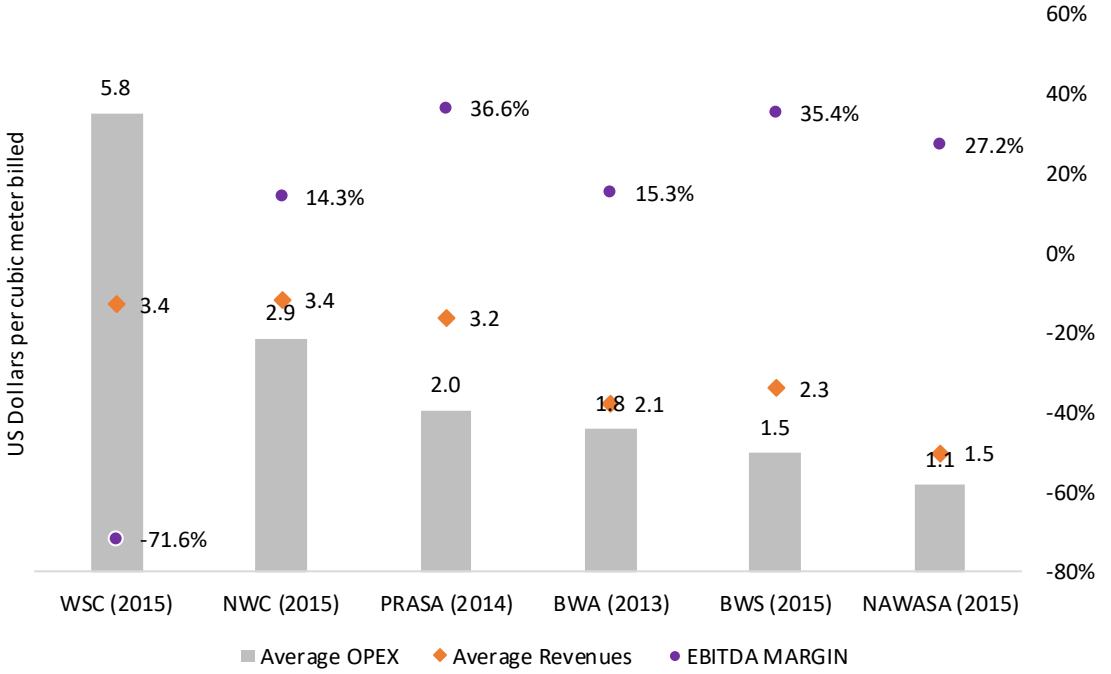
Country	Water Utility	Operating Efficiency	Adequacy of Tariffs	EBITDA Margin	Operating Cost Coverage
The Bahamas	WSC (2015)	3	1	-46%	0.7
Barbados	BWA (2018)	2	2	7%	1.08
Belize	BWS (2019)	4	4	56%	2.3
Dominica	DOWASCO (2018)	2	3	-7%	0,9
St Lucia	WASCO (2014)	1	2	22%	1.2
Jamaica	NWC (2017)	2	2	11%	1.12
Trinidad and Tobago	WASA (2018)	1	0	-220%	0.3
Grenada	NAWASA (2018)	3	4	29%	1.40
Guyana	GWI (2012)	TBD	0	-55%	0.6
Suriname	SWM (2017)	TBD	2	12%	1.02

Source: Utilities' financial statement and other information provided by them

Operating Cost Coverage is calculated as Revenues divided by Operating Expenditures

Figure 2.21 is a graphical presentation of how the EBITDA margin results from a utility's operating efficiency and tariff. It shows that there are utilities with relatively high tariffs—such as WSC—that have even higher average OPEX and, therefore, negative EBITDA margins. In contrast, other utilities with lower average tariffs can produce positive EBITDA margins since they have lower average OPEX.

Figure 2.21: EBITDA Margin—Difference between Average Revenues and Average OPEX per Cubic Meter Billed



Source: Utilities' financial statements and information provided by the utilities

2.4.2 Profitability

The profitability of a water utility is a result of its operating margin in combination with its depreciation charge (which depends on its asset base), its interest expenses (which depend on its borrowings), and taxes. Profitability can be measured by comparing the utility's net income with its revenues, assets, and equity.

Of the seven assessed utilities, only one earns a profit (see Table 2.12). The others are either unprofitable by any measure, such as WSC and NWC, do not report enough data to determine profitability (which suggests poor results), or are unprofitable by at least one measure (WASA).

Table 2.12: Comparing Profitability Among the Benchmarked Utilities

Country	Utility	Net Income / Revenues	Return on Assets	Return on Equity
Assessed utilities				
Belize	BWS (2019)	38%	9.4%	12.7%
Barbados	BWA (2018)	-2%	-0.4%	-0.8%
Trinidad and Tobago	WASA (2018)	-35%	-3.0%	-39.1%
Jamaica	NWC (2017)	-7.2%	-2.8%	14%
Guyana	GWI (2012)	-20%	TBD	TBD
The Bahamas	WSC (2015)	-27%	-4%	-9%
Suriname	SWM (2017)	-3.2%	TBD	TBD
Other benchmarked utilities				
Grenada	NAWASA (2018)	22%	6.7%	10%
Dominica	DOWASCO (2018)	-22.3%	-2%	-4%
St Lucia	WASCO (2014)	11%	5%	9%

Source: Utilities' financial statements

NWC's value is positive because it's net income and shareholder's equity are both negative.

Table 2.13 compares the composition of the net income for each of the seven assessed utilities. The table shows the elements of the income statement as a percentage of the utility's revenues. For example, for BWS, the depreciation and amortization expense is equal to 14 percent of revenues. Since the value is negative, it is shown in parentheses and in red. WSC, WASA, and GWI stand out since they finish with the largest losses. They do so because of their comparatively low EBITDA margins, high depreciation and amortization expenses, and relatively high interest expenses.

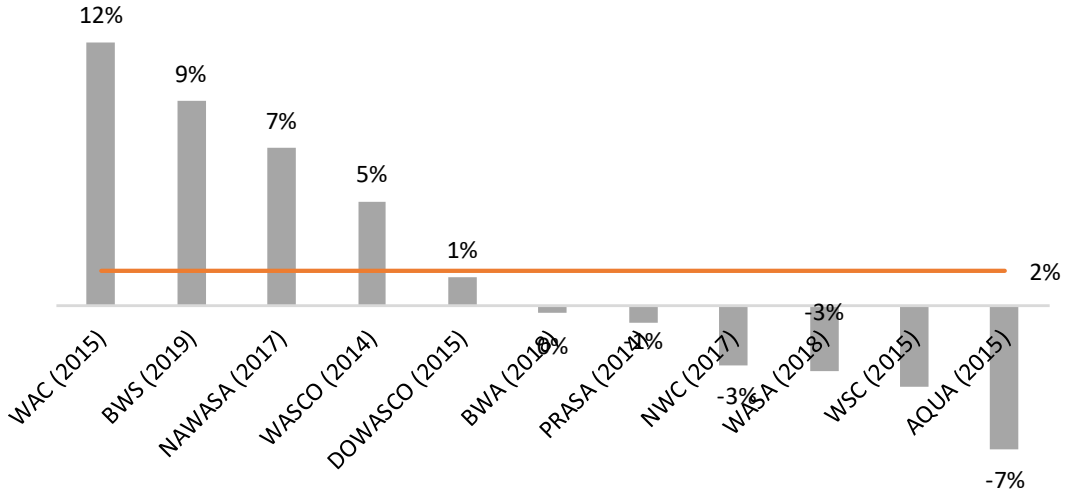
Table 2.13: Decomposition of Net Income (Values as a Percentage of Revenues)

	WSC (2015)	BWA (2018)	BWS (2019)	GWI (2012)	NWC (2017)	SWM (2017)	WASA (2018)
EBITDA	(46%)	7%	56%	(55%)	11%	12%	(220%)
Depreciation & Amortization	(31%)	(2%)	(14%)	(51%)	(18%)	(15%)	(35%)
Interest	0%	(12%)	(4%)	0%	(15%)	0%	(31%)
Other Income/(Expenses)	(3%)	(7%)	0%	(6%)	4%	0%	(66%)
Subsidies	55%	20%	0%	92%	0%	0%	252%
Earnings Before Taxes	(80%)	(-2)%	38%	(20%)	(16%)	(3%)	(35%)
Income Tax (Expense)/Credit	0%	0%	0%	(0%)	12%	0%	0%
Net Income/(Loss)	(26%)	(2)%	38%	(20%)	(7%)	(3%)	(35%)

Source: Utilities' financial statements

Figure 2.22 shows that the return on assets for the benchmarked utilities ranged from -7 percent (AQUA 2015) to 12 percent (WAC 2015).

Figure 2.22: Comparison of Return on Assets for Caribbean Water Utilities



Source: Utilities' financial statements

2.4.3 Liquidity, solvency and capital structure

Water utilities need to have the resources to meet short-term obligations (for example, paying their electricity bills) and to contract and service long-term debt. Their ability to cover these obligations can be measured with the following indicators:

- **Current ratio**. This is the ratio of the utility's current assets (the assets it has available for meeting any current liabilities) to its current liabilities (those obligations which it must pay within 12 months). A water utility with good liquidity should have a current ratio greater than 1.0 (meaning that its current assets exceed its current liabilities)
- **Debt service coverage ratio (DSCR)**. The debt service coverage ratio provides a measure of a company's ability to cover obligations (interest plus principal) related to its borrowings with its EBITDA. It is calculated by dividing EBITDA by the company's interest expenses and principal repayments due on borrowings. When assessing the creditworthiness of companies, many financial institutions require a minimum DSCR of about 1.2
- **Total debt to equity**. The water utility's total debt to equity provides a good measure of its financial leverage. A utility with a high value for this indicator will find it difficult to contract more debt. In contrast, a utility with a very low value has greater scope for increasing its borrowing. It also has a higher cost capital structure since the cost of equity is higher than the cost of debt.

Table 2.14 shows these three indicators of liquidity, solvency and capital structure for the seven utilities assessed in this report. Based on these indicators, we conclude that BWS is the only utility with high liquidity. In addition, it has a relatively high DSCR and a low debt-to-equity ratio, indicating that it could benefit from increasing its borrowing. WSC's and NWC's indicators suggest that their liquidity is below the desired level. NWC's high debt-to-equity ratio shows that it may have too much debt.

Table 2.14: Indicators of Liquidity, Solvency and Capital Structure

Country	Utility	Cash from operations per customer (US$/year)	Current ratio 1/	Debt Service Coverage Ratio 2/	Shareholders' Equity per customer (US$)	Total Debt / Equity Ratio
Assessed utilities						
The Bahamas	WSC (2015)	404	0.28	(5.16)	2,357	0.5
Barbados	BWA (2018)	137	1.4	1.2	1,500	0.7
Belize	BWS (2019)	88	3.0	2.9	2,872	0.3
Guyana	GWI (2012)	TBD	TBD	TBD	TBD	TBD
Jamaica	NWC (2017)	151	0.9	0.6	(295)	(2.83)
Suriname	SWM	TBD	TBD	TBD	TBD	TBD
Trinidad and Tobago	WASA (2012)	4.8	0.7	TBD	(42)	(1.51)
Other benchmarked utilities						
Dominica	DOWASCO (2018)	89	1.4	(0.19)	1,232	0.79
Grenada	NAWASA (2018)	180	2.1	TBD	746	0.03
St Lucia	WASCO (2014)	59	1.4	6.4	563	0.5

1/ Current assets divided by current liabilities.

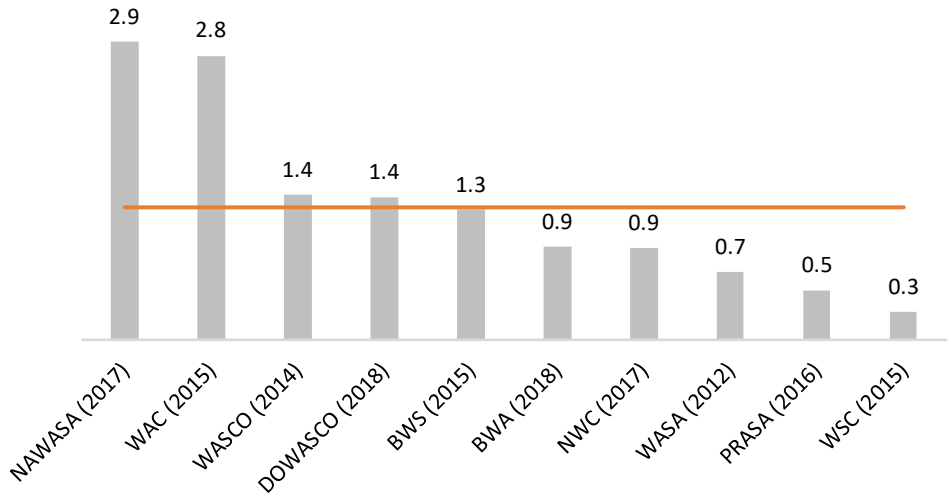
2/ EBITDA divided by interest plus principal payments

TBD = 'To be determined'

Source: Financial statements provided by the utilities

Figure 2.23 compares the current ratio for the benchmarked utilities. It shows that the current ratio ranges from a low of 0.3 (WSC in 2015) to a high of 2.8 (WAC in 2015). Four of the eleven utilities have current ratios below 1.0, suggesting that these four and the ones that did not provide any data may have liquidity problems.

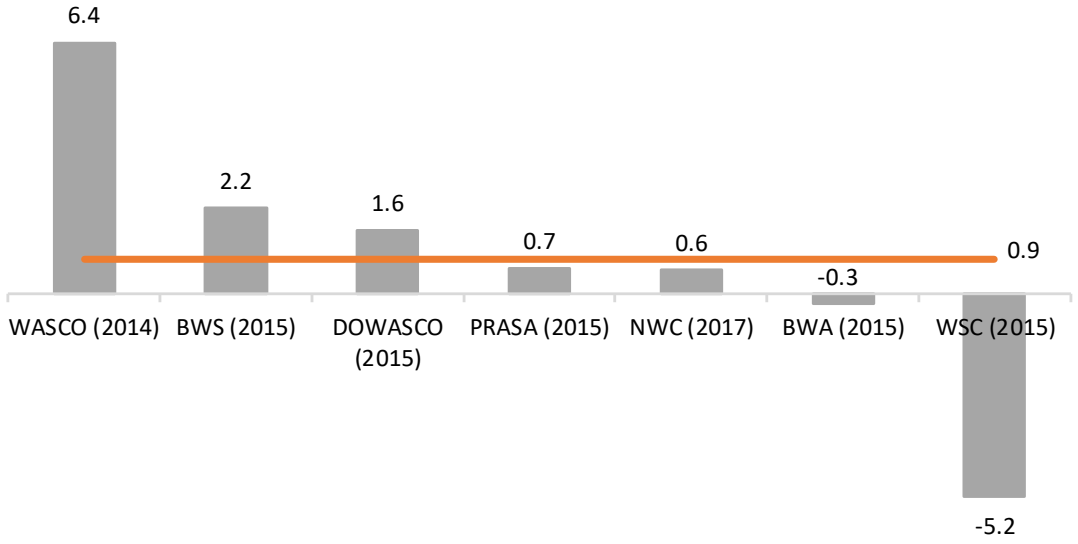
Figure 2.23: Comparison of Current Ratio for Benchmarked Utilities



Source: Financial Statements and Information provided by utilities

Figure 2.24 shows that DSCRs for benchmarked utilities range from a low of -5.2 (WSC) to a high of 6.4 (WASCO). In theory, only those utilities with a DSCR above 1.2 would be able to borrow from financial institutions. However, in practice, many governments provide guarantees so that water utilities can borrow, or governments borrow directly and then on-lend to the water utilities.

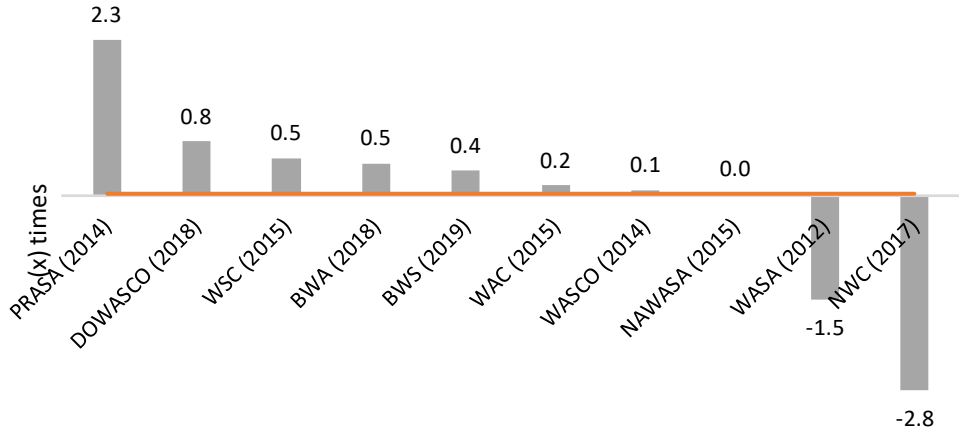
Figure 2.24: Comparison of DSCR for Benchmarked Utilities



Source: Financial statements provided by the utilities

Figure 2.25 shows that the total debt-to-equity ratios for the benchmarked utilities range from a low of -1.5 (WASA) to a high of 10.7 (NWC). WASA's debt-to-equity ratio is negative because it has negative net shareholder's equity.

Figure 2.25: Total Debt / Equity Ratio



Source: Financial statements provided by the utilities

Note WASA has a negative shareholder's equity due to accumulated deficit.

2.4.4 Adequacy of capital investments

Water utilities are among the most capital-intensive infrastructure companies.[49] They must constantly invest in, among other things, increasing water supply, expanding, and rehabilitating their water network, adding new connections, expanding their wastewater network, and increasing their wastewater treatment capacity. For water utilities with less than universal coverage, the capital investment requirements (also known as capital expenditures or 'CAPEX') are particularly relevant.

We assessed the adequacy of utilities' CAPEX using three indicators:

- **Average CAPEX per customer (US$/year)**. This is calculated as the average capital expenditures over several years divided by the number of customers at the end of the last year of the period
- **CAPEX/Depreciation.** This is calculated as the average annual capital expenditures over several years divided by the average annual depreciation expenses during that same period
- **CAPEX/Revenue.** This is calculated as CAPEX divided by revenues during one year.

Based on these indicators, three of the five assessed utilities—BWS, WSC, and NWC—seem to be investing at an adequate rate (Table 2.15). On a per-customer basis, WSC invests the most. The three utilities have CAPEX of at least 1.7 times the annual depreciation charge.

[49] Hull, Mark. Basic Network Utility Economics. 2013. P. 131-132

Table 2.15: Capital Investments Comparison

Country	Utility	Average CAPEX per customer (US$/year) 1/	Average CAPEX / Depreciation 2/	CAPEX / Revenue 3/
Assessed utilities				
The Bahamas	WSC (2011-2015)	481	2.3	70%
Jamaica	NWC (2011-2015)	202	1.7	28%
Barbados	BWA (2011 - 2015)	TBD	3.8	59%
Trinidad and Tobago	WASA (2012)	129	1.7	49%
Belize	BWS (2011-2016)	115	2.9	31%
Guyana	GWI	TBD	TBD	TBD
Suriname	SWM	TBD	TBD	TBD
Other benchmarked utilities				
Dominica	DOWASCO (2011-2015)	202	2.4	58%
Grenada	NAWASA (2011-2015)	39	1.0	18%
St Lucia	WASCO (2011-2014)	24	0.3	3.0%
Average		165	1.7	33%

1/ This is the average annual CAPEX for the period indicated divided by the number of customers for the last year in the period. For example, for BWS it is average annual CAPEX from 2011 to 2016 divided by number of customers in 2016.

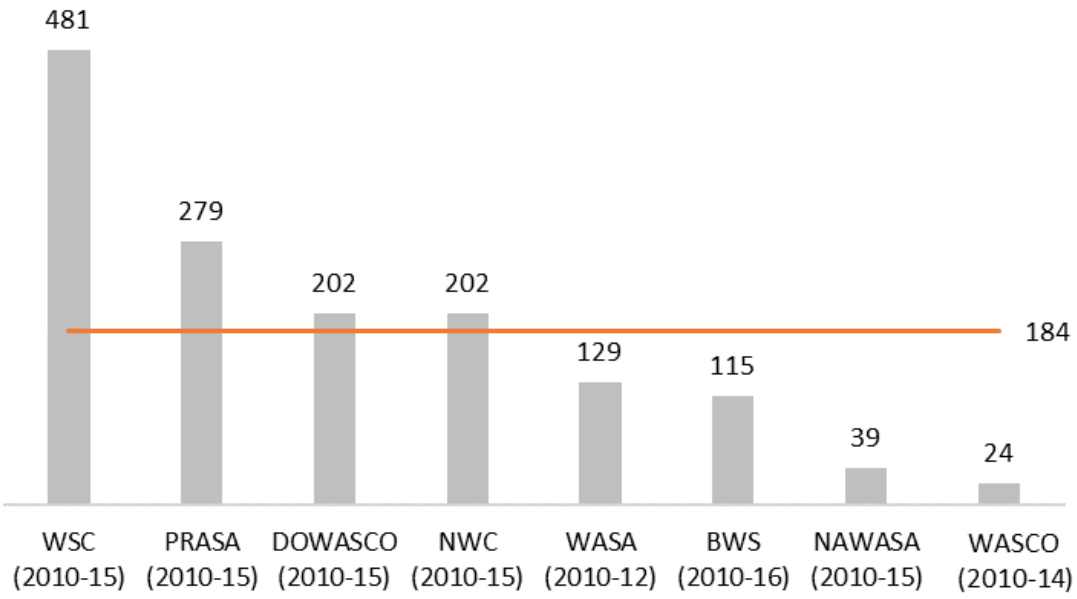
2/ This is the average annual CAPEX for the period indicated divided by average annual depreciation during that period.

3/ This is CAPEX divided by revenues for the following years for each utility: BWA (2015), BWS (2015), DOWASCO (2015), NAWASA (2014), NWC (2015), WASCO (2014).

Source: Utilities' financial statements

Figure 2.26 shows the average CAPEX per customer for the benchmarked utilities. WSC's CAPEX was by far the highest in the region—nearly two times PRASA, the second-highest. NWC has also made substantial investments in recent years, and is above the regional average at US$184 per customer per year. BWS is below average, at US$115 per customer per year.

Figure 2.26: Average CAPEX per Customer (US$/year)

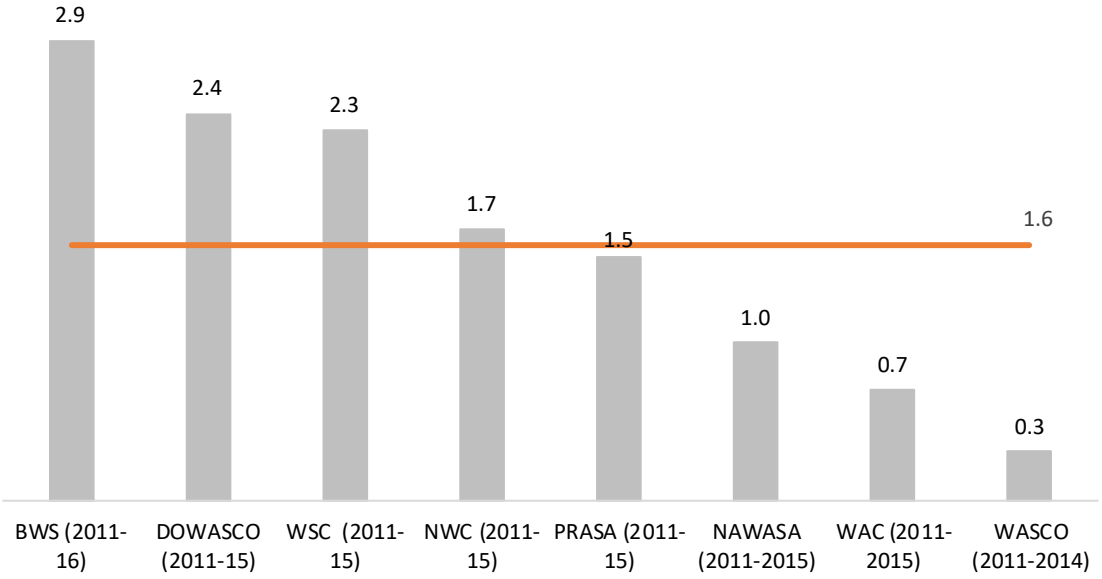


Source: Utilities' financial statements and information provided by utilities on their customers.

This is the average annual CAPEX for the period indicated divided by the number of customers for the last year in the period. For example, for BWS it is average annual CAPEX from 2011 to 2016 divided by number of customers in 2016.

Figure 2.27 shows the average ratio of CAPEX to depreciation for a multi-year period for the utilities. It confirms the finding that NWC, BWS, and WSC are generally investing adequately, compared to a set of peers in the Caribbean.

Figure 2.27: CAPEX/Depreciation



Source: Information provided by utilities.

Information pending from the following utilities: AQUA, BWA, CWASA, GWI, NWD, SKWD, SWM, and WASA

2.4.5 Adequacy of fixed assets

Capital investments (a flow of funds) made by water utilities are recorded in their balance sheets as fixed assets (a stock). Well-performing utilities have fixed assets that enable them to provide a certain level of access and customer service while maintaining operating efficiency. Two indicators that can be used to measure the adequacy of a water utility's fixed asset base are:

- **Gross book value per customer (in US$)**. This indicator provides a measure of the value of fixed assets relative to the number of customers. Gross book value (GBV) is the value of fixed assets at the cost of developing those assets. In general, assuming the number of customers remains fixed, as the utility improves quality of service and/or increases operating efficiency, it is expected that the GBV per customer will increase. Therefore, water utilities with low values for this indicator may struggle to provide the same service quality and operate as efficiently as water utilities with higher values
- **Accumulated depreciation/Gross book value**. This indicator provides a measure of the extent to which a water utility's fixed assets have deteriorated. For example, a water utility that has just developed its plant and equipment will have a very low value for this indicator. In contrast, a utility that has made minimal investments during the recent past—thereby holding gross book value nearly constant as depreciation has accumulated—will have a much higher value.

Based on the values for these two indicators (see Table 2.16), we can conclude the following for the three water utilities we are assessing for this report, and for which we had adequate information:

- **WSC's** asset base seems to be adequate. Its accumulated depreciation indicates that its fixed assets are becoming outdated. However, its GBV per customer is the highest of the benchmarked utilities (US$7,722)
- **BWS**' fixed asset base seems adequate. Although it has a relatively low GBV per customer (US$1,941), its accumulated depreciation indicates that its fixed asset base is relatively new. One reason for its lower GBV is that BWS purchases water and therefore does not have the fixed assets needed to produce that water on its balance sheet.
- **NWC's** fixed asset base may need to be increased to increase coverage, quality of service, and operating efficiency. At US$3,167, its GBV per customer is above average compared to the other benchmarked utilities, but accumulated depreciation represents 69 percent of its GBV.

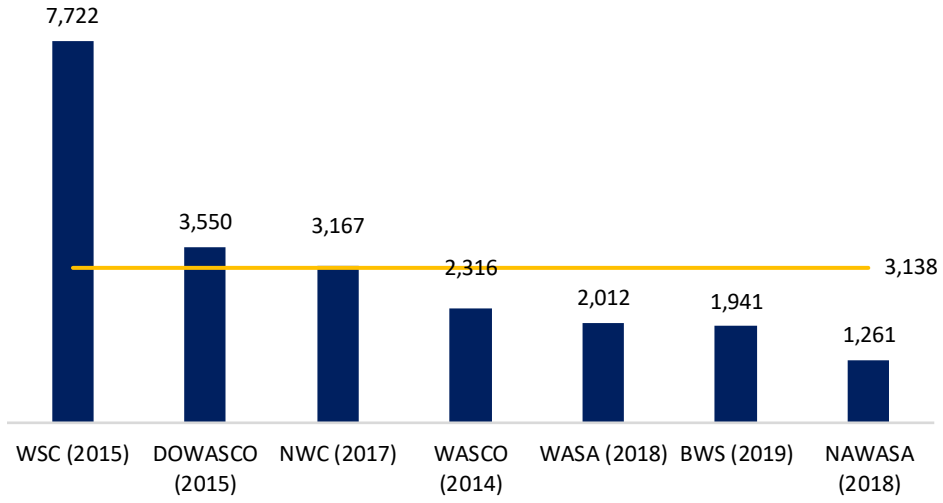
Table 2.16: Comparison of Levels of Fixed Assets

Country	Utility	Gross book value per customer (US$)	Accumulated depreciation / Gross book value
Assessed utilities			
The Bahamas (2015)	WSC	7,722	45%
Barbados (2018)	BWA	3,890	30%
Belize (2019)	BWS	1,941	23%
Guyana	GWI	TBD	TBD
Jamaica (2017)	NWC	3,167	69%
Suriname	SWM	TBD	TBD
Trinidad and Tobago	WASA	TBD	TBD
Other benchmarked utilities			
Dominica (2018)	DOWASCO	4,064	31%
Grenada (2017)	NAWASA	1,261	46%
St Lucia (2014)	WASCO	2,316	65%

Source: Utilities' financial statements

Figure 2.28 compares the GBV per customer for all benchmarked utilities. This value ranges from US$1,261 (NAWASA) to US$7,722 (WSC).

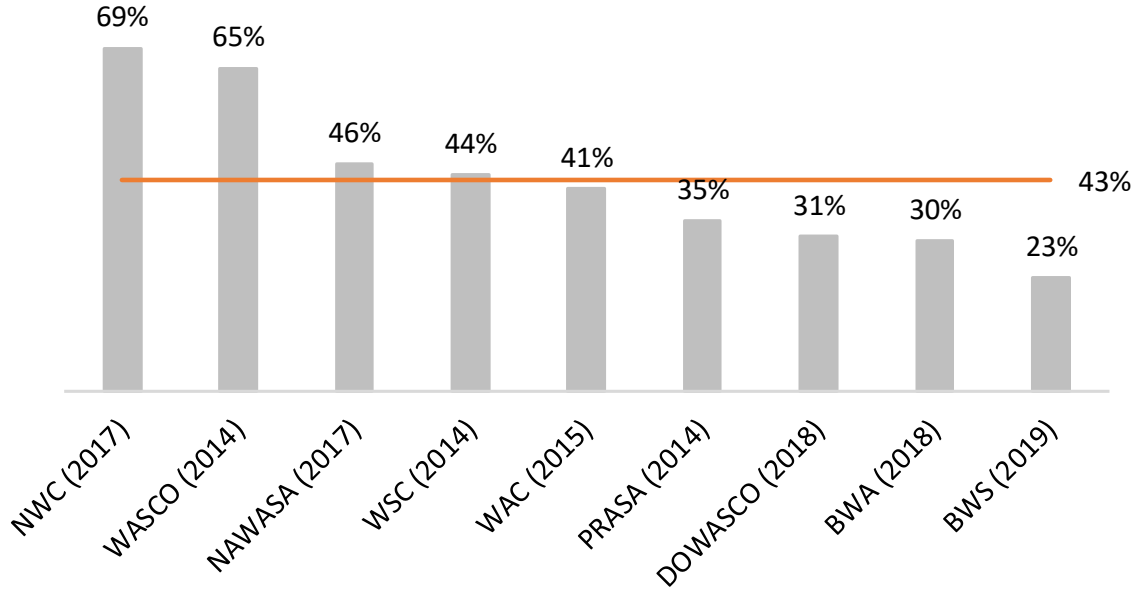
Figure 2.28: Gross Book Value per Customer (US$)



Source: Utilities' financial statements

Figure 2.29 compares accumulated depreciation/GBV for all benchmarked utilities. This value ranges from a low of 23 percent (BWS) to a high of 69 percent (NWC).

Figure 2.29: Accumulated Depreciation/GBV



Source: Utilities' financial statements

2.5 Paying For and Financing Services

Consumers and taxpayers share the cost of water services throughout the Caribbean, though to varying degrees. In some cases, consumers bear nearly all the cost of water

services, while in others, taxpayers subsidize up to three-quarters of the cost of service. Most water utilities depend on concessional loans from governments and multilateral and bilateral donors to finance new investments.

2.5.1 Paying for services

As shown in Section 2.4.1, most Caribbean utilities' revenues do not cover even their operating costs. Of the seven we are assessing for this report, based on the information we have available, only BWS and NWC have revenues that cover operating costs. For the other utilities, the difference must be made up by a combination of operating subsidies and deferred maintenance.

For utilities with low subsidies as a portion of revenue, such as NWC (0.11 percent) and BWS (14 percent), users pay for most of the cost of the services they receive. However, for both NWC and BWS most subsidies were directed for future capital investments or for loan repayments to pay back past capital investments. This separation of payments—users pay for nearly all operating costs, while governments provide some subsidies for capital investments—is common among public water utilities.

Most user fees are water supply tariffs, but also include wastewater tariffs and other fees, such as connection fees or fines for late payment. In 2015, for example, 57 percent of NWC's user fees came from water tariffs, with most of the rest coming from a combination of wastewater tariffs, service charges, and user fees for specific capital investments (Table 2.17).

Table 2.17: Composition of User Fees for NWC (2017)

Revenue source	NWC
Water tariffs	57%
Wastewater tariffs	16%
Service charge	12%
Price Adjustment Factor—to account for variable costs, such as electricity and exchange rates	3%
K-Factor—dedicated to specific capital investments	14%
X-Factor—price reduction to account for efficiency gains	-2%
Other	2%

Source: NWC financial statements

For utilities that receive a high level of subsidies relative to their operating revenues—for example, WSC (55 percent), GWI (92 percent), and WASA (252 percent)—taxpayers pay for most of the cost of service. In countries where many residents obtain services in ways other than through the utility, this results in many taxpayers paying for services they do not receive. For example, the WSC serves only 47 percent of Bahamian households, but most of its revenue comes from subsidies—paid equally by the more than half of taxpayers who may not receive services from WSC.

Three of the seven utilities we assessed record a negative EBITDA margin. For these utilities, the combination of user fees and subsidies does not cover expenses. To maintain operations, they must prioritize costs, reduce some costs, and defer others. In general,

these utilities pay immediate operating expenditures such as staff salaries and fuel costs first. Payments to contractors or the electricity utility may be delayed.

Depreciation expenses—not a reflection of financial costs, but rather a reflection of needed re-investment to replace aging assets—may not be covered at all, allowing the utility to continue operating, though not sustainably. This practice of deferring maintenance shifts costs to future consumers or taxpayers, who will need to pay later to catch up rehabilitation efforts or replace depreciation assets. Alternatively, assets that are not adequately maintained will simply deteriorate, reducing the utility's coverage or service quality.

2.5.2 Financing new investments

While some of the utilities we assessed are investing adequately (such as NWC, WSC, and BWS), others do not seem to be investing at the rate needed even to replace existing capital assets. Even those that are replacing existing assets are not investing to rapidly expand sewerage coverage, which is very low (a maximum of 20 percent of the population in Jamaica).

As shown in Figure 2.25 above, most utilities finance their investments largely through equity, a more expensive option than taking out debt. This is likely in part because many utilities are unable to access private financing. Like many water utilities in developing countries around the world, poor financial conditions mean most public water utilities in the Caribbean are not creditworthy.

Of a sample of seven Caribbean water utilities for which data was available, only NWC had significant long-term debt from private sources in 2014 (Table 2.18)). Nearly all the rest was concessional debt—three-quarters from multilateral and bilateral financing institutions, and one-quarter from governments.

Table 2.18: Sources of Debt (2014—US$ million)

Country	Utility	Debt Source			Total
		Government	Multilateral or Bilateral	Private	
Assessed utilities					
Belize	BWS	10	10		20
Jamaica	NWC	16	56	207	278
The Bahamas	WSC	9	50		60
Other benchmarked utilities					
Dominica	DOWASCO	6	10		16
Grenada	NAWASA	1			1
St Lucia	WASCO			1	1
Total (US$ million)		42	126	208	376
% of Total		11%	33%	55%	100%

Source: Utilities' financial statements

The attraction of concessional loans is clear—they offer low interest rates and long repayment periods. The average interest rate for five loans from multilateral finance institutions in 2014 was 2.54 percent. Table 3.2 shows that NWC held two of these loans, with a variable interest rate that for the quarter ended March 31, 2014 was 1.16 percent. This rate is about one-fifth of the average of 7.6 percent that NWC paid for loans from private financial institutions.

Table 2.19: Loans with IDB and CDB in 2014

Country	Utility	MDB	Loan Details	Interest Rate (2014)	Balance end 2014 (US$ million)
The Bahamas	WSC	IDB	US$14 million in 1999-2014 1/	NA	45.57
The Bahamas	WSC	IDB	US$81 million in 2017-2036 2/	NA	4.87
Belize	BWS	CDB	BZD$16.8 million 2032	4.80%	2.23
Belize	BWS	CDB	US$27.66 from 2011 3/	3.10%	7.31
Belize	BWS	CDB	US$0.25 million	2.50%	0.18
Jamaica	NWC	IDB	US$22.13 million	1.16%	22.14
Jamaica	NWC	IDB	US$33.5 million	1.16%	33.54
Trinidad and Tobago	WASA	IDB	US$ 246.5 million 4/	Libor based	97.68

Source: Notes to Financial Statement 2014 for WSC, BWS and, NWC

1/ For the Family Islands Improvement Project

2/ NRW reduction, wastewater infrastructure improvements and master plan, institutional strengthening and new legal and regulatory framework

3/ For the expansion of the water and sewerage system on Ambergis Caye

4/ For a Multi-phase wastewater rehabilitation program phase I

2.6 Affordability of Tariffs

On average, water tariffs in the Caribbean are affordable. Household expenditure on water services is below 3 percent of household income across the region, except in Belize. On the other hand, our results suggest that in many countries tariffs do not cover the cost of service and that there is scope to increase tariffs.

A sustainable utility should provide services in a manner that is affordable for everyone, including its poorest customers. We assess the affordability of tariffs of the five utilities using the following indicators:

- Average water tariffs (2.6.1)
- Average residential water tariffs (2.6.2)
- Residential monthly water bill for consumption of 15 cubic meters per month (2.6.3)
- Household expenditure on water as a percentage of household income (2.6.4).

Table 2.20 summarizes the indicators used to measure the tariff affordability.

Table 2.20: Summary of Tariff Affordability for Caribbean Water Utilities

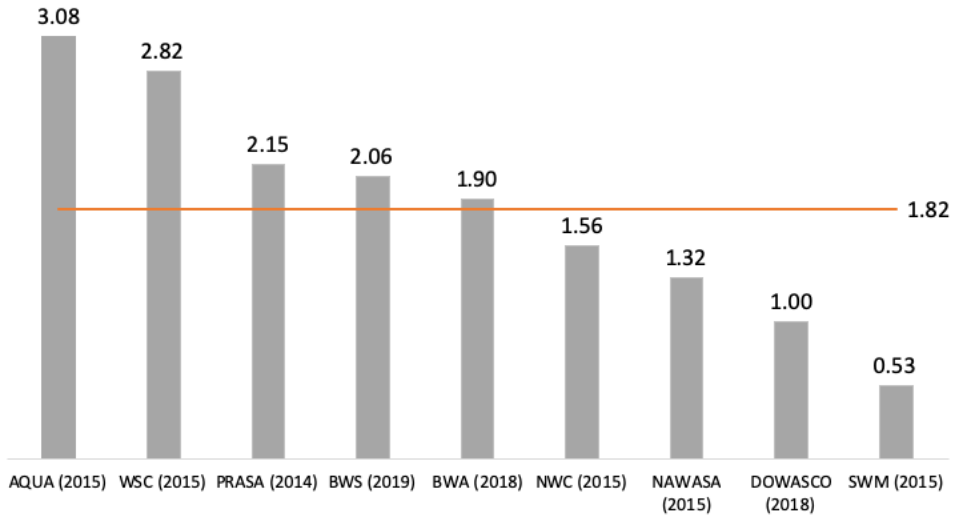
Country	Utility	Average Water Tariff (US$/m³)	Average Residential Water Tariff (US$/m³)	Residential Water Bill (US$ @15 m³)	Household expenditure on water / total household expenditure
Assessed utilities					
The Bahamas	WSC (2015)	US$ 2.82	US$2.78	US$ 35.83	0.81%
Barbados	BWA (2018)	US$1.90	TBD	US$ 20.77	0.70%
Belize	BWS (2019)	US$ 2.06	TBD	US$ 29.30	3.30%
Guyana	GWI (2015)	TBD	TBD	US$ 7.25	0.73%
Jamaica	NWC (2017)	US$1.55	TBD	US$ 19.85	1.79%
Suriname	SWM (2015)	US$0.53	US$0.37	US$ 7.90	0.92%
Trinidad and Tobago	WASA (2015)	TBD	TBD	US$ 4.11	0.12%
Other benchmarked utilities					
Dominica	DOWASCO (2015)	TBD	TBD	US$ 19.11	1.56%
Grenada	NAWASA (2015)	TBD	TBD	US$ 20.40	0.77%
St Lucia	WASCO (2015)	TBD	TBD	US$62.50	2.81%

Source: Information provided by utilities, utilities' websites, and World Bank Databank
TBD = To be determined. These utilities did not provide the information required to calculate these values.

2.6.1 Average water tariffs

The average water tariff for nine Caribbean utilities is US$1.82 per m³, but there is a large variance across the nine utilities (see Figure 2.30). To calculate the average water tariffs, we divided the utilities' total revenues from sales of water by the volume of water billed. SWM has the lowest average tariffs, at US$0.53 per m³. Average tariffs for NWC are below the average, while AQUA, and WSC have the highest average water tariffs at US$3.08, and US$2.82 per m³ respectively. An important reason for the high tariffs of these two utilities is that they produce most of their water with desalination, which is much more expensive than treating freshwater. They therefore incur high costs, some of which are passed on through tariffs.

Figure 2.30: Average Water Tariffs (US$/m³)

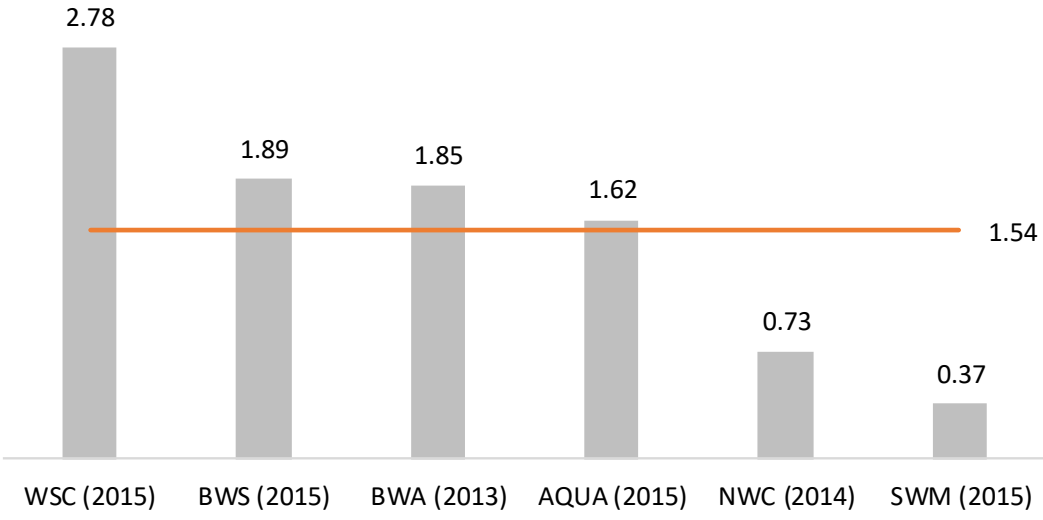


Source: Information provided by utilities

2.6.2 Average residential water tariffs

We calculated the average residential water tariff by dividing the utilities' total revenue from sales of water to residential customers by the total volume of water billed to residential customers. The average residential water tariff for the utilities that provided sufficient data to calculate this indicator is US$1.54 per cubic meter (see Figure 2.31). Due primarily to the high cost of desalination, WSC has the highest residential water tariffs at US$2.78 per cubic meter. BWS and BWA are slightly above the average with tariffs of US$1.89 and US$1.85 respectively. NWC and SWM are below the average with tariffs of US$0.73 and US$0.38.

Figure 2.31: Average Residential Water Tariff (US$/m³)

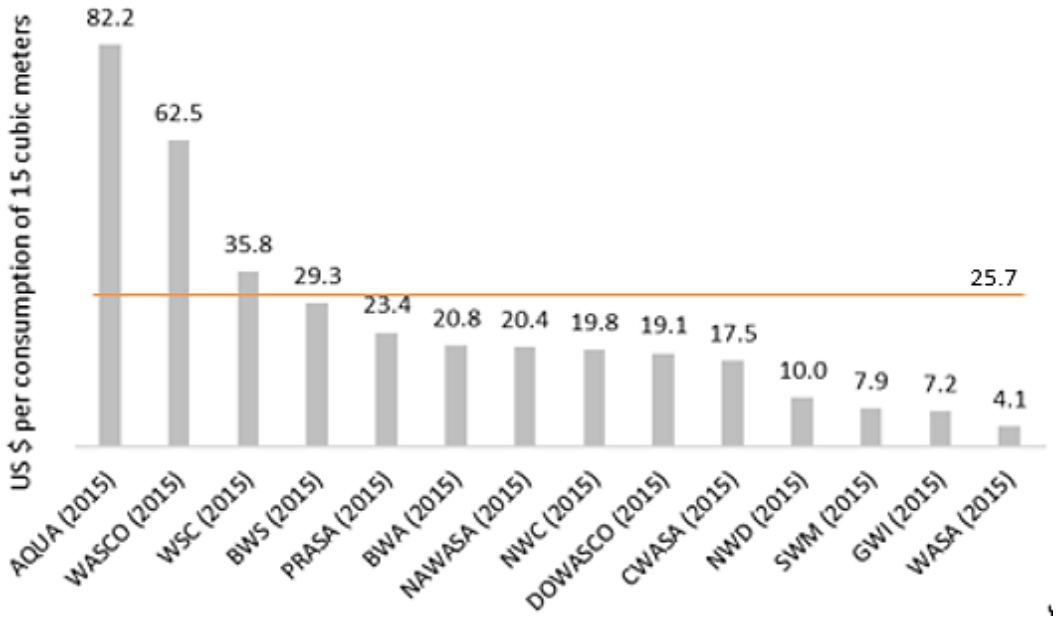


Source: Information provided by utilities

2.6.3 Residential monthly water bill for consuming 15m³ per month

We calculated the residential monthly water bill for a customer consuming 15 cubic meters per month using the tariff schedule of each utility in 2015. Figure 2.32 illustrates the large variation in the resulting monthly bill among the benchmarked utilities. NWC and BWA are below but close to the average of US$25.71. BWS, one of the most efficient utilities, is above but close to the average. Similar to average water tariffs, WSC has one of the highest bills due to its high desalination costs. SWM and GWI have two of the lowest bills in the benchmarked utilities at US$7.90 and US$7.25 respectively.

Figure 2.32: Residential Monthly Bill (US$ per consumption of 15 cubic meters)



Source: Tariff schedules found in utilities' websites.

2.6.4 Household expenditure on water as a percentage of household income

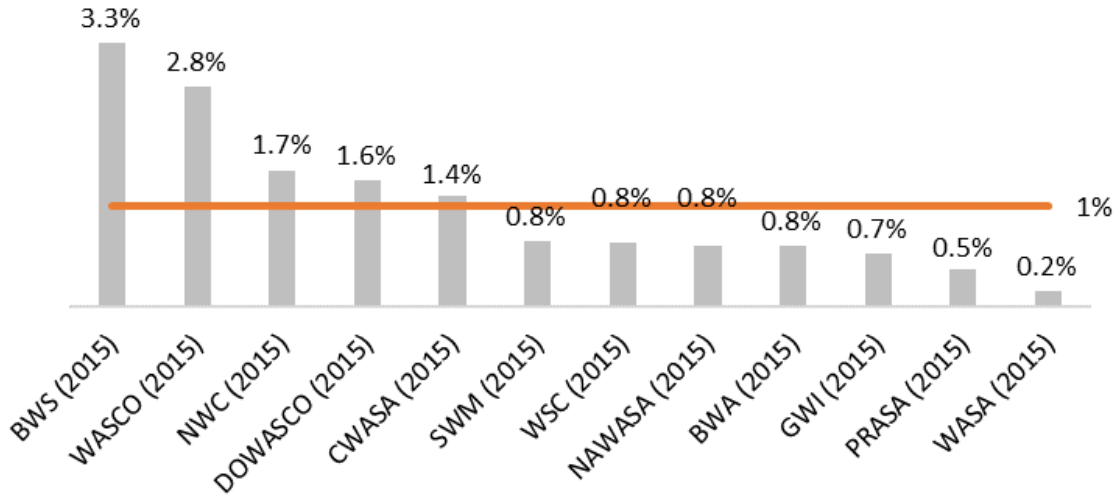
Household expenditure on water as a percentage of household income is a measure used to analyze the affordability of tariffs through the impact of water costs on household income. To calculate it, we divided the average residential monthly bill over the average total household expenditure of each country. The United Nations Development Program (UNDP) suggests that water costs should not exceed 3 percent of household income.[50] In this case, we use household expenditure as a proxy for household income because statistics on household expenditures are more readily available, and household expenditures are a more reliable indicator of welfare.[51]

[50] United Nations Development Programme. *Beyond Scarcity: Power, Poverty and the Global Water Crisis. Human Development Report.* 2006. New York: UNDP

[51] The World Bank. *Living Standards Measurement Study. Designing Household Survey Questionnaires for Developing Countries.* 2000. Oxford: The World Bank

Figure 2.33 shows household expenditure on water as a percentage of total household expenditure across the benchmarked utilities. For the benchmarked utilities, the average household expenditure on water as a percent of household income is 1 percent. Only Belize is above the 3 percent threshold. Despite the WSC's relatively high bills, water remains affordable, making up an average of only 0.9 percent of total household expenditure. These results suggest that, on average, water tariffs in the Caribbean are affordable and that tariffs for residential consumers could be increased without exceeding the 3 percent threshold.

Figure 2.33: Household Expenditure on Water as a Percent of Total Household Expenditure



Source: Tariff schedules found on utilities' websites and household expenditure found in World Bank Databank

3 Policies in the Water and Sanitation Sector in the Caribbean

Most governments in the participating countries have begun to make the water and sanitation sector a higher priority in their national agendas. All governments have national development strategies with explicit objectives for the water and sanitation sector. In addition, some countries, like Belize, Jamaica, and Trinidad and Tobago, have also drafted specific sector policies that focus on the sustainable use and management of water resources. These sector policies have been developed to varying degrees. With the exception of Jamaica, few countries have sector policies that have clear objectives, measurable targets, as well as associated financial plans (Section 3.1). By analyzing these sector policies, we can observe the common trends and challenges that exist in the governance framework of the seven participating countries. Ultimately, we find that even well-developed sector policies can only improve the performance of the sector to a certain extent (Section 3.2).

3.1 Assessing Sector Policies

Developing sector policies—either as part of a national development plan or as an independent sector strategy—is a step in the right direction. Nevertheless, governments should try to develop policies that are more *effective*. An effective sector policy has the following characteristics:

- **Clear objectives**—Governments should set objectives that clearly state the specific outcomes or results that are expected from the water and sanitation sector for a given period (Section 3.1.1)
- **Measurable targets**—Governments should establish targets with concrete criteria for measuring progress towards the main objectives. These targets must be quantifiable and trackable, with a specified time frame for completion (Section 3.1.2)
- **Financial planning**—Governments should include a funded plan with their policies to ensure that the targets are financially realistic and attainable. (Section 3.1.3)

Table 3.1 shows that every country has at least one sector policy with clear objectives. Nevertheless, only Barbados, Jamaica, and Trinidad and Tobago have sector policies with measurable targets. In addition, only Jamaica ties a financial plan to its targets.

Table 3.1: National Water and Sanitation Policies in Select Caribbean Countries

Government Policy	Includes Sanitation	Clear Objectives	Measurable Targets	Financial Plan
The Bahamas				
▪ Draft Vision 2040 (2016)	✓	✓		
Barbados				
▪ National Strategic Plan 2006-2025 (2006)		✓	✓	
▪ Draft Growth and Development Strategy 2013-2020 (2013)	✓	✓	✓	
Belize				
▪ Growth and Sustainable Development Strategy 2016-2019 (2016)	✓ ✓	✓ ✓		
▪ National Environmental Policy and Strategy 2014-2024 (2014)		✓		
▪ National Environmental Action Plan 2015-2020 (2014)		✓		
▪ National Integrated Water Resources Management Policy (2008)				
Guyana				
▪ National Development Strategy (2000)	✓	✓		
Jamaica				
▪ Draft National Water Sector Policy (2016)	✓ ✓	✓ ✓	✓ ✓	
▪ Vision 2030 (2009)	✓	✓	✓	
▪ Water Sector Plan 2009-2030—Vision 2030 (2009)	✓	✓	✓	✓
▪ Water Sector Policy (2004)				
Suriname				
▪ National Report (2013)				
▪ Development Plan 2012-2016 (2012)		✓		
Trinidad & Tobago				
▪ National Integrated Water Resources Management Policy (2016)	✓	✓ ✓		
▪ Medium-Term Policy Framework 2011-2014 (2011)	✓	✓	✓	
▪ Vision 2020 (2005)*				

* Trinidad & Tobago is developing a new national strategy called Vision 2030. The draft version of this document is not currently publicly available.

3.1.1 Setting clear objectives

From a good policy perspective, governments should set clear objectives that include improving water and sanitation coverage (particularly in rural areas), increasing wastewater collection and treatment, improving the quality of service provided, and achieving financial sustainability of the public water utility. In general, all the countries we analyzed had clear objectives that addressed these issues—that is, the objectives clearly state specific outcomes or results for a given period. However, not all countries emphasized the role of sanitation, improvement of access in rural areas, or improvement of the public water utility to the same degree.

Suriname did not mention sanitation in its Development Plan or National Report. It is the only country that does not mention the importance of wastewater treatment and collection in any of its national policies.[52] In addition, Suriname has not signed the Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region[53] (known as the Cartagena Convention) or the Protocol on the Control of Pollution from Land-Based Sources and Activities[54] (known as the LBS Protocol). These regional agreements recognize the need for wastewater treatment and management for environmental and health reasons.[55] Every other country we analyzed has ratified the Cartagena Convention and the LBS Protocol.

Jamaica is one of the few countries that explicitly identifies improving rural water service provision as part of its sector objectives. Its Water Sector Policy, both the one from 2004 and the draft from 2016, identify clear objectives. In its Growth and Sustainable Development Strategy from 2013, Belize also mentions the objective of attaining universal water access by focusing on rural areas. Nevertheless, countries establish objectives for rural development and poverty reduction in general, instead of rural water provision specifically. This is the case for Barbados, Guyana, Trinidad and Tobago, and The Bahamas.

Only The Bahamas and Jamaica have objectives that relate to their public water utilities in their national policies. In the case of The Bahamas, its Vision 2020 draft includes an

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[52] Suriname worked with the IDB to draft a Water Supply Master Plan in 2011. This Plan remains a proposal, and has not been presented by any ministry or government body

[53] Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region, adopted in Cartagena, Colombia on 24 March 1983 and entered into force on 11 October 1986. (UN Caribbean Environment Programme, "Text of the Cartagena Convention," March 24, 1983, accessed January 17, 2017, http://www.cep.unep.org/cartagena-convention/text-of-the-cartagena-convention)

[54] Protocol Concerning Pollution from Land-Based Sources and Activities, adopted on 6 October 1999 and entered into force on 13 August 2010. (UN Caribbean Environment Programme, "Overview of the LBS Protocol," n.d., accessed January 17, 2017, http://www.cep.unep.org/cartagena-convention/lbs-protocol/protocol-concerning-pollution-from-land-based-sources-and-activities)

[55] The Cartagena Convention is an umbrella agreement for the protection and development of the marine environment in the Caribbean. It designates domestic wastewater as a primary pollutant. By signing the Convention, the countries openly recognize the need for shared responses to the threats which land-based sources of pollution pose to public health, to the marine environment, and to economic welfare. The LBS Protocol establishes specific regional effluent limitations for domestic wastewater. Annex III of the LBS Protocol sets out specific obligations of state parties to address the urgent and serious problem of inappropriate and ineffective wastewater treatment and management. (CReW, Wastewater Management in the Wider Caribbean Region: Knowledge, Attitudes and Practice (KAP) Study, 2010)

objective for strengthening the operations of its public corporations, including the public water utility and the regulatory authority. In its Water Policy, Jamaica also includes the objective of restoring and maintaining the financial viability of its public water utility. Barbados and Belize also briefly mention the role of their public water utilities in service provision, however, most countries do not focus on improving the performance of their public water utilities in their national policies.

3.1.2 Establishing measurable targets

Although every country has clear objectives for its water and sanitation sector, few countries have established measurable targets for meeting the objectives. Barbados, Jamaica, and Trinidad and Tobago are the only countries that established quantifiable milestones from which progress could be measured. For example, in its Growth and Development Strategy for 2013-2020, the Government of Barbados set 28 targets for improving service provision that could be easily monitored during a given time frame. This included completing construction works, facility upgrades, and software implementation during a certain year.

In Jamaica, the Government also outlined close to 30 action items with targets that included conducting a tariff review, implementing new management information systems, and executing construction projects. Targets were designated to specific government bodies, with projected start dates and estimated duration times. In Trinidad and Tobago, the Government used a similar approach. In its Vision 2020, the Government gave the responsibility of meeting quantitative targets during specific time periods to different government agencies.

The remaining countries did not establish targets for the water and sanitation sector, or they established targets that were not measurable. That is, targets were broad and general, and lacked specific timeframes for their completion. This was the case for Belize, The Bahamas, and Guyana. Suriname, on the other hand, set no targets whatsoever.

3.1.3 Financial planning

Most countries do not include a financial plan with their sector policies. In fact, only Jamaica included a financial plan in one of its policy documents. In its Water Sector Policy from 2004, the Jamaican Government specified funding sources and total costs for all its action items over the span of 60 months.

For some countries, the long-time horizon of some national development strategies makes financial planning difficult. As funding sources and costs become harder to forecast over time, governments find it increasingly impractical to develop a financial plan. Even countries with short-term policies may find it easier at times to allocate resources for specific water and sanitation projects on an annual basis, through their budgets. This is the case in Guyana, Jamaica, and Trinidad and Tobago, where Governments have all mentioned water and sanitation improvement in recent budget speeches.

In 2016, the Government of Guyana committed GYD$2.8 billion to improve and expand water and sanitation services in the country for the next five years. Funding would cover the cost of building five new wells and four new water supply systems, replacing deteriorated pipes, installing 15,000 new meters, and building 50 water quality laboratories. The Government also promised to earmark an unspecified portion of the GYD$2.8 billion water budget to install filters, aerators, and quality assurance systems at four water treatment plants. Further, the Government made a commitment to grant tax exemptions

for investing and building water treatment and water recycling facilities, as well as corporation tax holidays for companies that exclusively import goods to carry out these activities.[56]

In 2016, the Government of Jamaica announced that the NWC would continue to work on improving the potable water supply and rehabilitating sewage treatment facilities across the island. The NWC earmarked JMD$3.2 billion for continued improvements to the water supply in Kingston, as well as JMD$720 million for the rehabilitation of 44 wastewater treatment facilities.[57] In Trinidad and Tobago, the Government announced in 2014 it would improve wastewater treatment, collection, and disposal in five cities. These projects were projected to increase centralized wastewater access from 30 percent to 45 percent of the population.[58]

Countries that rely on annual budget allocations may find it more difficult to meet long-term sector policy objectives. Limited funding makes planning difficult, which can cause governments to focus on resolving short-term problems instead of initiatives that improve the overall sector.

In some countries, policy makers may not be interested in carrying out comprehensive changes based on long-term time horizons that might entail political costs in the short term.[59] This incentivizes government leaders to be focused on short-term to medium-term planning.

3.2 Effectiveness of Sector Policies

Sector policies are important because they help align country priorities with the needs of the overall sector. Ultimately, sector policies should work to improve the provision of water and sanitation services by helping enhance the performance of the public water utility responsible for service provision. Sector policies are not as effective as they could be. Even when policies have clear objectives, measurable targets, and a financial plan, their time horizons make them difficult to monitor effectively.

As such, there is often a discrepancy between the sector policies a country develops and the overall performance of its utility. Table 3.2 shows that countries like Belize can have relatively well-performing utilities, despite having under-developed sector policies. The

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[56] Ministry of Finance, "Building a Diversified Green Economy: Delivering the Good Life to all Guyanese," Speech to the National Assembly, Guyana, November 28, 2016, accessed January 17, 2017, http://finance.gov.gy/documents-publications/category/budget-speeches

[57] Audley Shaw, "Partnership for Economic Growth," Speech made to Parliament by the Ministry of Finance and the Public Service, Jamaica, May 12, 2016, accessed January 17, 2017, http://www.mof.gov.jm/opening-budget-speeches.html.

[58] Larry Howai, "Budget Statement 2014: Sustaining Growth, Securing Prosperity," Speech to National Parliament by the Ministry of Finance, Trinidad and Tobago, September 9, 2013, accessed January 28, 2017, http://www.news.gov.tt/content/budget-statement-2014-sustaining-growth-securing-proserity#.UvQWAvldUsp

[59] Fidel H. Cuellar, "Corporate Governance in Water and Sanitation Enterprises," Inter-American Development Bank, 2011, accessed March 30, 2017, https://publications.iadb.org/bitstream/handle/11319/5420/Corporate%20Governance%20in%20Water%20and%20Sanitation%20Enterprises%20%20.pdf?sequence=1

opposite is also true—Jamaica has the most effective sector policies, yet overall utility performance is fair.

Table 3.2: Performance Indicators by Public Utility

Utility	Country Sector Policies	Access to Water	Access to Sanitation	Quality of Service	Operating Performance	Financial Performance
BWS	1	3	2	4	4	4
WSC	1	4	3	3	3	0
NWC	3	3	2	2	1	1
WASA	2	3	3	3	1	0
BWA	2	4	3	2	2	1
GWI	1	2	2	1	TBD	0
SWM	0	2	2	3	TBD	1

Note: In this table we provide a range from 0 to 4 to show the extent to which each data point applies. A 4 indicates high level of success and a 0 indicates low level of success.

Table 3.2 shows that there can be a parallel between sector policy effectiveness and utility performance for some countries. For example, Barbados, Guyana, Suriname, and Trinidad and Tobago have weak sector policies as well as under-performing utilities. Overall, it may be that a country's sector policies can only be as effective as the government that implements them.

4 Assessment of Institutions in the Water and Sanitation Sector in The Caribbean

In most countries in the Caribbean, the governance structure in the water and sanitation sector does not provide the proper incentives for achieving universal water and wastewater coverage on a sustainable basis. The governance structure is made up of the legal, institutional, and regulatory frameworks in place to oversee the public water utilities (Section 4.1).

Except for Belize, the effectiveness of the governance structure in The Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago is limited. In many cases, this has led to poor quality of service, a lack of access to sewerage for a significant portion of the population, a lack of transparency and availability of information, and public water utilities with significant scope for improving operating efficiency.

By analyzing the governance structure in these seven countries, we find responsibilities and procedures are not well defined and there is limited competence and resources for regulation. In addition, there is a lack of transparency, managerial autonomy, and proper incentives. These factors are a product of the governance structure in these countries, and they have contributed to the continued underperformance of many Caribbean utilities (Section 4.2).

4.1 Legal, Institutional, and Regulatory Frameworks of the Water and Sanitation Sectors in the Caribbean

To analyze the governance structure for state-owned water utilities in the Caribbean, we first identified whether there are legal, institutional, and regulatory frameworks in place for the water and sanitation sectors. These frameworks are typically developed through laws or government decrees. For this assessment, we examine and compare the legal, institutional, and regulatory frameworks in The Bahamas, Barbados, Belize, Guyana, Jamaica, Suriname, and Trinidad and Tobago.

4.1.1 Overview of the legal framework

At first glance, the legal framework for the water and sanitation sector in most of these countries should provide for an effective governance structure. Countries like The Bahamas, Belize, and Jamaica have laws and regulations that establish state-owned water utilities as separate legal entities and assign key functions of the sector to various government bodies. Table 4.1 shows that other countries, like Suriname and Barbados, have less developed legal frameworks. We can draw the following conclusions from the table:

- All countries have legislation that establishes the public water utility as a separate legal entity
- Most countries have a regulatory authority to oversee its water and sanitation sector
- Few countries have legislation that determines a tariff regime for the public water utility.

Table 4.1: Existing Laws in the Legal Framework

	Main Legislation	Public Water Utility as a Separate Legal Entity	Established Regulatory Authority	Responsibilities Assigned to Government Bodies
Bahamas	▪ **Water and Sewerage Corporation Act**, Chapter 196 (1976) ▪ **Utilities Regulation and Competition Authority Act** (2009) ▪ **Environmental Health Services Act**, Chapter 232 (2001) ▪ **Out Islands Utilities Act**, Chapter 28 (1965) ▪ **Building Regulations Act**, Chapter 200 (1971)	✓	✓	✓ ✓ ✓
Barbados	▪ **Barbados Water Authority Act** (1980) ▪ **Fair Trading Commission Act** (2001) ▪ **Water Authority (Amendment) Act** (2008)	✓	✓ ✓	✓
Belize	▪ **Water Industry Act**, Chapter 222 (2001) ▪ **Water Industry Order**—Water Industry Act, Section 85-86 (2001) ▪ **Public Utilities Commission Act**, Chapter 223 (1999) ▪ **Village Councils Act**, Chapter 88 (1999) ▪ **National Integrated Water Resources Act** (2010)	✓	✓	✓ ✓ ✓ ✓
Guyan	▪ **Water and Sewerage Act** (2002) ▪ **Public Utilities Commission Act** (1999) ▪ **Environmental Protection Act** (1996)	✓	✓	✓ ✓
Jamaica	▪ **National Water Commission Act** (1963) ▪ **Office of Utilities Regulation Act** (1995) ▪ **Water Resources Conservation Authority Act** (1991) ▪ **Water Resources Act and Regulations** (1996)	✓	✓	✓ ✓ ✓ ✓

Suriname	▪ **Concession Act** (1944) ▪ **Water Boards Act** (1931) ▪ **Water Supply Act** (1938) ▪ **Law on Regional Bodies** (1989)			✓ ✓ ✓
T&T	▪ **Water and Sewage Act**, Chapter 54 (1965) ▪ **Regulated Industries Commission Act**, Chapter 54 (1998) ▪ **Waterworks and Water Conservation Act,** Chapter 54 (1944) ▪ **Environmental Management Act**, Chapter 35 (2000)	✓	✓	 ✓ ✓

Most countries have legislation that establishes their public water utility[60] as a separate legal entity, and establishes a regulatory authority to oversee the water and sanitation sector. Nevertheless, Belize, Jamaica, and Trinidad and Tobago are the countries with the most comprehensive legal frameworks. Their laws clearly define the government bodies with responsibilities over the water and sanitation sector and state their powers.

Legal framework in Belize

In Belize, there are five laws that make up the legal framework for the water and sanitation sector. The Water Industry Act (2001) is one of the most important pieces of legislation in the framework. The Act is all encompassing—it states Belize's water resource and environmental policies, establishes a public water utility, and designates responsibility to government bodies for monitoring and regulating the sector, among others. The Act also builds on the Public Utilities Commission Act (1999) by outlining the powers and responsibilities of the PUC for regulating and licensing the water and sanitation sector. It also establishes the PUC's role in approving the public water utility's tariff structure.

Other relevant laws in Belize include the Village Council Act (1999) and the National Integrated Water Resources Act (2010). The Village Council Act governs the provision of water and sanitation services in rural areas. The National Integrated Water Resources Act established the National Integrated Water Resource Authority to coordinate the overall water policy in Belize, but it has not yet been fully set up organizationally due to funding constraints

Legal framework in Jamaica

Like Belize, Jamaica has multiple laws that rule the water and sanitation sector. Two of these laws include the National Water Commission Act (1963) and the Office of Utilities Regulation Act (1995). The National Water Commission Act establishes the NWC, the country's public water utility whose role includes establishing and managing the national water supply. Conversely, the Office of Utilities Regulation Act creates the Office of Utilities Regulation (OUR), the regulatory authority for utility services in Jamaica. The Act gives the OUR the authority to determine and monitor service charges, approve tariff structures, and issue licenses for the water and sanitation sector.

Jamaica's other laws focus on the conservation and regulation of water resources. The National Resources Conservation Authority (1991) gives broad responsibilities to various government bodies for managing natural resources and protecting the environment. More specifically, the Water Resources Act and Regulations (1996) creates a government authority that regulates water resources, including the extraction and use of water sources

Legal framework in Trinidad and Tobago

The legal framework in Trinidad and Tobago is also relatively well-developed. The Water and Sewerage Act of 1965 establishes WASA as a separate legal entity and outlines its responsibilities and powers. The Regulated Industries Commission Act of 1998 also creates the RIC as the regulatory authority to oversee WASA and the water and sanitation sector. Other laws, like the Environmental Management Act of 2000 establish environmental regulation and assign specific responsibilities to different government authorities. What sets Trinidad and Tobago apart from Belize and Jamaica, however, is that its legislation does

[60] The legislation from 1944 that establishes SWM as a separate legal entity in Suriname was not available. The law thereby was omitted from Table 4.**1**.

not clearly establish a tariff regime for its public water utility. Tariffs must be approved by the RIC but the legal framework does not establish a formula for setting tariffs.

Legal framework in The Bahamas

Although The Bahamas has several key laws that oversee its water and sanitation sector, its regulatory legislation is weak. The Utilities Regulation and Competition Authority Act of 2009 establishes URCA as the regulatory authority for several sectors. Nevertheless, the Act does not authorize URCA to engage in the economic regulation of the water and sanitation sector or the WSC. Instead, regulation of the public water utility is set under the Water and Sewerage Corporation Act of 1976. This Act grants regulatory responsibilities to the WSC, including managing and controlling water resources, ensuring the quality and distribution of water, and establishing tariffs for service provision.

Legal framework in Barbados, Suriname, and Guyana

Apart from not clearly establishing responsibilities over the sector to government bodies, the legal frameworks in other countries have different weaknesses. For example, legislation in Barbados and Suriname is relatively outdated. The Barbados Water Authority Act of 1980 is the main law that governs the water and sanitation sector in Barbados. Nevertheless, the law needs to be complemented with more regulatory legislation. Currently, the Water Authority Act from 2008 grants the FTC regulatory responsibilities over BWA, but it has yet to be enforced. The law that addresses environmental regulation has also not been approved by the Government.

In Suriname, the structure of the water and sanitation sector is the result of longstanding laws and executive decrees—there are no up-to-date, sector-wide laws or regulations. The Government of Suriname has acknowledged that its legal framework is outdated and needs to be reformed. Although it is drafting new legislation, nothing has been approved. Currently, the Water Boards Act of 1931, as well as the Concession Act of 1944, are the main laws that govern the water and sanitation sector. Nevertheless, these laws sometimes overlap with others, which may complicate their enforcement. For example, the Water Boards Act issues responsibility over water resources at the district level to water boards, local, independent, public bodies responsible for good water management. This overlaps with the Law on Regional Bodies of 1989, which gives local governments responsibility over pipes and waterways for public services.

The legal framework in Guyana is much more streamlined. The water and sanitation sector in Guyana is governed by three laws. The Water and Sewerage Act of 2002 is the most comprehensive law—it mandates the provision of water and sanitation services, provides regulation for water resources and service provision, and outlines the management and conservation of water resources. The other two laws deal directly with regulation—the Public Utilities Commission Act of 1999 creates a regulatory authority to oversee public utilities in Guyana, while the Environmental Protection Act establishes the Environmental Protection Agency to oversee environmental regulations.

4.1.2 Overview of the institutional framework

The institutional framework in the seven Caribbean countries we analyzed refers to the government bodies that are involved in policy-making, regulation, and funding of the water and sanitation sector. Table 4.2 shows that several countries have spread responsibilities over multiple government bodies. In many cases, responsibilities between bodies are not clearly established, making it difficult to create policies, regulate, and fund the sector. We can draw the following conclusions from the table:

- Multiple ministries are generally involved in making policies for the water and sanitation sector. In The Bahamas and Barbados, this responsibility is concentrated in one ministry
- In several countries, the regulatory authority does not have regulatory responsibilities over the water and sanitation sector
- All countries have a ministry of finance that allocates funding to the public water utility. Nevertheless, some countries also grant responsibility for approving finances to other ministries.

Table 4.2: Government Bodies Responsible by Country

	Government Body	Policy-making	Sector Regulation	Health Regulation	Environ. Regulation	Funding
Bahama	▪ Ministry of the Environment	✓		✓		✓
	▪ Water and Sewerage Corporation (WSC)		✓		✓	
	▪ Utilities Regulation and Competition Authority (URCA)		✓			
	▪ Ministry of Finance					✓
Barbados	▪ Ministry of Agriculture, Food, Fisheries, and Water Resources	✓				✓
	▪ Barbados Water Authority (BWA)		✓			
	▪ Fair Trading Commission		✓			
	▪ Ministry of Health			✓		
	▪ Ministry of the Environment				✓	
	▪ Ministry of Finance					✓
Belize	▪ Ministry of Natural Resources and Immigration	✓				
	▪ Ministry of Finance and Public Utilities	✓				✓
	▪ Ministry of Labour	✓	✓			✓
	▪ Ministry of Forestry, Fisheries, and Sustainable Development Environment	✓			✓	
	▪ Public Utilities Commission (PUC)		✓			
	▪ Ministry of Health			✓		
Guyana	▪ Ministry of Communities' Central Housing and Planning Authority	✓				
	▪ Ministry of Natural Resources	✓				
	▪ Hydrometeorological Service	✓				
	▪ National Water Council		✓			
	▪ Public Utilities Commission (PUC)			✓		
	▪ Ministry of Health				✓	
	▪ Environmental Protection Agency				✓	✓
	▪ Ministry of Finance					

Jamaica	▪ Ministry of Water and Housing ▪ National Water Commission (NWC) ▪ Ministry of Local Government and Community Development ▪ Office of Utilities Regulation (OUR) ▪ Water Resource Authority ▪ Natural Resources Conservation Authority ▪ National Environmental and Planning Agency ▪ Ministry of Health and Environment ▪ Ministry of Finance and Public Service	✓ ✓ ✓	 ✓ ✓	 ✓	 ✓ ✓ ✓	 ✓ ✓
Suriname	▪ Ministry of Natural Resources ▪ Cabinet Environmental Coordination Unit ▪ National Institute for Environment and Development ▪ Ministry of Public Health ▪ Ministry of Labor, Technology Development, and the Environment ▪ Fund for Development of Interior	✓ ✓ ✓	✓	 ✓	 ✓	 ✓
T&T	▪ Ministry of Public Utilities ▪ Regulated Industries Commission (RIC) ▪ Ministry of the Environment and Water Resources ▪ Environmental Management Authority ▪ Ministry of Public Health ▪ Ministry of Finance	✓ ✓	 ✓	 ✓	 ✓	 ✓

Most countries involve multiple ministries in policy-making for the water and sanitation sector. Belize and Guyana are the two countries that designate policy-making responsibilities to the most. Jamaica, however, is the only country in which this responsibility is also designated to its public water utility, which "may, with the approval of the relevant Minister, make regulations for the better carrying of [the National Water Commission] Act into effect."[61]

In The Bahamas and Barbados, only one ministry spearheads policy-making for the water and sanitation sector. In The Bahamas, the Ministry of the Environment has a broad mandate over the environment, and specific departments within the Ministry handle water policy. In Barbados, the Ministry of Agriculture is the government body with the most power in the sector.

The seven Caribbean countries we analyzed also distribute regulatory responsibilities in different manners. In Suriname, the Ministry of Natural Resources is responsible for the economic regulation of the public water utility. Every other country has a regulatory authority that oversees public utilities. In some instances, this body does not have the power to regulate utilities in the water and sanitation sector. This occurs in The Bahamas and Barbados, where both URCA and the FTC only regulate the electricity and communications sector. Economic regulation is thereby the responsibility of the public utility or its board.

The health-related responsibilities in the water sector reside with the Ministry of Health (or its equivalent) in each country. Environmental standards are also enforced by a ministry, a specialized government body, or a combination. For example, Jamaica has three specialized public authorities in charge of regulating environmental standards, while Trinidad and Tobago only has one.

Lastly, all countries 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 Belize and Jamaica, however, other ministries are also in charge of funding the rural water and sanitation sector. In Belize, the Ministry of Labour[62] oversees, regulates, and funds the Village Water Boards that supply water to rural areas. In Jamaica, the Ministry of Local Government and Community Development provides policy, regulation, and funding mechanisms to small water systems in Parish Councils.

4.1.3 Overview of the regulatory framework tariff regimes in the water and sanitation sector in the Caribbean

In the Caribbean, regulatory frameworks have been developed to varying degrees. Most of the countries we analyzed have established regulatory authorities for the water and sanitation sector that have some responsibility over setting tariffs, granting licenses, and setting and enforcing service standards. In some cases, the regulators are credible and function well, in accordance with clear guidelines established by law. The OUR in Jamaica and the PUC in Belize, for example, are multi-sector regulators with well-developed processes for tariff setting. In other cases, however, regulators have not set cost-reflective tariffs, potentially endangering the financial viability of the utility. Table 4.3 below

[61] National Water Commission Act, 1963, Section 19.

[62] Ministry of Labour, Local Government, Rural Development, NEMO and Immigration and Nationality

summarizes whether the respective regulatory framework reflects cost accuracy in each country.

Table 4.3: Overview of the Regulatory Framework

Country	Body responsible for setting tariffs	Tariffs reflect costs	Tariffs cover operating expenditures
The Bahamas	Government	No	No
Barbados	Government	No	Yes
Belize	PUC	Yes	Yes
Guyana	PUC	No	No
Jamaica	OUR	Yes	Yes
Suriname	Government	No	No
Trinidad and Tobago	RIC	No	No

A few other countries, such as Suriname, do not have clear regulatory guidelines. In these countries, tariffs are set or heavily influenced by the Government, and political pressure has led to tariff levels that are well below the cost of providing service. As a result, the Government heavily subsidizes companies in the water and sanitation sector, but budget limitations often mean that the utility does not receive enough funding to cover its required capital investments.

Even in countries with well-functioning regulatory frameworks, like Jamaica, utilities may have limited incentives or room to improve performance. Government ownership of utilities can at times render a regulatory framework virtually obsolete. Regulatory frameworks seek to balance the diverging interests of various parties, particularly the public, private investors, and the government. Public ownership, however, frequently dampens if not removes altogether the profit motive private utility owners would demonstrate. Politically appointed utility managers may not effectively oppose commercially unviable but politically tenable policy and regulatory decisions, and be induced to implement such decisions at the utility level. Additionally, an ineffective regulatory and institutional setup can lead to overreliance on transfers from the government to offset the utility's deficits.

Tariffs are the principal source of revenue for most public water utilities. While additional fees for connections and disconnections may be levied, the bulk of revenue comes from actual water sales. As such, it is imperative that tariffs accurately reflect the true and full costs utilities incur for water production and distribution, wastewater collection and treatment, as well as network maintenance and expansion.

In many Caribbean countries, tariffs are not enough to cover even operating expenditures. As shown in Table 4.3, more than half the countries we surveyed did not have cost-reflective or cost-recovering water tariffs. This may have occurred for the following reasons:

- **Lack of a clear approach for setting tariffs**—There is no clearly defined regulatory methodology for setting tariffs. Regulators could explore implementing an approach that incorporates price caps or revenue caps. They could also explore setting tariffs which incorporate the rate of return, or setting tariffs at intervals during which they would be reviewed and adjusted

- **Tariffs may not be set according to the approach established by law**—Even in cases where sector legislation and regulations establish a clear methodology for setting tariffs, a weak institutional framework and accountability mechanisms may result in regulators violating such approaches without consequence
- **Heavy political influence on the tariffs charged by the utility**—To ensure financial adequacy, regulators should be able to set tariffs without political interference. Political influence may result in setting tariffs below cost-recovery for political gains. To offset the difference, public water utilities may rely on scarce public funds to remain operational. Without political autonomy, the public utility may lack the incentive to cut costs and improve performance.

4.2 Evaluating the Governance Structure

The effectiveness of the governance structure in each Caribbean country differs considerably. Almost all countries have legal, institutional, and regulatory frameworks in place, however they do not always provide for an effective governance structure. In Belize, the governance structure has allowed the state-owned water utility to build managerial autonomy, hold management and staff accountable, and provide incentives for performance. In contrast, in Suriname, the governance structure has resulted in limited managerial autonomy, inadequate monitoring and supervision, and a lack of transparency. Table 4.4 provides further detail about the governance structure by country.

Table 4.4: Governance Structure Evaluation

Indicator	Belize	Jamaica	Bahamas	T&T	Suriname	Guyana	Barbados
Clear identification and allocation of responsibilities in the sector	4	4	2	4	2	3	2
Public water utility is established as a separate legal entity	4	4	4	4	4	4	4
Public water utility has autonomy from government	3	3	2	3	3	2	1
Availability to citizens of good information on actual performance	4	4	4	1	2	0	1
Public participation in planning and regulatory hearings	2	2	0	0	0	0	0
Responsibilities for providing services are well defined	4	4	3	4	2	4	3
Clear and public agreement on coverage and service levels to be provided	3	4	2	2	0	2	1
Adequate financial plan (tariffs plus subsidies provided through reliable mechanisms) for covering costs of providing desired services	3	1	0	0	TBD	0	1
Monitoring unit has adequate skills, resources, and focus	4	3	0	2	0	2	0
Effective monitoring and enforcement of "agreements" with the public water utilities	3	1	0	TBD	0	0	0
Managers of the public water utility have freedom to manage	4	3	2	TBD	3	TBD	1
Managers and staff of the water utility have incentives to perform well	3	2	3	TBD	3	TBD	TBD
Overall	3	2	2	2	1	1	1

Note: In this table we provide a range from 0 to 4 to show the extent to which each data point applies. A 4 indicates a high level of success and a 0 indicates a low level of success.

Table 4.3 shows that Belize is the country with the most effective governance framework. Jamaica, which has legal, institutional, and regulatory frameworks that are similar to those in Belize, does not have such an effective governance structure. The remaining countries also lag in effectiveness. Given the information presented in the table, we can draw the following conclusions:

- **Responsibilities and procedures are not well defined**—A good governance structure relies on frameworks that clearly define the actors, their responsibilities and powers, and the concrete measures they are authorized to take. In some countries, this was an issue. For example, in Suriname, responsibility over service provision at a regional and district level overlaps between different government bodies and can lead to confusion. In The Bahamas, regulation is poorly defined and gives the WSC room to set its own regulations
- **There is a lack of transparency and consumer involvement**—Most countries do not offer mechanisms for monitoring complaints or managing public consultations on tariff issues. Moreover, there are few requirements for water utilities to publicly disseminate information on performance, costs, and investments. As a result, few utilities have information on the quality of service they provide. This is particularly true for GWI, BWA, and WASA
- **Managerial autonomy in some countries is limited**—Some water utilities have little power to preserve their business autonomy from government officials, who usually appoint the members of upper management and the board of directors.[63] For example, managers of the water utilities in The Bahamas and Barbados appear to not have full managerial autonomy to carry out operations. Managerial autonomy is important because it ensures that management can make substantial and permanent changes without interference or predation from other parts of government. Otherwise, management may have been incentivized by the political system to increase certain types of costs or support commercially unviable—but politically tenable—policy and regulatory decisions. Without managerial autonomy, the water utility may also be subjected to a cumbersome budget process that is subject to political bargaining. If capital subsidies are approved based on political consideration, some fixed assets might also be neglected or inadequately maintained
- **Financial planning does not consider the costs for expanding and improving services**—None of the public water utilities have tariffs that fully cover the cost of expanding and improving services, particularly wastewater collection and treatment. Except for BWS and NWC, utilities in the other countries did not have tariffs that covered their cost of service as it stands. Financial planning for most utilities is vastly inadequate. This is true for BWS and NWC as well, since both utilities do not consider the higher cost of service associated with increasing wastewater collection and treatment
- **There are weak incentives for operating efficiency**—Except for BWS in Belize, most utilities are not reviewed to ensure costs are low, nor do the utilities have strong incentives to reduce these costs. For example, performance-based remuneration for utility management and staff is not used for any utility other than BWS

[63] Fidel H. Cuellar, "Corporate Governance in Water and Sanitation Enterprises," Inter-American Development Bank, 2001, accessed 3/30/2017, https://publications.iadb.org/bitstream/handle/11319/5420/Corporate%20Governance%20in%20Water%20and%20Sanitation%20Enterprises%20%20.pdf?sequence=1

- **Limited competence, resources, and credibility for effective utility supervision**—In Suriname, The Bahamas and Barbados, the regulatory responsibilities over the sector are not given to a regulatory authority. Instead, the responsibility falls to a ministry or the utility itself. The ministries in charge of oversight may also lack the capacity to carry out this function or may not have the resources to do so. Having a utility in charge of its own regulation can also create an inherent conflict of interest, since most utilities may find it difficult to effectively assess their own performance. Countries with a regulatory authority may also face similar issues with credibility. In countries like Jamaica, the regulatory authority does not have the credibility to effectively monitor and improve utility performance.

Part B: Action Plan

The seven countries we surveyed deliver different levels of service, and have utilities with widely varying levels of performance. As a result, each country requires an individualized action plan to improve governance, tailored to addressing its issues. Nonetheless, there are some common themes that a regional action plan can address:

- Lack of data on existing service levels, especially for areas without utility services, but often on utility services as well
- Unclear targets for expanding utility services, especially sewerage services, which are much less developed than networked water supply. Without clarity on targets, utilities have little motivation to invest in expanding sewerage networks, and governments cannot hold utilities accountable for poor outcomes
- Lack of commitment to deliver adequate services in areas where piped water supply and sewerage networks are not economical, or even standards for what adequate non-networked service is.

For these reasons, all seven countries should start their action plan for improving water-sector governance by establishing a baseline for services, broken down by utility services and access, quality, and convenience of services in areas that utilities do not serve. Data on areas without utility service is often particularly poor and unstandardized, so establishing this baseline is an important first step to setting targets for improving services. Section 5 describes the need to establish a baseline.

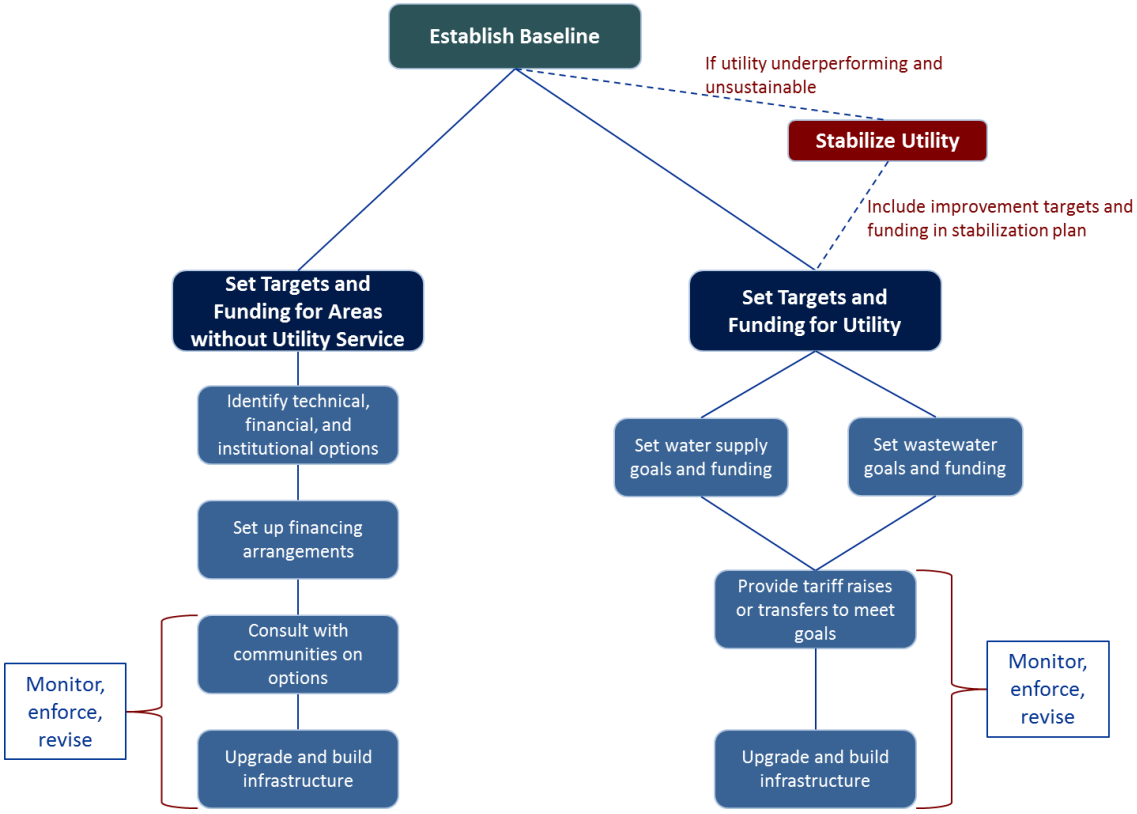
In countries with underperforming utilities, or utilities that do not collect or report data, a utility stabilization plan is likely needed. Countries should set out and begin working on that plan immediately and link the plan with targets and funding for expanding and improving utility services. Section 6 describes the basic steps countries can take to stabilize underperforming utilities.

With the baseline established (and a utility stabilization plan in place, if necessary), governments should set targets for expanding and improving utility services, as well as targets for improving services in areas where utility services are not economical. Meeting these targets will require funding, so governments should set targets and funding levels (and sources) through an iterative process—starting with consultations on ideal service levels, then determining if the cost of meeting that ideal is justified and feasible, and adjusting service and funding levels accordingly. Section 7 describes this process for setting targets and funding levels.

Once targets and funding levels are set, governments must establish the systems to regularly update the baseline to track progress. Utility managers and other implementers must also have incentives to reach targets. Section 8 describes the need for monitoring and enforcement.

Figure B.1 illustrates the progression of the action plan.

Figure B.1: Action Plan Diagram



5 Establish a Baseline

For all countries, establishing a baseline of water supply and sanitation services is the first step in the action plan to improving sector governance and service delivery.

5.1 What Needs to be Done

Most of the countries we surveyed lack comprehensive data on water supply and sanitation services, including utility service provision in areas the utility does not reach. This lack of data prevents a common understanding of issues in the sector, which makes it difficult to develop an informed national action plan that assigns responsibilities and sets measurable and enforceable goals. Each country needs comprehensive baseline information on performance that covers areas that utilities serve, and areas outside utility service.

Baselines for utility performance

A few utilities report comprehensive financial and operational data and make that data available to the public. Others lack data on operational and financial performance, or are unwilling to share that data with the public. This information gap makes it impossible for customers and the public—who pay for services through tariffs and taxes—to fully evaluate the service they receive.

While more information is needed, our benchmarking suggests that utilities can be broadly grouped into three categories, shown in Table 5.1. The table also shows that these categories have implications for what countries should do. In some cases, an immediate effort is needed to improve utility performance, which can position the utility to sustainably expand coverage and improve services over the medium to long term.

Table 5.1: Three Categories for Utility Performance in the Caribbean

Category	Utilities	Comment	Action Steps
Needs stabilization	▪ SWM (Suriname) ▪ GWI (Guyana) ▪ WASA (Trinidad and Tobago)	Incomplete information on performance, strong likelihood of low efficiency and poor financial results	Take steps to stabilize the utility, described in Section 6. An important early step is gathering information on physical assets, operational performance, and financial performance
Stabilized	▪ WSC (Bahamas) ▪ NWC (Jamaica) ▪ BWA (Barbados)	Operate reasonably comprehensive network with reasonable efficiency	Some steps needed to improve operating efficiency. Need clear goals for future actions, and greater financial sustainability to achieve more managerial autonomy
Stabilized and financially sustainable	BWS (Belize)	The best-performing water utility assessed, with good service quality and sustainable financial performance	Set goals and maintain autonomy to meet goals

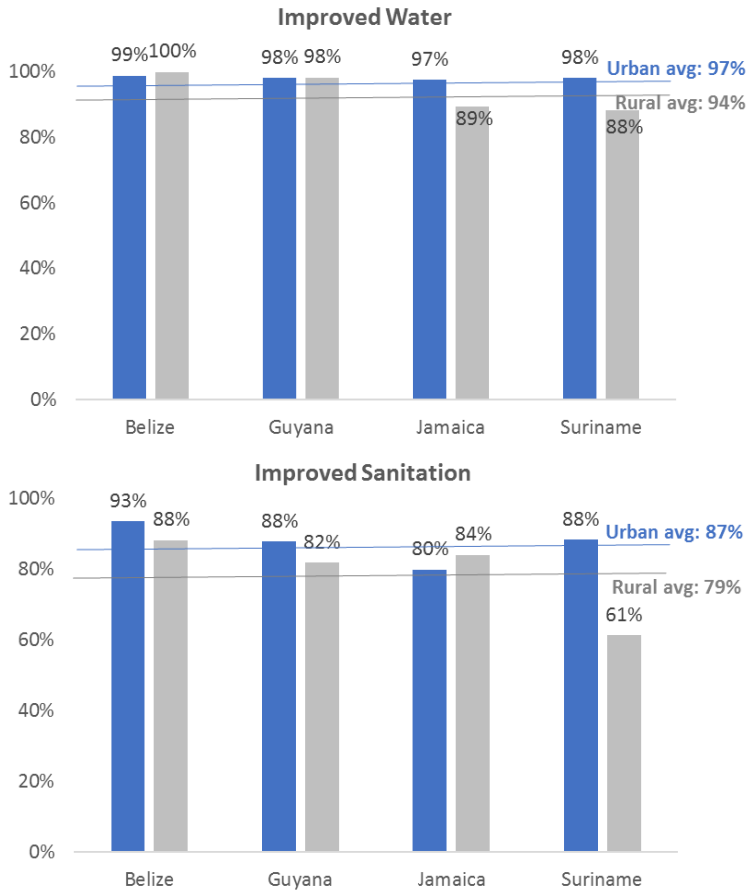
Baselines for service provision in areas that utilities do not reach

In the seven countries we assessed, sustainability and service quality are worse in rural areas where piped water and wastewater services are not practical or economical, compared to urban areas. Nearly all the countries surveyed lack comprehensive data on access to safe, reliable, and convenient sources for water supply and sanitation in areas that utilities do not reach. In the four countries of emphasis that report rural and urban statistics separately, average use of improved water sources is 3 percentage points less in rural areas, and average use of improved sanitation facilities is 8 percentage points less (see Figure 7.2).

This service gap likely understates poor access in rural areas, for two reasons. First, because the word "improved" refers only to whether the water source or sanitation facility is likely to be safe, it does not capture other potential problems that may make the source or facility inadequate. For example, users may need to travel long distances to reach a source, or that source could be unreliable—in either case, it would still be reported as improved. Urban facilities are unlikely to suffer from the same lack of data, since networked sources are nearly always at or near users' homes, and in the Caribbean are usually quite reliable.

Second, three of the seven countries of emphasis do not even report differences in urban and rural sources. At a minimum, the lack of data suggests low emphasis on rural water and sanitation services. It may also hide an even larger service gap than the one reported.

Table 5.2: Access to Improved Water Supply and Sanitation Services in Rural Areas



Source: WHO/UNICEF Joint Monitoring Programme, 2015.

For areas without piped services, standards are needed that go beyond the existing metric of improved sources, to encompass convenience, reliability, and safety. Because piped services are not practical in many of these areas, meeting these standards will require other technical, financial, and institutional solutions. With clear standards, governments can set clear objectives for sustainable access to water services in rural areas, and assign clear responsibilities to meet them. Currently, governments lack even the standards for access that would allow them to set goals.

Use available tools and frameworks to develop a baseline

Each country needs comprehensive baseline information on service quality, operating efficiency, access to service and financial sustainability. For some countries, obtaining this information can be difficult because governments don't know what information is relevant to include in the baseline. Countries could use tools and frameworks that are already available to better understand what information is needed for the baseline.

One of the tools that is available to utilities and governments is the AquaRating platform (aquarating.org) created by the IDB and the International Water Association (IWA). AquaRating evaluates water and sanitation services through several indicators across eights areas, including

service quality, operating efficiency, business management strategy, financial sustainability, access to service and corporate governance.

Another tool that can help governments develop a baseline is the Tool to Evaluate the Fulfillment of Good Corporate Governance Practices in Primarily State-Owned Water and Sanitation Companies developed by the IDB. This tool allows governments to assess the level of governance of publicly owned water utilities.

Both utilities and governments would benefit from using tools that are already available to help them develop the baseline study of the water and sanitation sector. It would help utilities identify areas of improvement and receive guidance on how to develop indicators to track progress. It would also help governments to establish a baseline to monitor the improvements in service provision.[64]

5.2 Who Should Do This?

Governments have a primary responsibility to establish a data baseline. Some countries, such as Jamaica and Belize, have passed responsibility for collecting data and monitoring the performance of the utility on to a *regulatory body*. This setup works well for those two countries, but is no panacea. The approach has been ineffective in Trinidad and Tobago, Barbados, and Guyana—countries with regulatory bodies that despite their nominal authority over the water sector, do not collect or report comprehensive data on utility performance. Indeed, a regulator is not required for good utility data. In The Bahamas, there is no independent regulator, yet the WSC follows government instructions to report comprehensive and timely operational and financial data.

For areas without utility service, governments must specify the data they would like to collect, then require local government or a national government entity (such as the Ministry of Water) to regularly survey and update progress. Data should reflect national goals for safety, reliability, convenience. Depending on national goals for access, it should include at least:

- Source of water supply
- Amount of water used per person per day
- Sanitation facility and disposal mechanism for fecal sludge
- Distance to water supply source and sanitation facility
- Reliability of water supply source and sanitation facility.

Civic society has an important role in pointing out problems with current services, and in providing input to national standards for areas where piped services are not practical or economical. National government administrators should consider input from residents, NGOs, and community organizations when setting standards for access.

[64] IDB, " Tool to Evaluate the Fulfillment of Good Corporate Governance Practices in Primarily State Owned Water and Sanitation Companies - See more at: https://publications.iadb.org/handle/11319/5421?locale-attribute=en#sthash.6yxe1CDd.dpuf

5.3 How Can the IDB Help?

National governments will need funding to collect data for baseline studies, especially in areas not served by utilities. They also need advice on reasonable standards for access outside utility areas. IDB can provide funding for these studies, and technical advice on global and regional standards.

For utilities, the IDB can continue to play a useful role by regularly updating information on utility benchmarking (such as the type of information in Part A of this report or the information available in AquaRating). This information is valuable to regulators, governments, utilities, and citizens in evaluating utility performance and setting reasonable targets. As we note above, simply providing comprehensive information on utility performance is the first step in building a competent utility.

The IDB can also provide technical assistance to:

- Utilities, to build up record-keeping and reporting capacity
- Regulators (including regulatory bodies and ministries with regulatory responsibilities) to determine what data to require from the utility, and when and how to make that data available to the public.

The IDB can also coordinate and complement financial and technical assistance with other multilateral organizations, such as the World Bank, the Caribbean Development Bank, and CAF. Its partnership with other organizations would advance the common interest in improving utilities' performance and governance in the region. When working jointly, multilateral organizations can establish a systematic utility assessment as part of their financial assessment process to provide joint financial and technical assistance. This would facilitate establishing a baseline.

6 Stabilizing Underperforming Utilities

Before managing any major network expansions or infrastructure upgrades, several Caribbean utilities should stabilize their operations to allow for future investments to be effective. Utilities in need of stabilization have incomplete knowledge of their networks, do not operate efficiently, and are not financially sustainable. These factors make it difficult to identify good investments, or to efficiently manage their construction and maintenance.

These utilities can take immediate steps to establish a baseline of performance and improve credibility and operations. Utilities can start with relatively simple actions, such as improving the collection rate, reducing response time to complaints, and collecting and sharing data on operating and financial performance. At the same time, governments should give utility managers the autonomy necessary to reform the utility, as well as to be accountable for the utility's performance.

In general, the steps to stabilization can be categorized into those:

- The utility can take on its own
- The utility needs to take in conjunction with other stakeholders
- The support other actors, such as the IDB, can provide.

The necessary actions, timing, and sequencing of those actions depends on the current state of the utility, political and economic conditions, and the regulatory and institutional framework within which the utility operates. The stabilization plan would ideally be formalized between the Government and the utility.

6.1 Utility Actions to Stabilize

As for each national water sector, the first step an underperforming utility should take is to conduct a comprehensive assessment of its baseline condition. For an underperforming utility, a lot of standard information regarding operations and financial performance will be missing—that is, the utility will not have the systems in place to monitor the data it needs. This in itself is an important step: identifying the type of information required, and developing the systems to collect it.

Based on the baseline survey, the utility can develop a short-term action plan focused on quick ways to improve service quality with minimal additional expenditure. Even seemingly simple steps, such as training call center employees to respond courteously and quickly to customer complaints, can make a noticeable difference to customers and help increase the utility's credibility. In turn, this could lead to support for future public expenditure or tariff increases to make the necessary infrastructure upgrades.

The utility can also quickly put in place better management information systems that focus on:

- The condition and operating performance of existing assets
- The utility's water balance
- Customer service indicators, such as coverage, continuity, and water quality.

As the utility gathers more data, it can begin to contract some specialized services to improve its performance rapidly and effectively. For example, many water utilities are finding that contracts with specialized companies are effective and efficient ways to reduce non-revenue water. The WSC in The Bahamas engaged a specialized company to reduce non-revenue water, and has

reduced losses by 56 percent in just 4 years.[65] The WSC has achieved these huge efficiency gains without needing to make major operational or managerial reforms, but the 10-year contract includes training for WSC to continue managing NRW.

As the utility stabilizes, it can progress to develop a multi-year business plan, which should be agreed with the government. With a fully funded business plan and managerial autonomy, the government can then hold utility managers accountable for clear targets. This business plan should include, at a minimum:

- Specific and measurable targets on an annual basis for the water utility's key objectives, including coverage, continuity, water quality, and financial performance
- A detailed and prioritized capital investment plan that clearly links the proposed investments to the utility's objectives. This means putting in place and sticking to a disciplined process for identifying, assessing, and developing capital investment projects
- A financial plan showing how the utility will cover its full costs of service with revenues from tariffs charged to customers, transfers from government, and borrowed funds
- A strategy for improving human resources management.

6.2 Government Actions to Stabilize Utilities

The single most important action governments can take to stabilize water utility performance is to ensure that top utility managers (especially the General Manager) are competent and have the autonomy to meet targets. Governments must ensure accountability by removing managers who do not meet targets. To do this, there must be effective processes for monitoring and evaluating utility performance—this could be done directly by a ministry, or by a regulatory body.

Along with autonomy, full funding to meet targets is the second essential element of accountability. As such, targets—even early ones, such as gathering data on key performance indicators—must be fully funded. Governments have two main options to fund utility improvements:

- **Increasing tariffs**. Tariffs are well below the full cost of service in each of the four Caribbean utilities we surveyed that need stabilization. Tariff increases could, therefore, allow them to invest to improve operations and reduce the need for government subsidies. However, experience shows that sudden tariff increases for underperforming utilities can provoke public backlash, as people feel they should not have to pay more for sub-par service. Therefore, while tariff increases are often a necessary part of stabilizing a public water utility, governments would do well to raise prices only gradually, and link increases to demonstrated improvements
- **Subsidies**, which are most effective when given for a clear purpose, to encourage accountability. When governments choose not to cover the full cost of service through tariffs, the subsidies should be reliable, planned for multiple years, and linked with targets for performance improvement.

In many cases, legal and regulatory changes can also help improve utility performance, by creating good incentives, accountability, or both. However, diverse legal structures for public

[65] From 6.9 million imperial gallons per day (migd) in 2012 to 3.0 migd in 2015. Data from the WSC.

utilities that perform well, both in the Caribbean and around the world, show that there is no single path to good performance. Similarly, there is no structure that will guarantee success—government commitment to clear goals and competent utility management that is motivated to meet those goals is more important.

6.3 IDB Support to Stabilize Utilities

The IDB has an important role to play in helping stabilize underperforming utilities. Perhaps its most important assessment is an initial assessment of what the utility needs. For many underperforming utilities that need to focus on gathering data, improving management processes, and low-cost ways to quickly improve customer services, the IDB should prioritize technical assistance regarding specific investments related to service improvements. In these cases, large new loans for infrastructure upgrades will typically not be appropriate, since the utility is not equipped to maintain even its existing infrastructure adequately.

As utilities begin to stabilize, the IDB can provide support with long-term planning, then eventually with financing for needed infrastructure expansions. However, new loans for stabilizing utilities should come after demonstrated progress towards clear targets, and alongside a sustainable plan to re-pay the loan that is agreed between the government, regulator (if there is one), and the utility.

7 Set Targets and Allocate Money to Reach Them

None of the seven countries we surveyed has clear targets for expanding water access over time that are linked with the funding to achieve them. This type of clarity is needed to set a path for improving utility performance, and improving services in areas where piped services are not viable.

7.1 Targets and Actions for Utilities

To be held accountable, utilities must have clear targets for expanding and improving services, and the financial resources to meet those targets.

What needs to be done

Many of the utilities we surveyed have high coverage rates for piped water supply, especially in urban areas, where high population densities make piped services the safest and most economical option. Yet nearly all utilities need to improve service quality and efficiency, as shown in Table 7.1.

Table 7.1: Utility Gaps for Water Supply Services

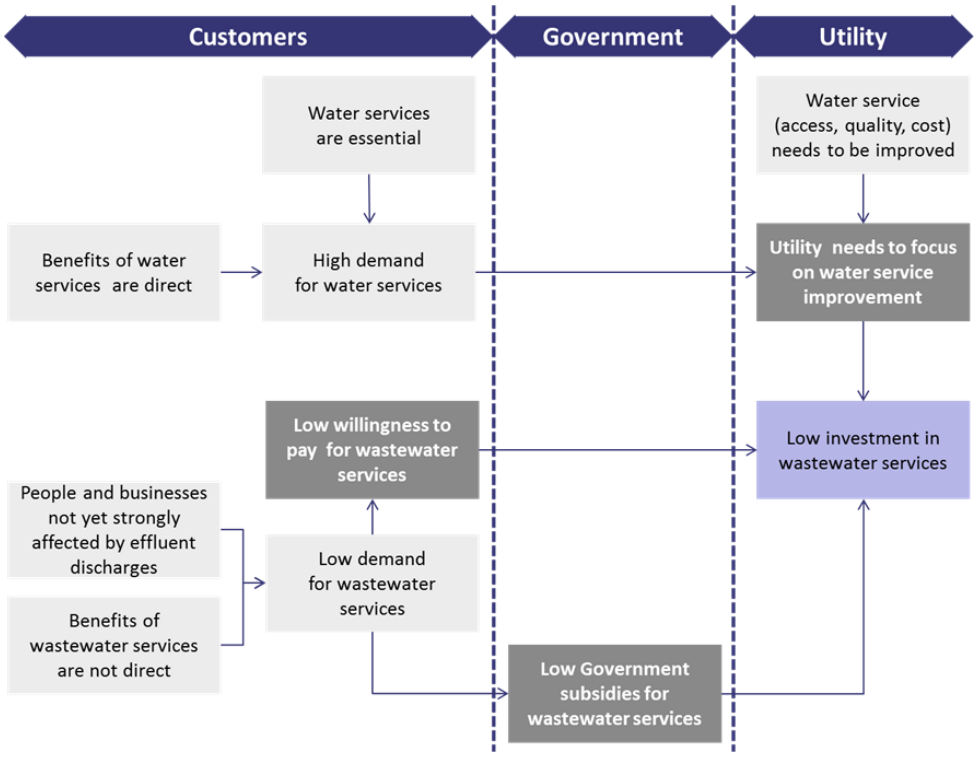
Utility	Coverage	Service Quality	Operating Efficiency
WSC (Bahamas)	2	3	3
BWA (Barbados)	4	2	2
BWS (Belize)	3	4	4
GWI (Guyana)	2	1	TBD
NWC (Jamaica)	2	2	1
SWM (Suriname)	2	3	TBD
WASA (Trinidad and Tobago)	3	3	1

Note: Harvey Balls are round ideograms used for visual communication of qualitative information. They provide a range from 1 to 5 to show the extent to which each data point applies. A 4 indicates high level of success and a 0 indicates low level of success.

In all countries, coverage for piped wastewater services is extremely low, reaching a maximum of 20 percent of the population in Jamaica. The main reason for underinvestment in wastewater systems is that households and businesses have a low willingness to pay for wastewater services, since piped wastewater systems do not directly benefit those who connect to it and pay for it. Most urban households already have sanitation facilities that keep their own premises free from contamination by excrement. However, that excrement often contaminates ground water, drainage ditches, and coastal zones—especially in high-density urban areas. The main objective of expanding the sewerage system, therefore, is to benefit public health and the environment by removing this contamination, rather than to benefit the user of the services directly.

Because the benefits go to the community at large, while each individual household may not experience much benefit from being connected to the sewage system, consumers may not be very willing to pay for wastewater services. Figure 7.1 illustrates these factors that limit investment in wastewater systems in favor of improving water supply services.

Figure 7.1: Understanding Underinvestment in Wastewater



Despite relatively low demand for wastewater services, some countries may wish to prioritize investments to expand their systems, for two main reasons:

- For high-density urban areas, benefits of wastewater investments will often outweigh costs. For these communities, centralized wastewater systems are typically the safest way to provide sanitation services, since run-off from de-centralized solutions (such as septic tanks) often contaminates ground water, drainage ditches, and coastal zones—endangering the environment and human health
- In countries with water supply networks that reach nearly all residents, wastewater investments are no longer competing with water supply investments. In Barbados, for example, water supply coverage is nearly universal, and service quality is generally adequate. As a result, expanding wastewater services in urban areas is likely the most cost-effective way for the utility to improve people's lives.

For both water supply and wastewater, meeting targets will be costly. Therefore, for targets to be realistic they must come along with a plan to fund them. The two options to pay for service improvements are tariffs and government transfers (subsidies). Only BWS and NWC have tariffs that cover their operating expenses, and some portion of capital costs. The tariff is not enough to fund major network expansions in either case.

Therefore, barring major tariff increases, major capital expansions will need to continue to be paid for through government transfers. This is the traditional mechanism for most water supply investments in the Caribbean, and in many other parts of the world. However, as noted above, building and sustaining popular and political support to pay for wastewater services is often more difficult than for water supply.

Setting and funding targets should be an iterative process that starts with the stakeholders' ideal, and estimates the cost of reaching that ideal. Stakeholders can then consider whether they are willing to pay the full cost, and determine the best combination of government transfers and tariffs to do so. If funding cannot meet the ideal, stakeholders can consider less ambitious targets, repeating the process until there is consensus on targets and how they will be paid for.

With reasonable targets and adequate funding, regional water-sector governance can improve in two main ways. First, utility managers and public officials can be held accountable for meeting targets. Second, regulators can set tariffs and service targets with clear policy guidance.

Who should do this?

Governments have overall responsibility for setting targets and the funding policies to meet those targets. They must allocate government funds for transfers, and commit to those allocations for long-term improvements. Governments also set tariff policies by providing guidance to regulators or utilities, or in some cases by setting tariffs directly. Even independent regulators must follow governmental policy guidance. In some cases, governments, through law or policy, create a clear commitment for tariffs to recover the full cost of service. However, the primary reason for tariffs that do not meet the cost of service, is a government priority to keep prices low, at the expense of cost recovery and/or expanding or improving services.

Regulators must set tariffs and service standards (including targets for expanding services) in line with government policy. They must also collect and report data on progress against those standards, helping to ensure accountability.

Utilities must improve and expand services according to their funded targets and efficiency targets set by the regulator. In some cases, utilities must take some of the steps toward building capacity set out in Section 6.

Civic society provides important input to the process of setting targets and funding levels, providing information on how much people value different types of improvements. For example, reducing untreated sewage discharge can benefit businesses by increasing tourism, residents by improving their quality of life and enjoyment of local beaches, and NGOs by reducing environmental impacts.

Governments should aggregate these benefits, consider costs for proposed investments, and allocate funds accordingly. This process is particularly important for wastewater investments, since popular support can help build the political will for long-term governmental funding for wastewater investments.

In some cases, total benefits will not reach total costs, or scarce funding will force some good investments to be shelved. In this case, the national plan may call for no immediate expansions of the sewerage system or wastewater treatment capacity. Yet this outcome would provide clarity for utilities on what is expected of them—much preferable to the current situation, in which utilities have nominal responsibility for expanding wastewater services, but no clear targets or funding sources to do so.

How can the IDB help?

The IDB has an important role to play in providing funding for countries to develop water policies and strategic plans that set out comprehensive, multi-year targets for service delivery, and describe how to get there. The IDB can then prioritize lending for projects that fit within these strategic plans, and can be sustainably maintained.

Loan money should be tied to a sustainable plan to maintain new assets, otherwise assets risk falling into disrepair. This means not financing projects that will not help achieve national targets, are inconsistent with the national strategy for reaching targets, or cannot be sustainably maintained. This type of discipline will encourage governments to develop comprehensive plans, and follow those plans when planning new investments.

For countries without a financially sustainable utility, the IDB should prioritize financing that will help turn around that utility's performance, rather than large new assets that the utility lacks capacity to maintain or use effectively. Section 6 includes a sequencing of investments underperforming utilities can make right away.

7.2 Targets and Actions for Delivering Non-Utility Services

For areas where utility services are not economical, alternative technical, financing, and governance options are needed.

What needs to be done

For many areas, without piped water supply or sewerage services, other technical options are more appropriate. That is, non-piped solutions can deliver a similar quality of service, at lower cost, and in a more sustainable way than a centralized piped system. This is especially true for small, isolated, rural communities, where population densities do not support the scale to make piped systems economical, and where residents do not have expertise or supplies to operate and maintain piped systems (reliable electricity or gasoline, for example).

For these communities, a variety of technical alternatives can deliver high-quality service at an affordable cost. For water supply, options include boreholes, rainwater harvesting and storage, or improved springs—Figure 7.2 shows a community and a household rainwater harvesting system in Jamaica.

Figure 7.2: Community and Household Rainwater Harvesting System in Jamaica

For sanitation, safely constructed pit latrines and septic tanks do not endanger drinking water or the environment in low-density communities. Household or community sanitation lagoons, such as the one shown in Figure 7.3 can be safe and sustainable places to collect excrement, as long as they are properly constructed and placed an appropriate distance from groundwater and wells.

Figure 7.3: Household Sanitation Lagoon

While these technologies can deliver safe and convenient service, a few of the countries we surveyed have standards for determining when non-networked solutions are acceptable, or even what areas should pursue these types of solutions, rather than piped solutions. This can create, or perpetuate, a stigma against non-networked solutions. At its worst, this stigma motivates public officials to advocate for universal expansion of piped systems, even if there is no funding to do so or if such a system would be unsustainable. Rural residents are then forced to permanently rely on inadequate solutions, or receive a piped connection that proves to be unsustainable (either technically or economically), and soon breaks down.

To solve these problems, governments can start by identifying the areas where piped services are economical, and where other options are better suited. Though not yet approved, Jamaica's 2016 draft National Water Policy does this by creating a distinction between 'Utility Service Areas' and 'Non-Utility Service Areas', with clear standards for access in each.[66]

Where piped services are economical, but the utility does not yet provide service, there should be a timeline for the utility to expand services, and find funding to do so. Where other solutions are more sustainable and affordable, the government should set targets for expanding access to acceptable solutions, based on national standards and the baseline of existing services. Linking expansion to national standards would ensure that all residents have sources that are safe, reliable, and convenient.

The best non-networked solution will vary for each community, according to their preferences, water resources, and physical constraints. Therefore, governments should lead a community-by-community consultation process to set out options, gather feedback, and establish a process for building out and maintaining new infrastructure—if new infrastructure is appropriate.

As part of the consultation process, communities must determine the institutional mechanism that works best for them. Legally, the utility (Guyana, for example) or local water boards (in Belize) may

[66] Government of Jamaica. "Draft National Water Sector Policy and Action Plan." January 2016. Accessed 23 February 2017. http://mwlecc.gov.jm/information-resources/policies/finish/8-policies/271-jamaica-water-sector-policy-january-2016-exhibit

be responsible for service delivery in rural areas, but in practice this responsibility often falls to the household. This simple arrangement can often work well, since households know their own needs and preferences best, and are highly motivated to meet them. Community or locally run systems can also work well—many Village Water Boards in Belize deliver sustainable and quality service. However, poorly performing Village Water Boards, and experience in Jamaica and other countries, suggests that community organizations are often ill-prepared to run complex systems. Another option is private providers, who often build and maintain simple piped systems or deliver trucked water to rural areas throughout the Caribbean.

In preparation for community consultations, governments must establish if they will subsidize the cost for non-networked systems, and, if so, by how much. Subsidies could be delivered in the form of new assets, money towards new assets, or financing to help individuals and communities pay for assets.

Who should do this?

The national government should work with local government and the utility to identify areas where services are best delivered through non-networked technologies, then set a schedule for consultations with those communities on improvements that residents would like. Depending on the legal framework (that is, who has responsibility for rural water services), the best agencies to carry out these consultations may be a combination of the Ministry of Water, the utility, and local government. A few countries, such as, Suriname and Jamaica, have public companies dedicated to rural water supply, who should also participate in these consultations.

Before the consultations, national and local government should determine how much funding they will allocate to communities that will need non-piped systems. With this information, communities can have complete information about technical options and costs before making decisions on changing to a new delivery system or improving their existing systems.

During the consultations themselves, communities can determine:

- Issues with existing service arrangements, if there are any
- What they would prefer, and what they are willing to pay for preferred solutions
- How they would like to manage a different solution.

How can the IDB help?

The IDB has important roles to play in providing advice on technical, financial, and institutional options, such as what types of solutions tend to work in what situations. While the best solution will vary by community, the IDB's regional work can inform a menu of options for each country to guide communities when making choices. In this way, communities can be sure they are choosing proven options, and avoid pitfalls other communities have experienced.

There is also an important role for finance from the IDB to improve water supply and sanitation services in rural communities, though that finance will likely not be delivered through the utility. Communities and households will need finance to afford infrastructure with large upfront costs. Household rainwater harvesting systems with storage, for example, can be affordable over the long term, but can also require up to US$6,000 in capital investments.[67]

[67] Information provided to Castalia by equipment suppliers in Jamaica

The IDB can provide financing to a fund that rural communities and households could access for capital investments for water supply and sanitation infrastructure. Depending on the country, the best place for such a fund may be with the Ministry of Water, a national development bank, or another institution. Such a fund could be set up as a revolving fund, since community consultations and upgrades will happen gradually, rather than all at once.

8 Monitoring and Enforcement

Establishing quality monitoring and enforcement mechanisms is an essential part of improving water-sector governance by holding utility managers and other public officials accountable for progress against targets. When targets are not met, monitoring also provides insight into what can be done to improve progress when revising targets.

What needs to be done

Progressing on each country's action plan will require regularly updating the baseline to track progress against targets. This will allow the government, utility, and consumers to track progress against targets, and hold accountable the individuals and institutions responsible for meeting those targets. To be enforceable, the government should put incentives in place for utility managers (see Section 4.2) and other agency heads with responsibility for meeting targets.

Who should do this?

Governments are responsible for setting up the systems to regularly update the baseline. These systems could include regular utility reports to a regulator or ministry, and reports from local government to a national ministry on services in areas without networked services.

As part of these systems, there should be ways for complaints from non-networked communities to reach policy makers. A single body should track community-level plans agreed during consultations, with provisions for providing additional assistance where plans fall off track.

How can the IDB help?

The IDB can assist countries in performance monitoring and enforcement in three main ways:

- By providing funding for tracking and enforcement systems
- By continuing to provide benchmarking data for utilities and areas without utility services
- By evaluating and disseminating approaches that have worked well in each country, as well as approaches that have not been as successful as hoped. In this way, other countries can benefit from this experience, by adapting successful approaches and not re-trying failed ones.