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REVIEW OF THE ACCESS TO, AVAILABILITY OF AND ORGANIZATIONAL READINESS FOR UPTAKE OF FUNDING FOR THE WASTEWATER SECTOR IN SELECTED PARTICIPATING COUNTRIES

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FINAL REPORT

REVIEW OF THE ACCESS TO, AVAILABILITY OF AND ORGANIZATIONAL READINESS FOR UPTAKE OF FUNDING FOR THE WASTEWATER SECTOR IN SELECTED PARTICIPATING COUNTRIES

Review of the Access to, Availability of, and Organizational Readiness for Uptake of Funding for the Wastewater Sector in Selected Participating Countries

Final Report

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Abbreviations

BNTF	Basic Needs Trust Fund
BWA	Barbados Water Authority (Barbados)
BWS	Belize Water Services Limited (Belize)
CAPEX	Capital Expenditure
CDB	Caribbean Development Bank
CReW	Caribbean Regional Fund for Wastewater Management
CWSA	Central Water and Sewerage Authority (Saint Vincent and the Grenadines)
CWWA	Caribbean Water and Wastewater Association
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
EU	European Union
GEF	Global Environment Facility
GWI	Guyana Water Incorporated (Guyana)
IDB	Inter-American Development Bank
IFI	International Financial Institutions
IG	Imperial Gallon
kWh	Kilowatt Hours
m3	Cubic Meter
NRW	Non-Revenue Water
NWC	National Water Commission (Jamaica)
NWSC	National Water and Sewerage Corporation
OPEX	Operating Expenses
UNEP	United National Environment Programme
W	Water
WASA	Water and Sewerage Authority (Trinidad and Tobago)
WASCO	Water and Sewerage Company Incorporated (Saint Lucia)
WB	World Bank
WRA	Water Resources Authority
WW	Wastewater

Executive Summary

The Caribbean Regional Fund for Wastewater Management (CReW) Project aims to address some of the critical issues that Caribbean countries face in managing wastewater treatment systems. CReW has funded pilot projects in four of the nine participating Caribbean countries. An objective of these pilot projects is to determine an appropriate strategy for helping participating countries improve the management of wastewater treatment systems. The resulting strategy could be applied to the remaining participating countries, as part of a possible second phase of the CReW Project.

CReW has realized that simply providing funds may not be enough to solve the challenges participating countries face in managing wastewater treatment. Therefore, CReW has commissioned this report to analyze this issue more closely. This report helps the CReW Project understand if the participating countries currently have access to wastewater funding, and if so, under which conditions. It also analyzes whether or not the countries have the organizational and absorptive capacity to effectively use the available funding. The report concludes by describing a proposed approach on how to help countries in the Caribbean achieve their objectives in the wastewater sector. The main conclusions from this report can be summarized as follows:

- **To meet their objectives for increasing the collection and treatment of wastewater and improving the quality of wastewater effluent, the governments in participating countries need to make the wastewater sector a higher priority on their agendas.** The current state of the wastewater sector in participating countries is a direct result of the priority the governments have assigned to wastewater. Investment in wastewater is low compared to investments in the water sector. Further, the lack of government commitment to improving the wastewater sector can be seen in the lack of the necessary legal and regulatory framework. Commitment from the governments in the participating countries is extremely important for ensuring the improvement of the wastewater sector. Without it, only marginal improvements can be made in the sector

- **Although most participating countries have access to funding for wastewater infrastructure from development banks, they do not have the organizational readiness and absorptive capacity to effectively use the available funding opportunities.** Most countries cannot effectively use wastewater funding, even when it is available. The entities responsible for developing and operating the wastewater systems—in this case, the water utilities in each country—are struggling to provide adequate access to and quality of water service. In fact, most water utilities in the Caribbean do not have tariffs that are sufficient for covering the cost of providing water services. Furthermore, since water is an essential service with direct benefits, water utilities must focus on improving water services before dedicating adequate attention and resources to wastewater. This means that most water utilities in the Caribbean do not have the personnel, financial resources, and technical capacity for developing and operating the wastewater assets necessary to meet the objectives of the respective governments in the wastewater sector

- **All loans for wastewater sector improvements are concessional and include institutional strengthening components as well as legal and institutional prerequisites that are aimed at improving the absorptive capacity of the borrowers to effectively use available funding.** Institutional prerequisites require the borrowers, for example, to adequately operate and maintain wastewater assets that are financed by the loans. Some loans also include measures for raising revenues required for adequate operation and management of the wastewater assets. Although these loan components are intended to address critical issues for improving the absorptive capacity of the participating countries, in practice, they have not accomplished their objectives. The challenges of implementing these components have proven to be greater than expected
- **Access to finance is only one of the important elements required for improving the wastewater sector; other essential elements need to be in place as well in order to meet sector objectives.** Financing, and the resulting investments in assets, will most likely be ineffective without an adequately prepared utility, an appropriate legal and regulatory framework, a comprehensive Action Plan, and a civil society that actively participates in developing and monitoring the Action Plan. Therefore, I recommend that in each country, the key stakeholders (in particular the government and utility) develop and agree upon a realistic plan for putting in place all the essential elements for a functioning sector. This wastewater master plan should be comprehensive, integrated and targeted. To ensure accountability and transparency, the plan and the progress of the plan against its objectives should be published on a credible and timely basis
- **Jamaica has shown recent advances in wastewater funding. Four factors were instrumental for the uptake of wastewater investments in the country.** First, to overcome the free-rider problem of customers who are not willing to pay for wastewater systems, Jamaica has a statutory obligation for new housing developments to connect to the national utility's (NWC) wastewater system. Second, untreated or poorly treated wastewater affects some households and businesses badly enough to raise pressure on the Government to improve the wastewater services in the country. Third, the Government provided the NWC with the subsidies that it needed to build, operate and maintain its wastewater assets. Lastly, the Government successfully encourages private sector participation. One of the largest wastewater treatment plants in Jamaica is run efficiently by a private operator.

1 Introduction

The Caribbean Regional Fund for Wastewater Management (CReW) Project aims to address some of the critical issues that Caribbean countries face in the managing wastewater. Two of the main components of the project are:

- Testing individual pilot financing mechanisms in the CReW participating countries
- Reforming wastewater management in the participating countries by addressing key capacity constraints with legal, institutional and policy frameworks

Currently, 13 countries participate in CReW, of which nine are in the Caribbean. The nine participating countries in the Caribbean are Antigua and Barbuda, Barbados, Belize, Jamaica, Guyana, Saint Lucia, Saint Vincent and the Grenadines, Suriname, and Trinidad and Tobago. The CReW Project is currently piloting national financial mechanisms that will facilitate sustainable financing of future wastewater investments in four countries—Belize, Guyana, Jamaica, and Trinidad and Tobago. One objective of the project is to promote similar financing mechanisms for the other participating countries.

Lessons learned show that even when financing is available, it does not necessarily lead to a successful uptake of wastewater investment and management in the countries. In many cases, countries do not have the organizational readiness and absorptive capacity to effectively use the available funding. For a successful replication of pilot projects, the CReW Project needs to analyze the institutional, policy, and legal environment that would improve the situation of the wastewater sector in the remaining participating countries.

To help the CReW Project prepare a successful replication strategy for the pilot projects, this report analyzes the following key questions:

- What is the current situation of the wastewater sector in participating countries?
- What are governments in participating countries doing, or not doing, to improve the current situation?
- What is the current level and planned level of capital expenditure in participating countries?
- What is the current availability of financing for wastewater improvements from development banks and other donors in the region for the participating countries?
- What are the terms of financing, and legal and institutional prerequisites, for wastewater infrastructure in participating countries?
- Do the participating countries have the organizational readiness and absorptive capacity to use the available funding opportunities?
- Which approach would help each participating country to achieve its objectives for the wastewater sector?
- Is there any country among the participating countries which has shown some advances in sustainable funding of the wastewater sector? Which factors facilitated the greater uptake of funding for the wastewater sector in this country?

To answer these questions, this report is structured as follows:

- **Overview of the Wastewater Sector in Participating Countries (Section 2).** This section provides an overview of the wastewater sectors in the nine participating countries. This includes an analysis of the levels of access to centralized wastewater systems, and a review of the issues with wastewater collection and quality of wastewater treatment that participating countries face. It also examines why the current situation of the wastewater sector in participating countries is a direct result of the attention that governments have given it
- **Assessing the Capacity of Participating Countries to Meet Objectives (Section 3).** This section assesses the capacity of participating countries to meet the objectives in the wastewater sector by considering whether they comply with a set of requirements. I look at the capital expenditures in the sector and the capacity of public utilities to carry out these capital expenditures. Furthermore, I explain why it is necessary for governments to mandate that households and businesses connect to centralized wastewater systems in order to improve wastewater management. Finally, I show that all participating countries have access to funding, and therefore this is not the factor that inhibits them from meeting their sector objectives
- **A Proposed Approach for Helping Countries in The Caribbean Achieve Their Objectives in the Wastewater Sector (Section 4).** This section proposes an integrated, comprehensive and targeted approach that would help countries in the Caribbean achieve their objectives for the wastewater sector. The section presents the essential elements that need to be in place for improving the wastewater sector. It also provides an overview of the stakeholders that are responsible for developing and implementing the proposed approach. Finally, it describes how stakeholders should develop and implement an Action Plan to put in place all the essential elements for improving the wastewater sector
- **Case Study: Review of Jamaica's Advances in Sustainable Wastewater Funding (Appendix A).** This section reviews Jamaica's advances in sustainable wastewater funding. It provides an overview of the wastewater sector in Jamaica, it shows the advances Jamaica has made in sustainable funding of the wastewater sector, and it analyzes the factors that facilitated the greater uptake for funding of the wastewater sector
- **Review of the Terms of Financing, and Legal and Institutional Prerequisites (Appendix B).** In this section, I review the terms of financing as well as the legal and institutional prerequisites of the available development bank loans. This section also includes a review of revenue-raising mechanisms for sustainability in the available loans
- **Checklist to Assess a Country's Readiness (Appendix C).** This section provides a checklist that can be used to assess a country's readiness to uptake funding in the wastewater sector. This checklist covers aspects regarding the institutional, legal, and regulatory framework. It also provides questions regarding the demand for wastewater services, the performance of the wastewater sector and of service providers, and the access to financing and financing mechanisms
- **References (Appendix D).** In this Appendix, I provide a complete list of the references I use throughout this report

- Finally, I include **Overview Tables (Appendix E).** These tables provide more information regarding the Governments' Objectives in the wastewater sector, the operational and financial performance of wastewater service providers, and ongoing and planned wastewater capital expenditures. Additionally, these tables provide information regarding available funding for wastewater infrastructure by multilateral financial institutions, special conditions to first disbursement, and special execution conditions.

2 Overview of the Wastewater Sector in the Participating Countries

The wastewater sector in the participating countries needs to be greatly improved. One of the reasons for the poor situation of the wastewater sector is that the governments have not assigned adequate priority to its improvement. This has resulted in poor sector performance. In this section we provide an overview of the situation of the wastewater sector in the participating countries as follows:

- Acknowledges that most governments have put wastewater on their agendas (Section 2.1)
- Shows that access to centralized wastewater systems in participating countries is much lower than access to improved sanitation (Section 2.2)
- Explains why collection and treatment of wastewater in the participating countries needs to be improved (Section 2.3)
- Illustrates that levels of investments in the wastewater sector have not been sufficient (Section 2.4)

2.1 Improving the Wastewater Sector is on the Governments' Agendas

Most governments in the participating countries have begun to make their wastewater sectors a higher priority on their agendas. Most countries in the Caribbean committed to improving their wastewater services by signing the Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region[1] (also known as the Cartagena Convention) and the Protocol on the Control of Pollution from Land-Based Sources and Activities[2] (also known as the LBS Protocol). Many participating countries have also set policy targets for the wastewater sector.

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.[3]

Table 2.1 below shows the commitment that the government in each participating country has made to improve wastewater management. Specifically, it shows that all participating

[1] Convention for the Protection and Development of the Marine Environment in the Wider Caribbean Region, Cartagena de Indias, adopted in Cartagena, Colombia on 24 March 1983 and entered into force on 11 October 1986, http://www.cep.unep.org/cartagena-convention/text-of-the-cartagena-convention (accessed on August 20, 2013).

[2] Protocol Concerning Pollution from Land-Based Sources and Activities, adopted on 6 October 1999 and entered into force on 13 August 2010, http://www.cep.unep.org/cartagena-convention/lbs-protocol/protocol-concerning-pollution-from-land-based-sources-and-activities (accessed on August 20, 2013).

[3] CReW, Wastewater Management in the Wider Caribbean Region: Knowledge, Attitudes and Practice (KAP) Study, 2010.

countries, except for Suriname, have ratified the Cartagena Convention, and most participating countries have signed the LBS Protocol.

Table 2.1: Government Actions in the Wastewater Sector

Country	Cartagena Convention?	LBS Protocol?	Objective for expanding piped WW services?	Which other objectives does the Government have with regard to wastewater services?
Antigua and Barbuda	✓	✓	✓	Wastewater treatment system in Saint John's City by 2020
Barbados	✓	X (plan to ratify soon)	✓	Government Action Plan in preparation
Belize	✓	✓		
Guyana	✓	✓	✓	Georgetown wastewater system rehabilitated
Jamaica	✓	X (plan to ratify soon)	✓ 37% (2018), 60% (2020)	All (20) major towns have proper centralized wastewater services
Saint Lucia	✓	✓		
Saint Vincent and the Grenadines	✓	X	✓	Wastewater service to urban population and tourism industry
Suriname	X	X (plan to ratify soon)		
Trinidad and Tobago	✓	✓	✓ 75% (2020)	Solution to"orphan" packaged wastewater treatment plants

Source: See Table E.1 in Appendix E

Most of the participating countries have objectives for the wastewater sector that will help them fulfill their obligations in the LBS Protocol, and address the environmental and health problems caused by the wastewater sector. While countries such as Jamaica and Trinidad and Tobago have indicated quantitative targets for wastewater service coverage, others have plans for specific regions or systems, such as:

- **Antigua and Barbuda**: The Government plans to build the first centralized wastewater system in the country in the capital Saint John's by 2020
- **Guyana**: The Government's priority is to rehabilitate the Georgetown wastewater system to stop the current wastewater overflows into the drainage canals and backs-up onto streets and backyards

- **Jamaica**: The Governments plans to provide twenty major cities in the country with centralized wastewater systems, starting with the towns that are particularly vulnerable to climate change. Savanna la Mar, for instance, is one of the first towns that the NWC is considering for wastewater system expansion. Building a wastewater system in Savanna la Mar would solve the existing and future problems with groundwater pollution in the city. The town has seen repeated outbreaks of diseases due to the wastewater contamination of the Roaring River. Being below sea level, Savanna la Mar is particularly vulnerable to a sea level rise, which could worsen the wastewater contamination of the river.[4]

In addition to their commitments to the Cartagena Convention and the LBS Protocol, three governments mentioned wastewater in their most recent Budget Speeches: Saint Lucia, Guyana, and Trinidad and Tobago. The Government of Saint Lucia acknowledged the importance of wastewater of the sector, but did not announce any planned investments in the sector.[5] In the 2013 Budget Speech of the Government of Guyana, the Government made a commitment to ensure a safer and more efficient sanitation system that will improve public health and sustainable economic development. Specifically, the 2013 Budget Speech announced that US$600 million would be made available to continue rehabilitation works on the Georgetown sewer systems.[6] The Government of Trinidad and Tobago announced in its 2014 Budget Statement that it is expanding and improving wastewater treatment, collection, and disposal systems in Malabar, San Fernando, Maloney, Cunupia, and Scarborough Tobago. These projects will increase access to centralized wastewater systems from 30 percent to 45 percent of the population.[7]

2.2 The Access to Centralized Wastewater Systems is Low

Access to a centralized wastewater system is important because it is likely the most efficient and effective method for collecting and treating wastewater in the highly populated areas of the Caribbean.[8] Additionally, when compared to other forms of improved sanitation, a centralized wastewater system that is properly managed may reduce the risk that negative externalities—such as aquifer pollution and waterborne diseases—will arise. In this section, I compare the levels of access to centralized wastewater systems with the levels of access to improved sanitation in participating countries in the Caribbean. Also, I compare the levels of access to centralized wastewater systems in the Caribbean with that of countries in Central America.

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[4] Jamaica Information Service, NWC Looking to Partner With Chinese Companies on Water Projects, 22 August 2013.

[5] Ministry of Finance of the Government of Saint Lucia. 2013 Budget Statement. Accessed on January 28, 2014. Available: http://www.finance.gov.lc/resources/index/26

[6] Ministry of Finance of the Government of Guyana. 2013 Budget Speech. Accessed on January 28, 2014. Available: http://www.finance.gov.gy/publications/budget-speeches.

[7] Ministry of Finance of the Government of Trinidad and Tobago. 2013 Budget Speech. Accessed on January 28, 2014. Available:http://www.news.gov.tt/content/budget-statement-2014-sustaining-growth-securing-proserity#.UvQWAvldUsp

[8] In some instances, in particular given recent technological advances, decentralized systems may be more appropriate. However, due to potential risks to human health and the environment, adequate due diligence and risk management must be conducted before confirming that decentralized systems are the appropriate solution on a long term basis.

The access to improved sanitation in the participating Caribbean countries varies from around 60 percent to 98 percent. Though some countries, like Antigua and Barbuda, have high coverage to improved sanitation, there exists a large gap in access between urban and rural areas. When only taking into account access to centralized wastewater systems, all participating Caribbean countries are below 30 percent.

Table 2.2 shows the level of access to improved sanitation facilities in each participating Caribbean country. In some cases, levels of access are shown for urban and rural areas. Improved sanitation facilities range from individual pit latrines and septic tanks to piped wastewater systems.[9] For example, in Saint Lucia the 2001 Census reported that five percent of households are connected to a piped wastewater system. Another 47 percent have septic tanks, 35 percent use pit latrines, and the balance of 13 percent are categorized as "Other", "None", or "Not Stated".[10] The table also shows that the access to a centralized wastewater system[11] is between zero percent and 15 percent in all Caribbean countries, except for in Trinidad and Tobago, where it is 30 percent.

Table 2.2: Access to Improved Sanitation v. Centralized Wastewater Systems

Country	Access to Improved Sanitation		Access to Centralized Wastewater System	
Antigua and Barbuda	98% (urban)	(2008)	0%	(2006)
Barbados	99.2%	(2010)	5%	
Belize	85% (urban) 32% (rural)	(2008)	14%	(2008)
Guyana	85% (urban) 80% (rural)	(2008)	7%	(2008)
Jamaica	80%	(2011)	15%	(2012)
Saint Lucia	87%	(2001)	5%	(2001)
Saint Vincent and the Grenadines	>60%	(2007)	<1%	(2007)
Suriname	>85% (urban) 0% (rural)	(2010)	0%	(2010)
Trinidad and Tobago			30%	(2012)

Source: See Table E.1 in Appendix E

Note: For Barbados, Belize, Guyana, and Jamaica we estimated the access to centralized wastewater services by multiplying the residential wastewater connections by the average household size and dividing it by the total population.

[9] This terminology is consistent with the terminology used by the WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, http://www.wssinfo.org/definitions-methods/watsan-categories/ (accessed on 3 September 2013). Public or shared latrines, open pit latrines and bucket latrines are not improved wastewater systems.

[10] Stone and Webster Management Consultants (March 2005) Water Sector Reform Project—Investment Feasibility and Financial Strategy for PSP in Saint Lucia—Final Report.

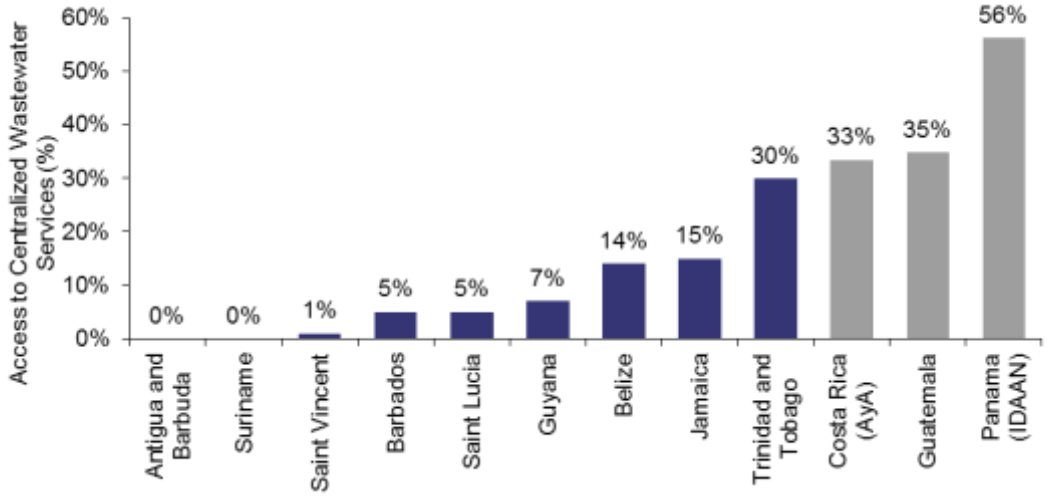
[11] A centralized wastewater system is a managed system consisting of collection sewers and a single treatment plant used to collect and treat wastewater from an entire service area. This is the definition used by the US Environmental Protection Agency, http://cfpub.epa.gov/npdes/glossary.cfm#C (accessed on 3 September 2013).

The level of access in urban areas is generally higher than the level in rural areas, but the magnitude of the rural-urban divide between urban and rural areas varies from country to country. While in Belize and Guyana the level of access among the urban population is 85 percent, the level of access in rural areas in Belize is 32 percent, while in Guyana it is 80 percent.

While the level of access to any form of improved sanitation facility is above 60 percent for all countries, the access to centralized wastewater systems is at a much lower level (between zero percent and 30 percent). The countries in which the GEF CReW project is currently testing the financing mechanism pilot projects have a level of access to centralized wastewater systems between seven percent and 30 percent. In Trinidad and Tobago, around 30 percent of the population has access to a centralized wastewater system. In Jamaica the percentage is 15 percent, and in Belize it is 14 percent. In Guyana, the access to centralized wastewater systems is seven percent.

Access to centralized wastewater systems in the Caribbean is lower than in Central America (see Figure 2.1). In Panama, access to a centralized wastewater system, for which the Government-owned utility IDAAN provides service, is around 56 percent of the population. In Guatemala, about 35 percent of the population is connected to a centralized wastewater system. In Costa Rica, the centralized wastewater system of the Government-owned utility AyA covers about 33 percent of the population.

Figure 2.1: Access to Centralized Wastewater Systems is lower in the Caribbean than in Central America

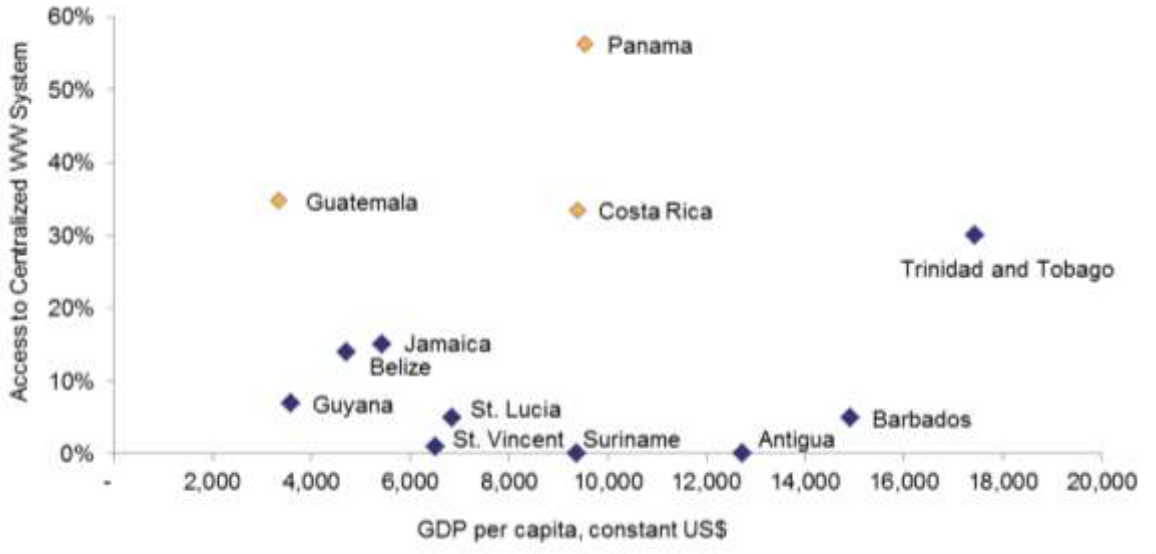


Source: Caribbean countries: See Table E.2; Costa Rica and Panama: ADERASA. Grupo Regional de Trabajo de Benchmarking (GRTB). Informe Anual-2012. Datos Año 2011. September 2012; Guatemala: Emilio Lentini. Servicios de Agua Potable y Saneamiento en Guatemala: beneficios potenciales y determinantes de éxito. CEPAL 2010

Furthermore, the coverage of centralized wastewater services in Central America tends to be higher than that of participating countries in the Caribbean even though the GDP per capital level is equal to or lower than the one of several participating countries. For example, the coverage levels in Costa Rica and Panama are much higher than the ones in Antigua and

Barbuda, Barbados and Trinidad and Tobago. However, the GDP per capita of Panama and Costa Rica is significantly lower than the one of those three participating countries.

Figure 2.2: WW Coverage in Central America Is Higher Despite Same GDP Level



Source: Caribbean countries: See Table E.2 in Appendix E; Costa Rica and Panama: ADERASA. Grupo Regional de Trabajo de Benchmarking (GRTB). Informe Annual-2012. Datos Ano 2011. September 2012

The GDP per capita numbers are taken from the World Development Indicators of the World Bank.

2.3 The Collection and Treatment of Wastewater in the Caribbean Needs To Be Improved

In all participating countries, wastewater collection and treatment needs to be increased, and effluent quality needs to be improved. On a regional level, it is estimated that only 20 percent of the wastewater that is produced in the Caribbean is collected. Only five percent of the total wastewater is treated and disposed of appropriately.[12] The low service coverage and the poor effluent quality are a threat to human health and the environment. Urgent action is thus needed to improve coverage and wastewater treatment quality.

The United Nations Environment Programme's (UNEP's) Global Programme of Action (GPA) estimates that around 85 percent of wastewater entering the Caribbean Sea is untreated.[13] One reason is that a low level of access to centralized wastewater systems makes it difficult to collect wastewater. It is also due to the fact that existing wastewater systems are often malfunctioning and leaking due to poor maintenance, as shown by the following examples:

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

[13] CReW, Wastewater Management in the Wider Caribbean Region: Knowledge, Attitudes and Practice (KAP) Study, 2010.

- **Barbados:** Flows of wastewater from domestic septic wells into the near shore region are one of the primary sources of land based pollution of the marine environment[14]
- **Belize**: Wastewater is collected and treated only in three cities, and treatment is only at a primary level[15]
- **Guyana**: The only centralized wastewater system exists in Central Georgetown. However, the wastewater system suffers from frequent blockages, interruptions, and ruptures due to old pipes and underground and surface leaks. The problems with the poorly maintained wastewater system in Central Georgetown in Guyana leads to risks of wastewater overflows into the drainage canals and backs-up onto streets and backyards, which pose significant health risks[16]
- **Jamaica:** Treatment of wastewater is very limited in the Kingston Metropolitan Area (KMA). Although several wastewater treatment facilities exist in this area, most do not operate satisfactorily due to inadequate maintenance and outdated treatment regimes. As a result, a significant amount of untreated wastewater is discharged into the Kingston Harbour[17]
- **Trinidad and Tobago**: Of special concern are approximately 200 private packaged wastewater treatment plants, or 'orphan plants', which are mostly malfunctioning or abandoned. Untreated effluent is discharged into water courses posing public health and environmental risks[18]
- **Suriname**: In Paramaribo, 85 percent of the population uses septic tanks. The design and maintenance of the septic tanks is often inadequate, which in many cases results in overflow of raw sewage into the surface water drains or leakages of septage into the underlying aquifer. When the rainwater enters the combined drainage system, the foul gases are first exhaled and continued rains can cause flooding when the carrying capacity of the combined system is exceeded.[19]

Therefore, there is an urgent need to increase adequate wastewater collection and treatment in the Caribbean region.

2.4 Investments in Wastewater Have Not Been Sufficient

Despite the fact that wastewater is on the agendas of many governments in participating countries, investments in the wastewater sector remain much lower than investments in the water sector. This reality is the result of the following two reasons:

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[14] UN, Sanitation Country Profile Barbados, 2004.

[15] IDB, Integrated Water and Sanitation Programme for the Plancencia Peninsula, Belize, Loan Proposal BL-L1015, 2010.

[16] IDB, Georgetown Sanitation Improvement Program, Guyana, Loan Proposal GY-L1025, 2010.

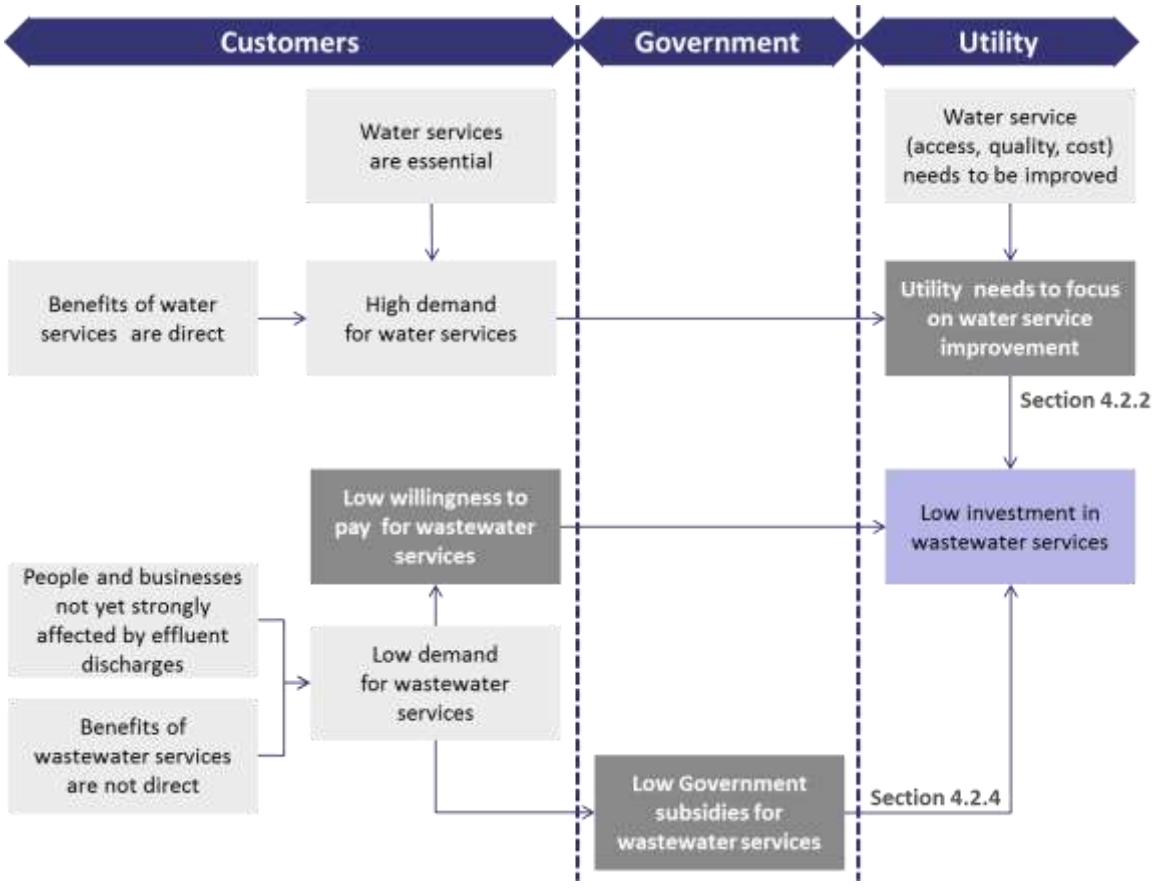
[17] IDB, Kingston Water and Sanitation Project, Jamaica, Loan Proposal, JA-0114.

[18] IDB, WASA Modernization and Wastewater Infrastructure Rehabilitation Program, Trinidad and Tobago, Loan Proposal, TT-L1018, 2011.

[19] IDB, Water Supply Infrastructure Rehabilitation, Suriname, Loan Proposal, SU-L1018.

- **Households and businesses have a low willingness to pay for wastewater services** (Section 2.4.1)—Piped wastewater systems do not directly benefit those who connect to it and pay for it. Rather, wastewater systems benefit those who suffer less from pollution of the downstream area thanks to better wastewater treatment. As long civil society is not seriously affected by the negative impacts of discharges on health and the environment, they may not be willing to pay their contribution to avoid these impacts. Furthermore, this behavior will keep wastewater low on the government agenda
- **Governments have not ensured that providers of wastewater services have sufficient funding to cover the costs of developing and operating wastewater systems** (Section 2.4.2)—Governments in the participating countries do not face enough pressure to address the negative impacts of poor wastewater treatment. They thus dedicate insufficient attention and financial resources to improving wastewater services

Figure 2.3: Understanding underinvestment in wastewater



2.4.1 Households and businesses have a low willingness to pay for wastewater services

In most participating countries, households and businesses have a low willingness to connect to a centralized piped wastewater system and to pay for it. The reason is that they have

limited incentives to switch from their current decentralized technology for collecting and treating wastewater, to a centralized wastewater system. As long as households and businesses are not seriously affected by the negative impacts of discharges on health and the environment, they may not be willing to pay their contribution to avoid these impacts, and they will not pressure government to improve wastewater services.

In the participating countries, many households are not connected to a centralized wastewater system. Instead, households have decentralized solutions such as pit latrines or septic tanks. These decentralized solutions serve the purpose of wastewater collection equally well as centralized systems. Households would thus likely not be willing to pay an additional fee for being connected to a centralized wastewater system.[20]

Most households are not willing to pay for a centralized system because the improvement that it provides does not directly benefit them; instead the benefits accrue to a broader community. The problem with decentralized systems is that third parties suffer. A household that pays for its septic tank to be emptied considers the service complete when the tanker drives the septage away. If the truck then discharges the waste untreated into the harbor, it is those who use the harbor who suffer. Similarly, when nitrates seep into an aquifer, thereby rendering it unsafe, the whole community living around the aquifer suffers. Replacing decentralized systems with centralized systems would benefit those who suffer from environmental and public health problems caused by decentralized systems, but not those who would pay for it.

2.4.2 Governments have not ensured that providers of wastewater services have sufficient funding to cover the costs of developing and operating wastewater systems

In most participating countries, the governments have not approved adequate tariffs or provided sufficient subsidies to utilities for operating and maintaining piped wastewater systems. It may be that not enough people and businesses have pressured the governments to provide piped wastewater services. Therefore, the governments do not have adequate incentives to raise and allocate financial resources for developing and operating wastewater systems.

Furthermore, as long as funding for operating and maintaining a wastewater treatment plant is not secured, it is not worth rehabilitating or constructing wastewater infrastructure—even if funds are available from development banks. Most participating countries use volumetric wastewater charges (see Table 2.3). However, volumetric wastewater charges are not cost-reflective. The main cost drivers in the wastewater business are pollution load and network size rather than the water volume. However, as pollution load and network size are hard to measure, volumetric charges are used as a second best option.

[20] As household income increases, households may be willing to pay an additional fee for the convenience of being connected to a centralized piped wastewater system, which does not need to be emptied from time to time like septic tank.

Table 2.3: Overview of Wastewater Tariff Calculation in Participating Countries

Country (Utility)	WW Tariff?	How is the WW charge calculated?
Antigua and Barbuda (APUA)		
Barbados (BWA)	✓	1/3 of the water bill for domestic customers, and 2/3 of the water bill for commercial customers
Belize (BWS)	✓	
Guyana (GWI)	✓	Only the non-domestic metered customers are charged a wastewater charge based on consumption, while the other customers pay a flat rate
Jamaica (NWC)	✓	100% of water charge
Saint Lucia (WASCO)	✓	Domestic, commercial, industrial and Government wastewater charges based on consumption (different rates than water charges)
Saint Vincent and the Grenadines (CWSA)	✓	Domestic and commercial wastewater charges based on consumption (different rates than water charges)
Suriname (SWC)		
Trinidad and Tobago (WASA)		

Source: See Table E.2 in Appendix E

Additionally, it seems that Governments in the participating countries have not found sustainable mechanisms for providing the funding for capital investments in wastewater. It is difficult to cover the costs of wastewater investments with tariffs charged to customers of the wastewater utilities for the following reasons:

- **Wastewater systems have social benefits that spread over the wider community**. It is not clear that recovering the full costs from those connected to the system is the right choice, from either an efficiency or equity perspective. In many cases, customers who are offered the choice to connect to the wastewater system, and pay its costs, prefer not to. In this case, it is hard to say that the customers are the beneficiaries, since from their perspective the benefits of the system are less than its costs. And yet, the community may still decide that it is worth having a wastewater system and requiring people to connect. In this situation, it might be reasonable to spread the costs across the broader community, and not simply those connected to the system.
- **Fully cost-reflective wastewater charges might by unacceptably high**. Since a wastewater system generally costs as much or more than a water system, recovering the costs of a new wastewater system may lead to an increase of as

much as 100 percent of the existing tariffs.[21] It is common for the total costs of a centralized wastewater system to exceed US$4.5 per 1,000 imperial gallons. Adding a charge of this amount to the water bill could be socially unacceptable.

The governments in most participating countries have not put in place tariffs, along with complementary funding mechanisms (such as dedicated subsidies), that can adequately cover the cost of developing and then operating and maintaining wastewater services. The only exception to this is Jamaica (see Case Study in Appendix A). Some options that the governments could consider for covering this cost are[22]:

- **Recovering the cost of wastewater systems through local property taxes, or subsidies from the national governments**. Payment through property taxes reflects the fact that everyone in the area benefits from wastewater removal and treatment, and this may in fact increase property values. Subsidies from the national government reflect the broader benefits of wastewater treatment. Treating wastewater in an upstream community benefits downstream communities, which may justify funding wastewater treatment on a national, or at least river-basin wide basis.
- **Requiring all those whose properties are near the sewer network to pay, whether or not they connected to it**. This has the advantage of encouraging people to connect, and reflecting the fact that everyone in an area benefits from a system which removes wastewater from that area. The disadvantage of this approach is that it can generate resistance from those who do not connect to the system.

[21] Castalia, Regulating Wastewater Services in Developing Countries, Explanatory Note 7, Key Topics in the Regulation of Water and Sanitation Services, January 2006.

[22] Castalia, Regulating Wastewater Services in Developing Countries, Explanatory Note 7, Key Topics in the Regulation of Water and Sanitation Services, January 2006.

3 Assessing the Capacity of Participating Countries to Meet Objectives in the Wastewater Sector

In Section 2, I explain that current efforts have not been enough to improve the situation of the wastewater sector in participating countries. Assuming that centralized wastewater systems are the most efficient way to achieve the objectives in the wastewater sector, each participating country will need to do the following:

- Make large capital expenditures
- Have bodies that are capable of effectively developing, operating, and maintaining wastewater systems—or, alternatively, are capable of managing someone that can
- Have the appropriate legal and regulatory framework in place
- Mandate households and businesses to connect to centralized wastewater systems
- Have access to finance, and
- Have the capacity to pay the costs (including operating expenses and capital costs) once the system is in place

Therefore, in this section I assess the capacity of participating countries to meet the objectives in the wastewater sector by considering whether they have the above-mentioned elements in place. Specifically, I assess whether participating countries meet the requirements for achieving objectives in the wastewater sector as follows:

- Current and planned levels of expenditure in wastewater infrastructure in participating countries (Section 3.1)
- Capable utilities are key to improving the wastewater in the Caribbean (Section 3.2)
- The Government needs to mandate that households and businesses connect to the centralized wastewater system (Section 3.3)
- All participating countries have access to funding for wastewater infrastructure by development banks (Section 3.4)

3.1 Current and Planned Level of Expenditure in Wastewater Infrastructure in Participating Countries

In order to meet their objectives for increasing the collection and treatment of wastewater and improving the quality of wastewater effluent, the governments of the participating countries need to significantly increase their capital expenditure in wastewater systems. Most participating countries are planning significant investments in their wastewater infrastructure in the next decade. The planned investments are much higher than the current level of investments in wastewater infrastructure.

For the governments to meet their obligations arising from the LBS Protocol and their targets for the wastewater sector, most public utilities in the participating countries plan significant capital expenditures for expanding or rehabilitating their wastewater systems. Some utilities are in the process of carrying out significant wastewater infrastructure projects. For instance, BWS in Belize has two ongoing major projects—the extension of the

Ambergris Caye Water and Sewerage Extension, and the establishment of the Placencia Sewerage System.[23] Furthermore, most utilities have significant investment planned (see Table 3.1).

Table 3.1: Ongoing and Planned Investments in Wastewater

Country (Utility)	Ongoing Wastewater CAPEX Projects	Planned Wastewater CAPEX Projects
Antigua and Barbuda (APUA)		
Barbados (BWA)	▪ Sanitation Systems Upgrade (US$3.45 million)	▪ West Coast Sewerage Plant (US$150 million) ▪ Septage Handing Facility
Belize (BWS)	▪ Ambergris Caye Water and Sewerage Extension Project ▪ Placencia Sewerage System (US$10 million)	▪ Belize City ▪ Belmopan ▪ Caye Caulker ▪ Corozal Commercial Free Zone ▪ Hopkins and Sittee River (US$149 million)
Guyana (GWI)	▪ Georgetown Sanitation Rehabilitation (US$7.5 million)	
Jamaica (NWC)	▪ Kingston Sanitation Rehabilitation Project (US$4 million) ▪ Port Antonio Water and Sewage (US$15 million)	▪ Wastewater systems for 20 major towns (Planned WW CAPEX 2013-2022: US$580 million)
Suriname (SWC)		
Trinidad and Tobago (WASA)	▪ Multi-Phase WW Rehabilitation Program, (US$246.5 million) ▪ WASA Modernization and WW Infrastructure Rehabilitation Program (US$50 million)	▪ Wastewater service expansion from 30% in 2011 to 75% by 2020 (Estimated total WW CAPEX: $4.1 billion)

Source: See Appendix E

The current level of average annual capital expenditure in wastewater systems is well below the planned investments in wastewater system rehabilitation and expansion in the future. For example, the NWC plans to build centralized wastewater systems for Jamaica's 20 major towns by 2022 at an estimated cost of about US$580 million. The planned annual capital expenditure for wastewater systems for the NWC would thus be US$58 million over the next ten years. The NWC's current level of average annual capital expenditure for wastewater systems is US$6.2 million. The NWC would thus need to almost tenfold its current level of annual capital expenditure to meet its planned wastewater investments over

[23] IDB, Integrated Water and Sanitation Programme for the Plancencia Peninsula, Belize, Loan Proposal BL-L1015, 2010; CDB, Ambergris Caye Water and Sewerage Project, Belize, Number. 15/12-BD.

the next ten years. In order for utilities to increase their average annual capital expenditure, they will need additional funding and to significantly improve their capacity to implement or manage capital expenditures.

3.2 Government-Owned and Operated Utilities are Key to Improving the Wastewater Sector in the Caribbean

In this section, I assess the capacity of utilities in participating countries to meet sector objectives. This section is structure in the following way:

- **Utilities in the participating countries are the sole providers of centralized wastewater services** (Section 3.2.1). Low rates of access to centralized wastewater systems suggest that utilities in participating countries must increase their capacity to develop and operate centralized wastewater systems. Because utilities play a major role in providing centralized wastewater services, a capable utility can greatly contribute to meeting the governments' objectives in the wastewater sector
- **The utilities need to focus on improving water services** (Section 3.2.2). Before focusing on wastewater services, the utilities in the participating countries need to improve their water services. Since water services are essential and provide direct benefits, customers pressure governments to provide sufficient water in good quality.
- **Most wastewater projects in participating countries are delayed** (Section 3.2.3). The utility is executing agency for wastewater sector projects in many of the participating countries. The fact that many of these projects are behind schedule indicates that utilities lack the institutional capacity to implement projects on time.

3.2.1 Utilities in participating countries are the sole providers of centralized wastewater services

The utilities in participating countries are the sole provider of centralized wastewater services in each country. Antigua and Barbuda and Suriname do not have centralized wastewater systems. Assuming that centralized wastewater systems are the most efficient way to achieve overall objectives in the sector, it is evident that a capable utility is important for achieving sector objectives. A utility that has the capacity to build and operate wastewater infrastructure, as well as provide adequate wastewater services to its customers, can greatly improve wastewater management in the country.

In addition to being the sole provider of wastewater services, utilities in participating countries have another characteristic in common. In all the participating countries, the government owns 100 percent of the utility (or in the case of Belize, the majority of shares). Table 3.2 below shows the utilities in each country.

Table 3.2: Characteristics of Wastewater Service Providers in Participating Countries

Country	Utility	Sole Provider of Centralized Wastewater Services?	Ownership	Number of Wastewater Connections

Country	Utility	Sole Provider of Centralized Wastewater Services?	Ownership	Number of Wastewater Connections
Antigua and Barbuda	Antigua Public Utilities Authority (APUA)		100% Government	
Barbados	Barbados Water Authority (BWA)	✓	100% Government	4,500
Belize	Belize Water Services Limited (BWS)	✓	Majority Government	11,000
Guyana	Guyana Water Incorporated (GWI)	✓	100% Government	48,000
Jamaica	National Water Commission (NWC)	✓	100% Government	99,000
Saint Lucia	Water and Sewerage Company Incorporated (WASCO)	✓	100% Government	1,200
Saint Vincent and the Grenadines	Central Water and Sewerage Authority (CWSA)	✓	100% Government	
Suriname	Suriname Water Supply Company (SWC)		100% Government	
Trinidad and Tobago	Water and Sewerage Authority (WASA)	✓	100% Government	

3.2.2 The utilities need to focus on improving water services

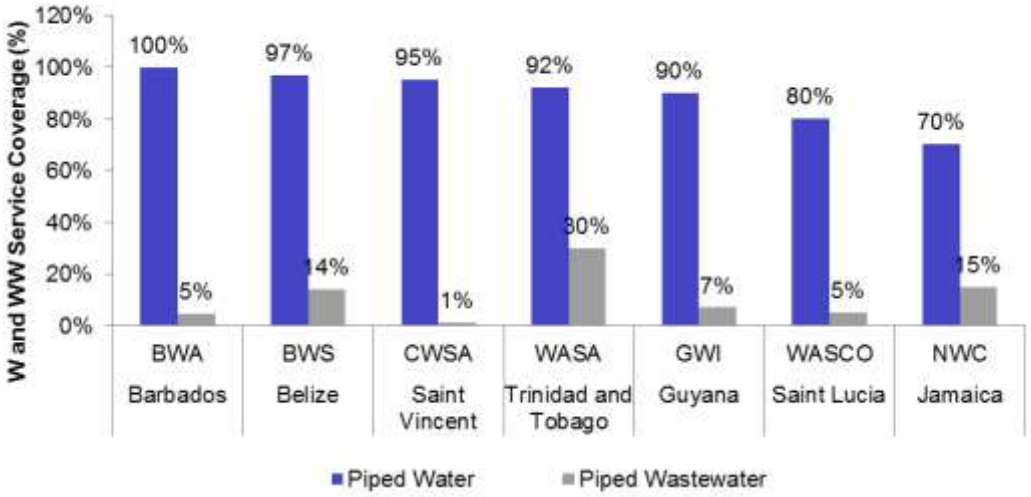
In the participating countries, the most efficient way to provide centralized wastewater services is through the water utilities. This is due to the economies of scale that exist in providing water and wastewater services in a country in the Caribbean. However, the water utilities do not have the financial and institutional capacity to provide wastewater services.

In most participating countries the utilities are not able to provide water in the quantity and at the quality expected by customers. Because water is essential, and provides direct benefits to customers, customers pressure governments to improve water services. Only when customers are satisfied with water services can utilities dedicate the required level of focus on increasing wastewater collection and treatment. Therefore, accelerating improvements of the utilities in the participating countries is key to increasing effective investments in the wastewater sector.

In most participating countries, governments—through the utilities—need to focus on improving water services before devoting considerable time and resources to improving wastewater services. People value water services more than wastewater services, because water is essential and considered a basic good. People are willing to pay for this service. Water directly benefits the person who pays for it. In cases where the government is unable to provide basic services well—such as water—people are unhappy and will pressure the

government to provide these services. In the participating countries, there has always been pressure on the governments to improve access to and quality of water services. However, there has hardly been any pressure to provide piped wastewater services. This is why in all participating countries water coverage is nearly universal, while the coverage of piped wastewater services is minimal. Figure 3.1 compares water coverage to wastewater coverage in participating countries.

Figure 3.1: Piped Water and Wastewater Coverage in Participating Countries



Source: See Table E.2 in Appendix E

Most utilities in the participating countries do not have a separate wastewater division at the senior management level of their organizational structure (see Table 3.3). Only the NWC in Jamaica created a separate business division for its wastewater business that reports directly to the CEO—the division for "Wastewater Systems Development and Operation and Maintenance".

Table 3.3: Most Utilities Do Not Have a Wastewater Business Unit

Country	Utility	Separate WW Division That Reports to CEO
Antigua and Barbuda	Antigua Public Utilities Authority (APUA)	x
Belize	Belize Water Services Limited (BWS)	x
Guyana	Guyana Water Incorporated (GWI)	x
Jamaica	National Water Commission (NWC)	✓
Saint Vincent and the Grenadines	Central Water and Sewerage Authority (CWSA)	x
Trinidad and Tobago	Water and Sewerage Authority (WASA)	x

Source: Utility Websites

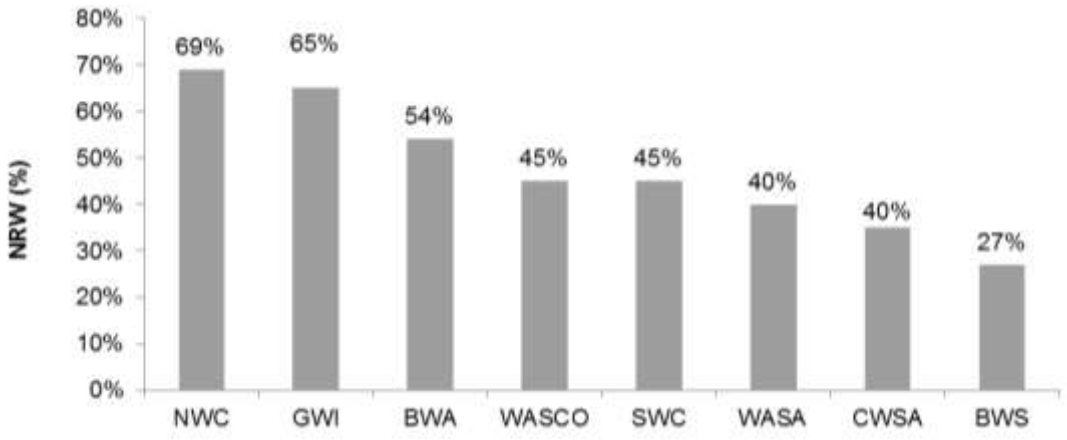
Although coverage of water services is nearly universal in most participating countries, customers are still expecting significant improvements of the water sectors. In particular, the countries need to address the following challenges in their water sectors:

- **Water coverage needs to be universal**—Since water services are considered a basic service, governments, in particular when they own the utilities with responsibility for doing so, need to ensure universal access to water services
- **Water quality needs to be improved**—In most countries water quality does not comply with national water quality standards. For example, in Jamaica, water quality targets are set by the Office of Utility Regulation (OUR). Water quality is measured by the percentage of test samples that is within standards as specified by World Health Organization (WHO) guidelines and the Interim Jamaica Standards for Drinking Water (IJAM) in terms of chlorine and fecal coliform. The OUR target for water quality was 99 percent by 2012. NWC's actual percentage was 94 percent[24]
- **Quality of service needs to be improved—**In most countries, the quality of service provided by the utilities shows room for improvement. In Jamaica, for example, water pressure targets were met only 76 percent of the time in 2012. Only 20 percent of the population in Trinidad and 58 percent in Tobago have access to continuous water supply.[25] Another important reason why water service needs to improve first, is that customers in these countries will only accept tariff increases if the quality of water services is significantly improved
- **Operating expenses need to be reduced**—Most of the utilities in the participating countries should increase their operating efficiency and thereby reduce their operating expenses. A good indicator of the operating efficiency of a water utility is the level of non-revenue water. On average, well performing utilities have a non-revenue water percentage at or below 25 percent. Among the participating countries, only Belize Water Services Limited shows a relatively efficient level of non-revenue water at 27 percent (see Figure 3.2). The high non-revenue water levels of 50 percent for the utilities in Barbados (BWA), Guyana (GWI) and Jamaica (NWC) indicate that these utilities need to increase the efficiency of their operations.

[24] NWC, Tariff Application 2013.

[25] IDB, WASA Modernization and Wastewater Infrastructure Rehabilitation Program, Trinidad and Tobago, Loan Proposal, TT-L1018, 2011.

Figure 3.2: Non-Revenue Water (Percentage of Total Water Production)

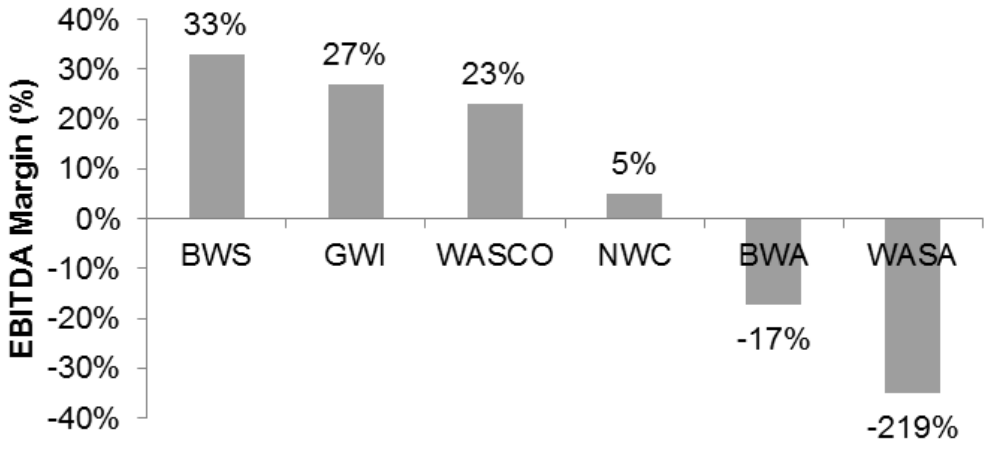


Source: See Table E.2 in Appendix E

As long as utilities need subsidies from the government for developing and operating their water services, unless they are specifically dedicated for investments in wastewater, a limited amount of the subsidies provided to water utilities will be used for developing and operating wastewater services.

Some utilities still need subsidies for their water services, since they cannot cover their operating expenses and capital investments with their operating revenues (see Figure 3.3). WASA in Trinidad and Tobago and BWA in Barbados, for example, have negative EBITDA margins. This means that their operating expenses exceed their operating revenue. The NWC in Jamaica has an EBITDA margin of 5 percent. It can cover its operating expenses through its operating revenue. However, the remaining EBITDA is not sufficient for covering any significant level of capital investments.

Figure 3.3: EBITDA Margin



Source: See Table E.2 in Appendix E

Note: EBITDA Margins for WASCO, BWA and WASA include government subsidies

Governments will need to provide subsidies to water utilities as long as:

- The quality of water service provided by the water utilities is too poor to consider significant tariff increases
- Water utilities do not improve their operating efficiency and thereby decrease their operating expenses.

3.2.3 Most wastewater projects in the participating countries are delayed

Many ongoing wastewater projects in the participating countries are delayed. This shows that utilities lack institutional capacity to implement projects. If this problem appears now, when investment in wastewater is only a fraction of what it will be in the future, then this is a matter for concern. Utilities need to develop the institutional capacity to execute wastewater projects that will contribute to meeting sector objectives.

In four out of the five participating countries that received funding from the IDB or the World Bank, the projects are behind schedule (see Table 3.4). For example, two wastewater projects in Jamaica that should have been completed in 2010 and 2011 are just nearing completion now, in 2014. Also, the two projects in Barbados and Belize are significantly behind their planned disbursement schedules. Without significant changes in the existing frameworks for wastewater investments in the participating countries, it seems unlikely that these countries have the capacity to successfully absorb more funding at the moment.

Table 3.4: Planned Versus Actual Status of Disbursement

Country	Loan Contract (Loan Proposal)	Executing Agency	Original Disbursement Expiration	Planned Percentage Disbursed	Actual Percentage Disbursed
Barbados	2255/OC-BA (BA-L1015)	BWA	April 2016	90%	4%

Belize	2486/OC-BL BL-L1015	BWS	March 2015	68%	1%
Guyana	2428/BL-GY (GY-L1025)	GWI	December 2015	68%	49%
Jamaica	(JA-0114)	NWC	September 2010	100%	91%
Jamaica	4819-JM (P091299)	JSIF	June 2011	100%	96%
Trinidad and Tobago	2600/OC-TT (TT-L1018)	WASA	November 2016	44%	40%
Trinidad and Tobago	2890/OC-TT (TT-L1026)	WASA	January 2018	0%	0%

Source: Progress Reports as of May 2013

3.3 The Governments Should Mandate that Households and Businesses Connect to the Centralized Wastewater System

The asymmetry of costs and benefits between those households and businesses that pay for piped wastewater services and the broader range of people that benefit from it suggest that the governments need to intervene. Without intervention by the government, many households and businesses are likely to engage in free-rider behavior. That is, each household or business would hope for others to connect to the wastewater system, but would not connect itself. This behavior could lead to increasing damages to the environment and public health.

Where individual decisions by households and businesses fail to protect the population from environmental and health problems caused by effluent discharges, the governments can improve the situation with some intervention. The negative externalities resulting from wastewater services are broad enough that governments use their legislative power and public funds to align individual behavior to the public interest. There are three areas of action for governments to promote the expansion of centralized piped wastewater systems in the public interest:

- The governments need to encourage or force customers to connect to wastewater systems
- The governments need to find socially acceptable ways of covering the costs of developing and then operating and maintaining centralized wastewater systems
- The governments need to provide the water and wastewater utilities with adequate financial support for providing wastewater services.

In most participating countries, the governments have not adequately taken on this role. This helps to explain why utilities do not invest more in wastewater systems and why their absorptive capacity for operating and maintaining wastewater systems is insufficient. With the exception of Jamaica (see Case Study in Appendix A), most of the participating countries do not have:

- Laws that encourage or force customers to connect to centralized wastewater systems
- Socially acceptable ways for paying for the operation and maintenance of wastewater systems
- Pressure on the utilities to provide wastewater services by customers or the government.

3.4 All Participating Countries Have Access to Funding for Wastewater Infrastructure from Development Banks

Having access to finance is one of the essential elements for achieving the objectives in the wastewater sector. In this section, I show that this is one element all participating countries do meet. In Appendix B, I provide more detail on the terms of financing, as well as the legal and institutional elements that participating countries must meet.

All participating countries, except for Antigua and Barbuda, and Suriname, currently receive funding from development banks for wastewater sector projects (see Table 3.5). All participating countries are eligible for funding by at least one development bank:

- Antigua and Barbuda is not a member country of the Inter-American Development Bank (IDB), and does not participate in the Basic Needs Trust Fund (BNTF) programme of the Caribbean Development Bank (CDB). However, it is eligible for funding from the World Bank
- Suriname is not a member country of the Caribbean Development Bank, but is eligible for funding from the IDB and the World Bank.

Table 3.5: Current Funding for Wastewater Infrastructure by International Financial Institutions

Countries	IDB	CDB	World Bank
	US$ million	US$ million	US$ million
Antigua and Barbuda	not eligible	0.00	0.00
Barbados	3.45	0.00	not eligible
Belize	10.00	0.75 BNTF 7: ?	0.00
Guyana	7.30	BNTF 7: ?	0.00
Jamaica	4.00	BNTF 7: ?	<2.00
Saint Lucia	not eligible	BNTF 7: ?	0.00
Saint Vincent and the Grenadines	not eligible	BNTF 7: ?	0.00
Suriname	0.00	not eligible	0.00
Trinidad and Tobago	296.50	0.00	

Source: See more detailed information on available funding in Table E.4.

Note: "BNTF 7" stands for the seventh cycle of the CDB's "Basic Needs Trust Fund".

The participating countries have access to the following actual and potential funding from multilateral development banks:

- **Inter-American Development Bank (IDB)**: The IDB currently funds wastewater projects in all participating countries that are IDB member countries, except for Suriname. Antigua and Barbuda, Saint Lucia, and Saint Vincent and the Grenadines do not have access to IDB funds since they are not member countries
- **Caribbean Development Bank (CDB)**: The CDB will provide most of its funding for wastewater infrastructure investments through the Basic Needs Trust Fund (BNTF) programme.[26] This programme is a direct and targeted poverty reduction initiative, which was launched in 1979 and has received six replenishments since then. The seventh cycle started in 2012. The water and wastewater sector are one of the three key priorities of the seventh cycle. Funding from the seventh cycle has already been allocated to the BNTF participating countries Belize, Guyana, Jamaica, Saint Lucia, and Saint Vincent and the Grenadines for infrastructure projects, including wastewater projects. Antigua and Barbuda, Barbados, and Trinidad and Tobago are not member countries of the BNTF programme, and are thus not eligible to funding. Suriname is not a member country of the Caribbean Development Bank
- World Bank Group: The World Bank Group provides funding to eight of the nine participating countries—Barbados is not eligible—through the following two entities:
  - The International Bank for Reconstruction and Development (IBRD) provides funding on favorable terms in larger volumes, with longer maturities, and in a more sustainable manner than world financial markets typically provide.[27] Antigua and Barbuda, Belize, Jamaica, Suriname and Trinidad and Tobago are currently eligible for IBRD funding. The IBRD is providing funding for one wastewater project in Jamaica
  - The International Development Association (IDA)[28] lends money on concessional terms. This means that IDA charges little or no interest and repayments are stretched over 25 to 40 years, including a five to ten-year grace period. IDA also provides grants to countries at risk of debt distress. Only Guyana, Saint Lucia, and Saint Vincent and the Grenadines are currently eligible to receive IDA resources
- **European Investment Bank**: The European Investment Bank is also a source of funding for all participating countries. It currently has one active project in the wastewater sector in Jamaica.

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[26] Caribbean Development Bank, Basic Needs Trust Fund, http://www.caribank.org/programmes/basic-needs-trust-fund.

[27] World Bank, IBRD, Background, http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/EXTIBRD/0,,contentMDK:21130269~menuPK:3168298~pagePK:64168445~piPK:64168309~theSitePK:3046012,00.html (accessed on 3 September 2013).

[28] IDA, What is IDA?, http://www.worldbank.org/ida/what-is-ida.html (accessed on 3 September 2013).

4 A Proposed Approach for Helping Countries in the Caribbean Achieve Their Objectives in the Wastewater Sector

Improving the situation of the wastewater sector in The Caribbean requires that each country uses a comprehensive, integrated, and targeted approach. This approach must ensure that all the essential elements for improving the sector are in place, and that the key stakeholders (in particular, the government and utility) develop and agree upon a realistic plan for improving the sector. Furthermore, civil society should have a say in the development of the plan, through public consultations, and have access to credible and timely information regarding the progress of the plan against its objectives. The accountability established by the plan, and a disciplined (but practical) adherence to it, will increase the probability of its success.

Financing for capital investments to develop wastewater assets (such as wastewater collection networks and wastewater treatment plants) is an important element for improving the sector. However, other elements are also essential for the successful reform of the wastewater sector. Financing, and the resulting investments in assets, will most likely be inefficient and ineffective without an adequately prepared utility, an appropriate legal and regulatory framework, and a comprehensive wastewater master plan. In each country, the first step toward improving the sector is identifying the missing essential elements, and obtaining credible commitments from those responsible for putting them in place. In this section, I:

- Describe the essential elements for improving the sector (Section 4.1)
- Identify the stakeholders responsible for developing and implementing the approach (Section 4.2)
- Recommend an approach for developing and implementing an Action Plan for improving the wastewater sector (Section 4.3).

CReW may want to consider providing funding to help put in place the essential elements that are missing in each participating country. Additionally, CReW may help participating countries develop and carry out their Action Plan, so that they meet their objectives in the wastewater sector.

4.1 Essential Elements for Improving the Wastewater Sector in the Caribbean

Essential elements for improving the wastewater sector must be in place for a country's efforts to improve wastewater sector to be successful. Most of the participating countries have some of the essential elements in place. However, as described in Section 6 of this report, Jamaica is the only country that has enough essential elements and, as a result, is the only country that has made substantial progress in improving the sector's performance. The essential elements are:

- **An appropriate legal and regulatory framework**. The legal and regulatory framework must clearly assign all key functions in the wastewater sector. For example, the framework must clearly define which body is responsible for setting

effluent standards and which body is responsible for enforcing those standards. It must also establish a reasonable mechanism for setting and adjusting tariffs for wastewater collection and treatment. In addition, the legal framework must require that customers connect to the network.

- **A utility with the capacity to effectively manage wastewater systems**. For investments in wastewater assets to be effective, the utility must be able to operate the assets efficiently and to maintain them adequately. Many of the utilities in the Caribbean need to increase their operating capacity and improve their financial situations before they can operate and maintain any significant increases in wastewater assets. Attaining the adequate capacity requires making wastewater a primary business unit in the utility, training the utility's staff, and developing the appropriate information systems and processes.
- **Access to sufficient finance**. In most of the participating countries, improving the wastewater sector will require large capital investments in wastewater collection systems, wastewater treatment plants, and information technology systems. These capital investments must be financed in large part with external financing (in particular, debt). Without access to such financing, it is not reasonable to expect any significant increase in the levels of wastewater collection and treatment.
- **Timely and credible communication to the public regarding performance of the sector.** Providing civil society with timely and credible information—for example, information regarding the commitments that each of the stakeholders has made toward improving the sector—enhances accountability within the sector. It also contributes to obtaining greater support from the public for the government's initiatives within the sector. This information can be provided to the public through a number of channels including websites, publications in major newspapers, and social medial (such as Twitter). It is important that this information be provided by a body that the public considers to be credible.
- **An Action Plan with realistic objectives.** To be effective, the four elements described above must be synchronized (that is, internally consistent and integrated). Developing a single, unified Action Plan with approval from the highest levels of government, as well as the bodies that would be responsible for implementing the plan, is the best way to achieve integration across these elements. This plan should be practical with clearly identified objectives that take into account any existing financial constraints and institutional capacities.

  Given the time that may be required to carry out some of the tasks in the plan (such as modifying the legal framework or designing and building specific wastewater assets), the plan should be multi-annual (with annual adjustments as necessary). An ideal timeframe for the plan would be about three to four years. Furthermore, in particular, an effective plan would:

  – Identify the **capital investments** required to achieve the plan's objectives. It may be necessary to iterate between the initial objectives (for example, a very rapid increase in the percent of wastewater treated) and the amount of financing that would likely be available for the required capital investments.

- Present a **detailed financing plan** for covering proposed capital investments. In addition, it will provide for a financing mechanism—consisting of tariffs and/or a reliable subsidy mechanism—to cover projected operating expenses of existing and future wastewater infrastructure.
- Assign **clear responsibilities** to the bodies with the capacity, resources and incentives to complete the required tasks (for example, tasking the Ministry of Finance with ensuring that the required financing plan is available, and the Ministry responsible for the wastewater sector with establishing appropriate effluent standards).

Table 4.1 below presents a preliminary assessment of the presence of essential elements in each participating country.

Table 4.1: Preliminary Assessment of Participating Countries' Wastewater Sector

Country	Access to Finance	Legal and Regulatory Framework	Adequately Prepared Utility	Communication to the Public	Action Plan
Antigua and Barbuda (APUA)	◔	○	○	○	○
Barbados (BWA)	◑	○	○	○	○
Belize (BWS)	◑	○	○	○	○
Guyana (GWI)	◔	○	○	○	○
Jamaica (NWC)	◕	◑	◔	◔	◔
Saint Lucia (WASCO)	◔	○	○	○	○
Saint Vincent and the Grenadines (CWSA)	◔	○	○	○	○
Suriname (SWC)	◔	○	○	○	○
Trinidad and Tobago (WASA)	◑	○	◔	◔	○

Legend: ○ This element is not in place; ◔ This element is in a preliminary stage; ◑ This element needs major improvements; ◕ This element needs minor improvements; ● This element is in place.

Source: This is a preliminary assessment based on the information I have available.

A preliminary assessment of the essential elements in each participating country indicates that access to finance may be the best-developed element in almost all the countries. However, financing alone will not improve the wastewater sector in participating countries. Therefore, CReW may want to consider providing funding to help put in place the essential elements that are missing in each participating country.

Having identified the essential elements that must be in place for improving the sector, I now turn to the stakeholders that must lead the approach.

4.2 Stakeholders Responsible for Developing and Implementing the Proposed Approach

For this approach to be successful, the government, utility, and any existing regulatory body for the sector must actively participate. In addition, public consultations with civil society will be essential for ensuring credibility and support of the approach. Finally, development partners, given the importance of the technical and financial assistance they provide, should review and provide advice as necessary. In particular, each of these stakeholders should participate in developing and implementing the proposed approach as follows:

- **The government**. Within any of the participating countries, the Cabinet and several of the ministries will have responsibility for deciding on some of the most important aspects for improving the sector (for example, proposing any changes to the legal framework, developing the objectives for the sector, and approving the financing plan for the utility). The Ministry responsible for the wastewater sector would likely lead the development of any necessary legal and regulatory instruments and sector objectives. Since all utilities in the participating countries are owned and operated by the governments, the Ministry is also responsible for leading the efforts to increase the utility's capacity. The Ministry of Finance must ensure the utility, and the sector as a whole, have an adequate budget. In addition, the Ministry of Finance is generally responsible for coordinating any assistance from the development partners.
- **The water and wastewater utility**. The utility in the country is primarily responsible for developing the new assets and operating and maintaining the assets. It must also work closely with the government on developing realistic objectives for the wastewater sector.
- **Regulatory bodies**. In any participating countries with regulatory bodies responsible for the wastewater sector (such as in Belize, Jamaica, and Saint Lucia), it is important that the regulatory bodies participate in the development of the Action Plan. Some care must be taken in involving the regulatory body in the process since it may later have to make regulatory decisions regarding some of the items in the Action Plan.
- **Civil society.** Civil society—broadly encompassing households, businesses, and civic associations within the country—should be the beneficiaries of the improvements in the wastewater sector. Therefore, when developing the Action Plan, it is important that civil society is provided with the opportunity to contribute to and review the proposed objectives and projects for meeting those objectives. Furthermore, once the Action Plan is being implemented, civil society should receive timely and credible information regarding the progress of the Action Plan.
- **Development partners**, such as the Caribbean Development Bank, the Inter-American Development Bank, the European Investment Bank, the Global Environment Facility, and the World Bank provide technical and financial assistance to the participating countries. During the development and implementation of the Action Plan, these agencies can provide valuable advice and funding for activities that must be carried out to improve the sector. These

agencies should play an advisory role in the development of the Action Plan and during its implementation to ensure that they provide technical and financial assistance that is consistent with the plan's progress and objectives.

Therefore, the Action Plan needs to set out the clear roles, responsibilities, and objectives for each of these stakeholders.

4.3 Development and Implementation of an Action Plan for Improving the Wastewater Sector

As a first step toward developing the Action Plan, it would be important to create a working group that included any Ministries with responsibility for wastewater, the utility, and any existing regulatory body. Among the first decisions this working group must make is identifying the body responsible for carrying out the assessment of the initial situation of the wastewater sector. This body could be a subset of the working group with access to some experts as necessary. With the results of the assessment, the working group could then develop the draft Action Plan, make the plan available for public consultations, agree upon a final version of the plan, publicly disseminate the plan, and begin its implementation and monitoring.

Assessment of the initial situation of the wastewater sector

An assessment of the initial situation (the baseline) of the wastewater sector should identify the priority needs, and the gaps in the essential elements for meeting those needs. Furthermore, it should provide the data necessary to develop realistic objectives. This assessment should include a review of the legal and regulatory framework, the existing technical and financial situation of the utility, the availability of finance for developing any required assets, the existence of consultations with civil society to identify key public concerns regarding wastewater, and the financing mechanism in place to cover the operation and maintenance of wastewater assets. This initial assessment should take about three to six months to complete. Appendix C in this report provides a questionnaire with sample questions that could be used to conduct the baseline assessment.

Development of an Action Plan

With the results of the assessment of the initial situation, the working group can then turn to developing the Action Plan. Although each country should develop its Action Plan according to the results of the assessment of its initial situation, there may be some options for regional synergies. Assuming that the proposed approach is tested in a few pilot countries, CReW might apply the lessons learnt from implementing the proposed approach in these pilot countries. Furthermore, CReW might find that some materials (such as a sample Action Plan or a financial model for testing the viability of options to achieve objectives) and techniques (for example best practice for public consultation or structuring subsidies or tariffs for wastewater) that were used in these pilot countries can also be shared with other participating countries. Another option for creating regional synergies could be to develop standard contracts that could be used for recurring activities throughout the region. For example, a standard contract could exist for developing and operating wastewater facilities under a Build-Operate-Transfer scheme.

Developing the Action Plan will require dedicated and specialized inputs. Therefore, it may be useful to have some external assistance to do so. Furthermore, due to the role of the development partners, it would be useful to regularly send draft versions of the plan to the

development partners to ask them for comments and advise. It will probably take about three to six months to complete this draft version.

Once the working group is satisfied with the draft version of the Action Plan, it should be distributed for public consultations. For example, this could mean publishing the document on a website (also notifying the public that it can be obtained in hard copy at a particular place) and then holding numerous events at which civil society can comment on the draft version (written comments should also be accepted). Allowing about four to six weeks for public comments on the draft Action Plan should be sufficient.

After the public consultations, the working group should reconvene to address the comments that were raised during the consultations. Depending on the comments received, finalizing the Action Plan may take up to about one month. The working group should agree upon a final version of the Action Plan, and each of the responsible authorities should subsequently sign the Action Plan indicating their commitment to the objectives and obligations established therein. The signed Action Plan should then be disseminated publicly (for example, on a dedicated website, on the government's official website, and in several major local newspapers). Disseminating the plan will promote transparency, accountability, and support for the government's efforts to improve the wastewater sector.

Monitoring of and updating the Action Plan

The Action Plan should include a clear and detailed process for monitoring and communicating its progress. The transparency and credibility of the plan's implementation would be improved if an independent body, in which the public has confidence, is responsible for evaluating and reporting the progress of the plan. Examples of such a body include a regulatory body, a panel of experts appointed by the working group, and a non-governmental organization.

The working group should meet two to four times per year to review the progress of the Action Plan and to make any adjustments which may be necessary. Following these reviews, the working group should disseminate reports with comprehensive updates on the progress of the plan.

About one year before the Action Plan's original planning period will be completed the working group should convene to begin developing the Action Plan for the subsequent period.

Appendix A: Case Study—Review of Jamaica's Advances in Sustainable Wastewater Funding

This section reviews Jamaica's advances in sustainable wastewater funding. For this purpose, it first provides an overview of the wastewater sector in Jamaica (Section A.1). It then shows the advances Jamaica has made in sustainable funding of the wastewater sector (Section A.2). Finally, it analyzes the factors that facilitated the greater uptake for funding of the wastewater sector (Section A.3).

A.1 Overview of the Wastewater Sector in Jamaica

This section provides an overview of the wastewater sector in Jamaica that focuses on:

- Water and wastewater service providers
- The regulatory framework
- Wastewater tariffs.

Water and wastewater service providers

The National Water Commission (NWC) has a license to provide water and sewerage services island-wide. However, the NWC is unable to supply services in some parts of the island, and many small private and community-based water and sewerage providers have stepped in to fill this gap. There are four distinct groups of small service providers:

- **Investor-owned utilities**—Commercial operations supplying services for a profit. Some have been established by property developers to serve developments they are involved in, while others are responding to unmet needs and opportunities in the sector
- **Community providers**—These are utilities owned by the Central Government or Parish Councils that are community-run and have been established or rehabilitated with funding from:
  - The Inter-American Development Bank (IDB) through the Government's Rural Water Programme (RWP)
  - Government through the national budget, and
  - The Jamaica Social Investment Fund (JSIF) which receives grants from the Government and the European Union
- **Parish Council systems**—Piped systems, wayside tanks, and standpipes owned and operated directly by Parish Councils. These tend to be in worse condition than the systems operated by community organizations as a result of chronic lack of funding
- **Truck-based providers**—Government water supply trucks, private water supply trucks, and private septage haulers.

The NWC has a business division for its wastewater services, the division for "Wastewater Systems Development and Operation and Maintenance". The division is separate from the utility's water services, and reports directly to the CEO. It operates some sixty-eight sewage treatment facilities. Most of these were constructed in tandem with housing developments

and then turned over to NWC.[29] Although there are sixty-eight plants, the installed treatment capacity of five of these facilities account for almost 70 percent of the total. These five facilities are the Soapberry, Greater Portmore, Negril, Montego Bay and Ocho Rios plants.

Regulatory framework

Table 4.2 provides an overview of the regulatory framework for wastewater in Jamaica. The National and Environmental Planning Agency (NEPA) and the Environmental Health Unit (EHU) of the Ministry of Health are responsible for setting effluent standards. The Office of Utilities Regulation (OUR) is responsible for setting and monitoring tariffs and performance targets.

Table 4.2: The Regulatory Framework for Wastewater in Jamaica

Type of Provider	Effluent	Customer Service	Service Area	Tariff
Investor-owned utilities	NEPA/EHU[1]	License	License	OUR
Community providers	NEPA/EHU	Licence	Licence	Charges set by community
Parish Council systems	NEPA/EHU	None	Parish	Charges set by Parish Council
Government water trucks	N/A	None	None	Charges set by Government
Private water trucks	N/A	None	None	Not regulated, but competitive
Private septage haulers	NEPA/EHU[1]	None	None	Not regulated, but competitive

/1 Some stakeholders expressed concern that this many not be adequately policed.

Wastewater tariffs

The wastewater charge is equal to the water charge and is intended to cover the collection and treatment systems where available. The NWC tariff structure has a price adjustment mechanism (PAM) that is applied to all rates and charges monthly to account for inflation, mainly electricity price changes, and exchange rate variations. There is a cross subsidy from commercial and industrial consumption to residential consumption. There is no targeting of subsidies.

A.2 Jamaica Has Shown Advances in Sustainable Funding of the Wastewater Sector

Jamaica has shown advances in sustainable funding of the wastewater sector over the past ten years. For example, the coverage of piped wastewater systems in Jamaica is increasing. Jamaica has invested constantly in the wastewater sector over the last 20 years (Section A.2.1). Jamaica's wastewater sector has seen major advances:

- Coverage of piped wastewater systems is increasing (Section A.2.2)
- Most wastewater treatment plants are operated and maintained (Section A.2.3)
- Jamaica has plans to improve effluent quality (Section A.2.4).

[29] NWC, Sewerage Services, http://www.nwcjamaica.com/PDFs/Advertisements/PPLan%20-%20PDF/Sewerage%20Services.pdf (accessed on October 1, 2013).

A.2.1 Jamaica constantly invests in the wastewater sector

Jamaica has invested constantly in the wastewater sector during the last 20 years. By 2010, five wastewater treatment plants—the Soapberry, Greater Portmore, Negril, Montego Bay and Ocho Rios—accounted for 70 percent of the wastewater treatment capacity in Jamaica. All five plants were constructed between 1995 and 2010.[30]

The country received significant amounts of funding for investments in the wastewater sector from development banks and the Governments during the last 20 years. Examples of these loans are shown in Table 4.3.

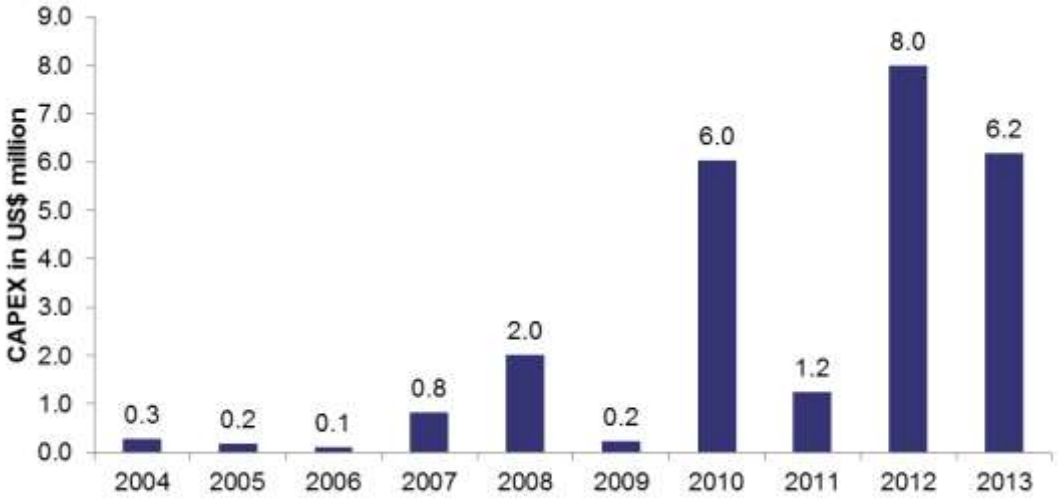
Table 4.3: Examples of loans for wastewater projects in Jamaica, 1993-2013

Lending Institution	Loan Contract	Project Name	Sectors	Approval Date	Loan Amount for WW
					US$ million
European Development Fund	7 ACP JM 23/24	Negril and Ocho Rios Wastewater Project	WW	Mid 1990s	51
		Kingston Harbour Clean-up Project (Soapberry Treatment Plant)	WW	Mid 2000s	52
European Development Fund		Rehabilitation Negril and Ocho Rios Wastewater Treatment Plants	WW	December 2007	4
Government of Japan		Sewerage Collection and Wastewater Treatment Plant for Montego Bay	WW		
IDB	(JA-0114)	Kingston Water and Sanitation Project	W and WW	June 2004	4
World Bank	4819-JM (P091299)	Inner City Basic Services for the Poor Project	Multiple Sectors	March 2006	<2

The National Water Commission (NWC) increased its capital investments in wastewater infrastructure from US$300,000 in 2004 to US$6.2 million in 2013 (see Figure 4.1).

[30] NWC, Sewerage Services, http://www.nwcjamaica.com/PDFs/Advertisements/PPLan%20-%20PDF/Sewerage%20Services.pdf (accessed on October 1, 2013).

Figure 4.1: NWC's Capital Investments in Wastewater Projects, 2004-2013



Source: NWC Fixed Assets Register as of March 31, 2013.

A.2.2 Coverage of piped wastewater systems is increasing

Contrary to other participating countries—such as Antigua and Barbuda, Surname, Saint Lucia, and Trinidad and Tobago—the coverage of piped wastewater systems in Jamaica is increasing. Nationally, access to improved sanitation[31] is nearly universal—between 98 and 99.5 percent. Wastewater services exist in most major urban areas and are being improved. In the Kingston Metropolitan Area, 92.2 percent of households had flush toilets in 2010 (see Table 4.4). In other towns 71.4 percent had this facility. This was 8.4 percent more than in 2004. The great majority of urban households without flush toilets use pit latrines.

Table 4.4: Households With Water Closet, 2001 and 2010

	2001	2010
	%	%
KMA	92.6	92.2
Other Towns	63	71.4
Rural Areas	38.5	50.6
Jamaica	**61.8**	**70.1**

Source: Jamaica Survey of Living Conditions, 2010

The coverage of the piped wastewater system has increased in recent years. In the Kingston Metropolitan Area, the percentage increased from 47 percent in 2004 to 49.1 percent in 2010

[31] The Jamaica Survey of Living Conditions 2010 refers to the term "improved sanitation" as "Private facilities that hygienically separate human excreta from human, animal and insect contact, such as facilities with flush/pour flush to piped sewer system, septic tank, pit latrine; ventilation improved (VIP) latrine; pit latrine with slab; and composting toilet (UNESCO)".

(see Table 4.5). In other towns, the percentage increased from 4 percent in 2004 to 11 percent in 2010.

Table 4.5: Households Connected to Piped Wastewater Systems, 2004 and 2010

	2004	2010
	%	%
KMA	47	49.1
Other Towns	4	11
Rural Areas		4.6
Jamaica		**70.1**

Source: Jamaica Survey of Living Conditions, 2010

Jamaica Water Sector Policy 2004

A.2.3 Most wastewater treatment plants are in service

Unlike in other participating countries, such as Trinidad and Tobago, most of the wastewater facilities in Jamaica are in service. Only a small number of wastewater plants in Jamaica are currently abandoned.

The NWC plans significant investments in wastewater systems from 2014 to 2018. As shown in Table 4.6, several projects aim at replacing non-functioning plants or redirecting wastewater streams from less efficient to more efficient plants:

- **Portmore Sewerage Reconfiguration Project**—This project plans to retire non-functioning wastewater treatment plants in Portmore, and to redirect the wastewater flows to the Soapberry wastewater treatment plant near Kingston Harbour, which currently has unused capacity.
- **Rehabilitation of several wastewater treatment plants island-wide**—The NWC plans to use CReW funds to rehabilitate wastewater treatment plants islandwide and to construct conveyance systems for the decommissioning of four wastewater treatment plants.

Table 4.6: Planned Capital Investments in Wastewater Systems, 2014-2018

Project	Funding Sources	Summary of Capital Expansion Works to be Carried Out	Expected Benefits
Kingston and St. Andrew Sewerage Expansion	K Factor	▪ Inspection, modeling, cleaning, and replacement of main trunk and secondary sewers in Kingston ▪ Rehabilitation of sewerage system in Majesty Gardens, Seaview, Riverton City, and Whitfield Town ▪ Installation of 200m of 250mm and 440m of 200mm sewers and service laterals from College Green to Ravinia Mews. Installing 260m of 250mm sewers & laterals along Barbican Road, permanent reinstatement of 330m of roadway along Standpipe Lane with asphaltic concrete, and construction of approximately 130m of 200mm and 300mm nominal diameter PVC sewers	▪ Rehabilitation of sanitation infrastructure to improve public health and environmental conditions ▪ Retirement of the College Green and Ravina Mews sewage treatment plants, bringing improved environmental conditions to the area
Phases 2 and 3 of the rehabilitation of the Harbour View Sewage Treatment Plant	K Factor/ NWC	▪ Erection of new trickling filter treatment plant and installation of a reed bed facility to enable treatment plant to meet the tertiary treatment requirements of NEPA	▪ Refurbished sanitation infrastructure will provide improved public health and environmental benefits to the Harbour View community
CReW Project	IDB/ GEF/ UNEP/ K Factor/ USTDA	▪ Rehabilitation of several wastewater treatment plants islandwide ▪ Rehabilitation of pond systems for wastewater treatment in: Lionel Town, Blackwood Gardens & Dela Vega City ▪ Rehabilitation of oxidation ditch Systems in: Longville Park, Paisley Pen, Eltham Park, Ensom City, Red Hills Pen, Shrewsbury WWTPs ▪ Construction of new sewage treatment plants to replace existing plants at: Boscobel and Elletson Flats ▪ Construction of conveyance systems for the decommissioning of 4 wastewater treatment plants at: Hughenden, Arcadia, Bay Farm and Springfield, and the rehabilitation of 6 wastewater treatment plants at	▪ Rehabilitation of sanitation infrastructure to improve public health and environmental conditions

Project	Funding Sources	Summary of Capital Expansion Works to be Carried Out	Expected Benefits
		Elletson Flats, Llandilo, Mineral Heights, Longville Park, Ensom City, and Blackwood Gardens	
Portmore Sewerage Reconfiguration Project	K Factor/ NWC	▪ Re-direct sewage flows from Portmore to Soapberry and retire selected treatment plants	▪ Retirement of old non-functioning WWTPs to reduce energy and maintenance costs, and utilize available capacity of more efficient facility
KMA Wastewater Phase 2A	K Factor	▪ Rationalization and expansion of sewage network in Portmore, Kingston, and St. Andrew	▪ Removal of onsite systems, phased improvement in groundwater, and additional revenue for Kingston only ▪ Benefits are public health, environmental improvement and O&M cost reduction
KMA Wastewater Phase 2B	TBD (US$20 mn)	▪ Pre-treatment at Greenwich and treatment to facilitate using wastewater for irrigation	▪ Effluent re-use
Soapberry WWTP Module No.2	TBD (US$50 mn)	▪ Construction of an additional Module 18 mgd to the Soapberry Wastewater Treatment Plant	▪ Double the capacity of the Soapberry plant to accommodate additional flows from Kingston and St. Andrew

Source: Project Documents for each of the Loans

A.2.4 Jamaica plans to improve effluent quality

Although the quality of effluent treatment in Jamaica is mostly poor[32], the Government and service providers have the capacity and the plans to improve the situation:

- Jamaica has the institutional capacity to set and monitor effluent standards
- The NWC committed to improve compliance with effluent standards by 2015
- The NWC redirects wastewater that currently flows to small malfunctioning treatment plants with poor treatment to functioning treatment plants where it is properly treated.

[32] IDB, Kingston Water and Sanitation Project, Jamaica, Loan Proposal, JA-0114.

The quality of effluent treatment in Jamaica is mostly poor. A study of the performance of the Jamaican domestic wastewater sector conducted from 2001 to 2003[33] showed that only 40 percent of the 60 plants monitored met the national effluent standards.[34] The NWC does not include all wastewater treatment plants in the sampling for National and Environmental Planning Agency (NEPA) standards. In September 2012, the Western Division had a sampling rate of wastewater treatment plans of 100 percent, and the Eastern Division had a sampling rate of 92 percent. Ten percent of all plants achieved an effluent rating of "good" or "very good". Twelve percent of all plants achieved a rating of "fair". Seventy-eight percent of all plants achieved a rating of "poor" or "very poor".[35]

Although current enforcement of standards for effluent discharges shows room for improvement, the Jamaican legal, regulatory and institutional framework shows some positive trends with regard to improving effluent quality:

- **Jamaica has the institutional capacity to set and monitor effluent standards.** The NEPA and the EHU are responsible for setting standards for effluent discharge. Together with the Water Resources Authority (WRA), NEPA and the EHU developed effluent standards, which set the permissible limits on discharge of treated sewage. NEPA is considered to be an effective institution; it has expanded its role since its creation. The OUR regulates the water and sanitation sector and monitors the compliance of service providers with effluent standards. As part of the tariff setting process, the OUR sets targets for the NWC's compliance with NEPA standards
- **During the 2013 tariff submission process, the NWC committed to three ambitious targets with regard to improving effluent quality**[36]:
  - Bring the percentage of wastewater treatment plants that measure effluent quality up to 100 percent by 2015
  - Bring the percentage of wastewater treatment plants that are rated at least "good" in all four reporting periods (quarters) of a fiscal year to 50 percent by 2015. The rating is based on meeting NEPA standards
  - Bring the percentage of wastewater treatment plants that are rated "poor" or worse in two consecutive periods (quarters) during a fiscal year to zero percent by 2017. The rating is based on meeting NEPA standards
- **The NWC redirects wastewater that flows to small malfunctioning treatment plants with poor treatment to functioning treatment plants where it is properly treated.** The NWC operates many small treatment plants that were constructed in tandem with housing developments and then turned over to the NWC. Many of these small plants are malfunctioning and therefore not capable of providing the required level of treatment. In some cases, they were not

[33] The Coastal Water Quality Improvement Project, funded by USAID and the Government of Jamaica.

[34] CReW's Lines, Upgrading Wastewater Management Systems to 21st Century Standards, Newsletter of the Caribbean Regional Fund for Wastewater Management, Vol.1, Issue 2, September 2012.

[35] NWC, Tariff Application 2013.

[36] NWC, Tariff Application 2013.

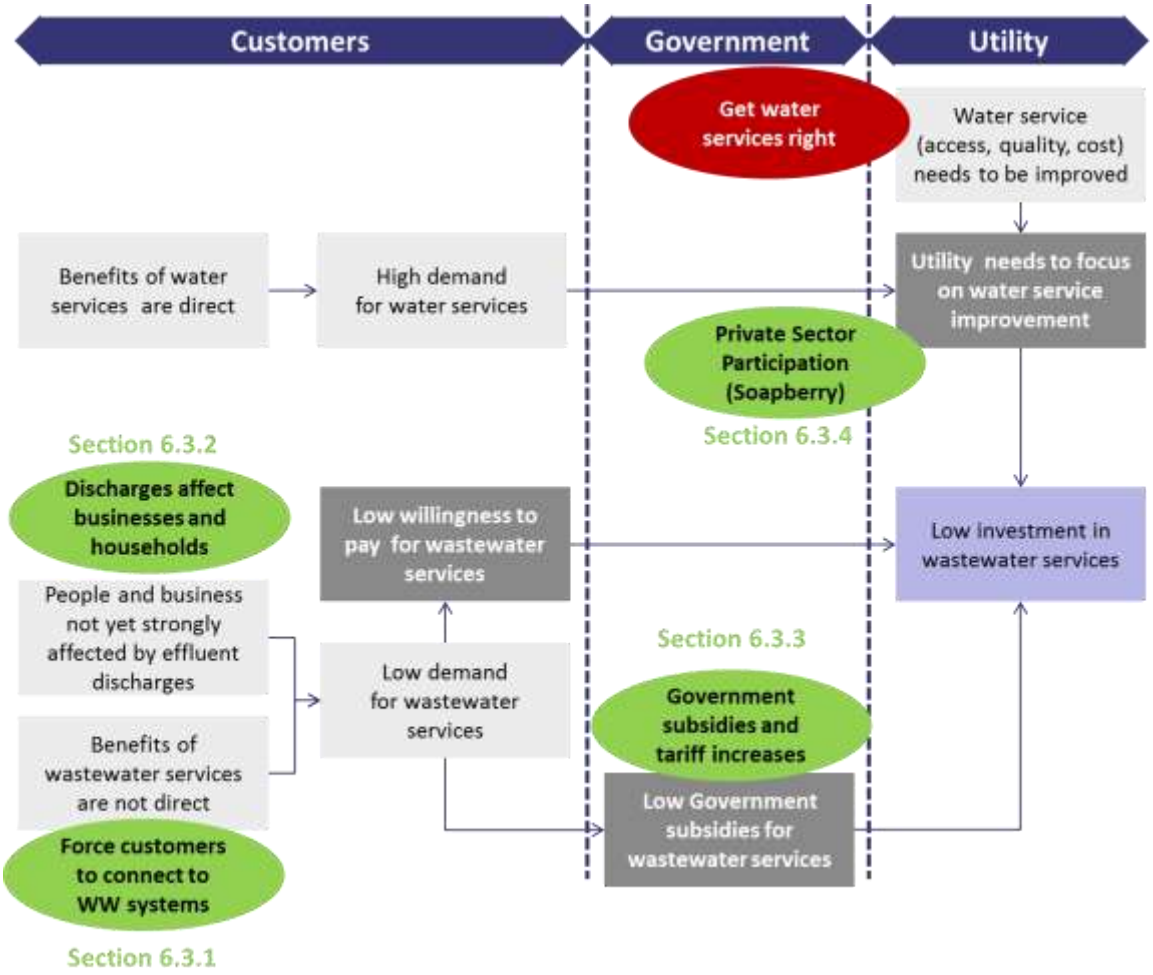
designed to meet the current NEPA effluent standards. The NWC plans to redirect wastewater from small treatment plants with poor treatment to larger plants with proper treatment (see Table 4.6). The small malfunctioning plants can then be decommissioned and retired.

A.3 Several Factors Facilitated the Greater Uptake of Funding for the Wastewater Sector

This section analyzes the main factors that facilitated advances in the wastewater sector in Jamaica. The following factors were instrumental in the greater uptake of funding for the wastewater sector in Jamaica (see Figure 4.2):

- The Government forces customers to connect (Section A.3.1)
- Wastewater discharges affect businesses and households (Section A.3.2)
- The Government provides for subsidies and wastewater tariffs (Section A.3.3)
- The Government encourages private sector participation (Section A.3.4).

Figure 4.2: Factors that Facilitated Uptake of Wastewater Funding in Jamaica



Note: The green shapes indicate factors that facilitated the uptake of wastewater funding in Jamaica. The red shapes indicate factors the impeded the uptake.

A.3.1 The Government forces customers to connect

In Jamaica, there is a statutory obligation for developers to connect new developments to the wastewater systems of the NWC. This obligation has been instrumental in the increase of wastewater investments in the country.

Improvements in sanitation services are, in most cases, a public good. That is, most Jamaican households already have sanitation that keeps 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 piped wastewater 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 and not to the individual household that is connected to the system, it is unlikely that households in Jamaica would be willing to pay for piped wastewater services. Unless required by law, consumers may not be willing to connect to a piped wastewater system.

For this reason, the National Water Commission issued a "Sewerage Connection Policy" that requires new developments to connect to its wastewater systems.[37] If a development is within 90 meters of a system owned by the NWC, there is a statutory obligation for the development to be connected to the system.[38] The developer is responsible for ensuring the development has adequate sewerage facilities in place to support the needs of the development.

Although the NWC's "Sewerage Connection Policy" is an important step in facilitating the uptake of wastewater investments in Jamaica, its impact is limited. The policy is a solution for new housing developments, but it is difficult for the NWC to sewer an existing area with septic tanks. There is little incentive for the customers to connect to a more expensive piped wastewater system.

A.3.2 Wastewater discharges affect businesses and households

Water pollution from discharges drives demand for adequate wastewater collection and treatment in Jamaica. Poorly treated effluent discharges are a risk to the environment and health in Jamaica. Increasing discharges raise the need and customers' calls for adequate wastewater treatment:

- **Water quality and cost of water treatment**: The absence of proper wastewater treatment leads to water pollution, which is affecting water quality. Surface water pollution also raises the cost of water treatment for the NWC. For example, the NWC had to shut down wells near Kingston because of nitrite pollution from septic tanks. It is in the interest of the NWC to improve its wastewater services to achieve a high water quality at reasonable cost.
- **Wastewater charges are a threat to human health and the growing tourism industry**—For example, ongoing pollution through untreated wastewater discharges has contributed to the decline of Jamaica's coral reefs. The resort towns of Negril, Montego Bay, Ocho Rios and areas along the south coast in the Portland Bight protected area have felt the greatest impact. Experts fear that this impact on Jamaica's fragile ecosystem will worsen and damage the country's tourism industry. Tourism is key to the economic growth of the country. It is one of the few local sectors that experienced growth even as the global economy declined.[39]

A.3.3 The Government provides subsidies and wastewater tariffs

In recent years, the Government ensured the NWC received the funds it needed to build, operate and maintain its wastewater systems. The Government provided the NWC with access to the three following sources of funding:

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[37] NWC, Policy for Customers Connections to the Commission's sewerage facilities, Final Draft, http://www.nepa.gov.jm/symposia_03/Policies/Sewage_Connection_Policy.pdf (accessed on October 1, 2013).

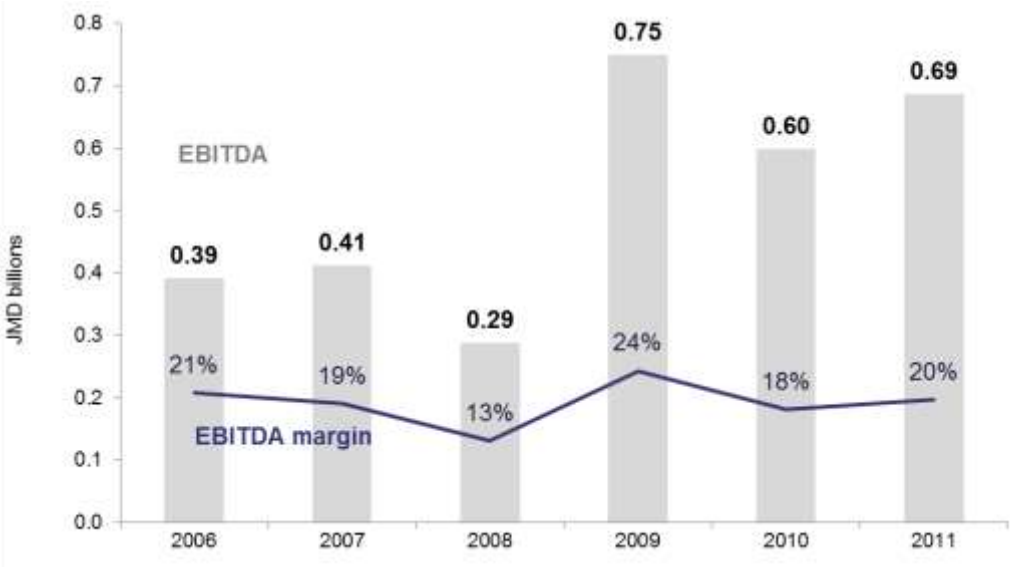
[38] NWC Developer's Manual Handbook, Water and Sewerage Services by the National Water Commission, Volume 3, Section 3, http://www.jamaicatradeandinvest.org/pdf/vol3/section3_water_sewerage_services.pdf (accessed on October 1, 2013).

[39] Inter Press Service, Human Activity and Climate Change Threaten Tourism in Jamaica, June 2012, http://www.ipsnews.net/2012/06/human-activity-and-climate-change-threaten-tourism-in-jamaica/, (accessed on October 9, 2013).

- Until recently, the Government subsidized the capital investments in wastewater facilities
- The OUR approved wastewater tariffs that allowed the NWC to recover the operation and maintenance costs of its wastewater facilities
- The Government allowed the NWC to charge its customers a tariff component ("K Factor") that is used to cover the NWC's capital investments or debt repayments for long term loans, respectively.

Figure 4.3 shows that the NWC had a positive EBITDA margin for its wastewater services from 2006 to 2011. This means that NWC collected sufficient revenue from its wastewater tariffs to cover the expenses of its wastewater operations.

Figure 4.3: NWC's EBITDA Margin for Wastewater Services is Positive (2006-2011)



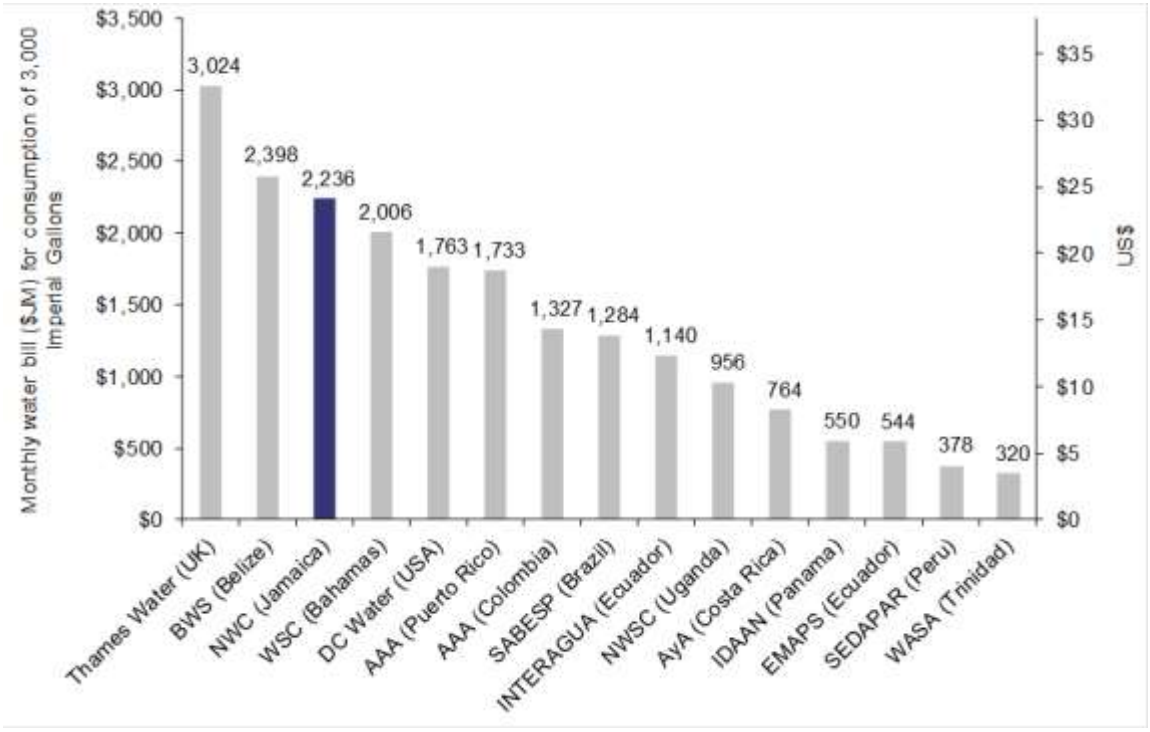
Source: NWC Audited Financial Statements, 2006-2011

Although providing sufficient funds to the NWC for its wastewater operations has been crucial for the advances in wastewater services in Jamaica, the existing framework for wastewater funding shows the following limitations:

- **Once the NWC has connected all customers that represent "low hanging fruits", it will be unlikely to charge wastewater tariffs that ensure cost recovery**. It seems that the NWC's current wastewater customers are high-income customers who can afford being connected to a piped wastewater system. Jamaicans with access to the wastewater system tend to have higher incomes than those without access. Of the 40 percent of Jamaicans with the highest income, 23 percent use a toilet facility with access to the sewage network. This level of spending and the relative wealth of those with access to the wastewater system suggest that most Jamaican households with access to the wastewater system can afford to pay for wastewater services in addition to water supply.
- **The Government of Jamaica does not subsidize the NWC**. While the lack of subsidies puts some pressure on the NWC to become more efficient and self-

sufficient in its water services, it might slow down investments in the wastewater sector. The NWC does not have sufficient revenue to finance the planned capital investments with its own funds. Raising tariffs and the K-Factor to a level where they would cover future wastewater investments is likely to be socially unacceptable. Current water tariffs in Jamaica are already relatively high compared to the region (see Figure 4.4).

Figure 4.4: Monthly Water Bill: Comparison with other Utilities



Source: The monthly water bill is calculated by applying the tariff scheme published on the websites of the utilities to an assumed average household water consumption of 3,000 imperial gallons per month.

A.3.4 The Government encouraged private sector participation in wastewater services

The NWC outsourced the management and operation of wastewater treatment plants to private companies. This has the following advantages:

- A private operator of wastewater assets usually has more experience and can operate more efficiently than the NWC
- Contracting wastewater services out allows the NWC to continue allocating most of its financial and human resources to urgently needed water sector improvements instead of shifting them to the wastewater business.

A successful example of Jamaica's experience with private operation of a large wastewater treatment plant is the Soapberry Wastewater Treatment Plant. This is a privately operated plant in the Greater Kingston area. The plant has a capacity of approximately 30 million

cubic metres per year and provides tertiary treatment of wastewater.[40] The company that owns the plant—the Central Water Treatment Company CWTC—charges a tariff to NWC, which in turn bills its clients for the service provided by the plant.

As for smaller plants, the Government recently put a hold on the issuing of new licenses to housing developers to avoid "cherry picking" behavior. Some private operators are serving only the lower-cost, higher-tariff commercial customers within their service area. This could deprive the NWC of the revenue it would use to subsidize the higher-cost, lower-tariff residential areas. Better regulation is needed that requires private developers to also supply to more difficult customers in their areas.

A.4 Several Factors Impede the Greater Uptake of Funding for the Wastewater Sector

In addition to the factors described in the section above, the need for the NWC to focus on improving its water services is a critical factor that has impeded the greater uptake of funding for the wastewater sector. As long as the NWC needs to focus on improving coverage and quality of its water services, and on bringing down the cost of water, it will not have the resources to substantially improve its wastewater services.

The factors identified in the last section can be summarized as:

- Households in existing developments with septic tanks are unlikely to be willing to connect to a piped wastewater system. The NWC only forces new developments to connect
- Once the NWC has connected all customers who are a "low hanging fruit", it will be unlikely to charge wastewater tariffs that ensure cost-recovery. The Government will then need to find a socially acceptable way of raising funds for wastewater services. The Government of Jamaica recently stopped subsidizing the NWC's investments in wastewater infrastructure. This does not indicate any progress on ensuring the availability of funding for wastewater services in the future
- The Government has put a hold on private operation of smaller wastewater treatment plants to prevent them from "cherry picking behavior". The Government needs to find a solution to the problem before the OUR continues to issue licenses to private operators.

In addition to these factors, the Government, through the NWC, needs to focus on improving the quality and efficiency of water services. As long as the following issues in the Jamaican water sector are not improved[41], the Government, and NWC, may be distracted from making noticeable improvements in the wastewater sector:

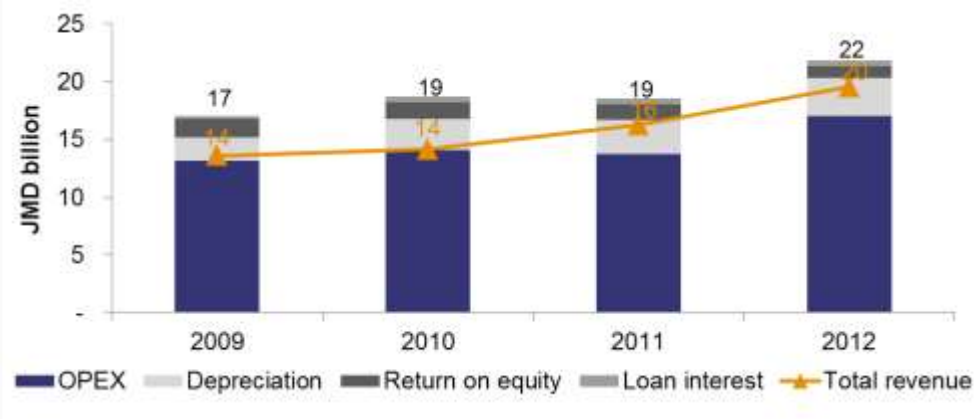
- In 2012, piped water supply only reached 70.3 percent of the Jamaican population

[40] The Gleaner, Soapberry: Solving the Corporate Area's sewage problems, October 2010, http://jamaica-gleaner.com/gleaner/20101010/lead/lead9.html (accessed October 9, 2013).

[41] NWC, Tariff Application 2013.

- A comparison of the affordability of NWC's water tariffs to those of selected utilities shows that water bills are a relatively large share of total household expenditure in Jamaica compared to other countries
- The NWC operates inefficiently. Its percentage of non-revenue water in 2012 was 69 percent, which is well above the level of most water utilities in The Caribbean
- The NWC's net profit margin was negative 11 percent in 2012
- From 2009 to 2012, the NWC's total revenue was not sufficient to cover the cost of service (see Figure 4.5).

Figure 4.5: NWC's Revenue Does not Cover the Cost of Service (2009-2012)



Source: NWC, Tariff Application 2013

Appendix B: Review of the Terms of Financing and Legal and Institutional Prerequisites

Many investments in the wastewater sector in the participating countries are financed with loans from development banks (primarily, the Inter-American Development Bank, the World Bank, and the Caribbean Development Bank).[42] These loans have similar terms of financing and legal and institutional prerequisites. Of the loans that we reviewed, only those approved after 2010 have financing dedicated exclusively for the wastewater sector. All of the loans have an institutional strengthening component (Section B.1). To date, these components have not demonstrated the effectiveness required to increase the participating countries' capacity to efficiently use funds for wastewater investments.

All loans have a similar structure and are concessional (Section B.2). Some loans have revolving fund elements. All loans have similar general contractual conditions that aim to ensure the proper management of the project and the loan (Section B.3). In most loans, the banks require adequate operation and maintenance of the funded wastewater assets. They also require the Government and the utilities to implement revenue-increasing measures. These requirements also aim at increasing the countries' absorptive capacity for wastewater funding. However, the requirements' effectiveness is limited.

B.1 Loans from Development Banks for Financing for Wastewater Include Several Components

The development bank loans to the participating countries include more than a wastewater component. In particular, the loans made by the IDB and the World Bank before 2010 include wastewater system rehabilitation or expansion only as a minor component of loans for the water and wastewater sectors (Section B.1.1). All loans provide for an institutional strengthening component that aims at improving the institutional framework in which the investment will take place (Section B.1.2). However, their impact on improving the countries' absorptive capacity has been limited.

B.1.1 More recent loans focus solely on the wastewater sector

Of the ongoing loans to the participating countries by the IDB and the World Bank, only the more recent loans such as the ones to Belize, Guyana, and Trinidad and Tobago are exclusively for the wastewater sector (see Table 4.7). The earliest loans that are still active are the "Kingston Water and Sanitation Project" approved in 2004 and the "Inner City Basic Services for the Poor Project" approved in 2006 in Jamaica. In both loans, investments in wastewater systems are a relatively small component.

Table 4.7: Ongoing Loans for Wastewater in the Participating Countries

Country	Bank	Loan Contract (Loan Proposal)	Loan Name	Sectors	Approval Date
Barbados	IDB	2255/OC-BA (BA-L1015)	Water and Sanitation Systems Upgrade	W and WW	December 2009

[42] As there is no readily available data on loans other than those provided by development banks for wastewater investments in the participating countries, the analysis in this report is limited to loans provided by development banks.

Belize	IDB	2486/OC-BL BL-L1015	Integrated Water and Sanitation Programme for the Placencia Peninsula	WW	December 2010
Guyana	IDB	2428/BL-GY (GY-L1025)	Georgetown Sanitation Improvement Project	WW	October 2010
Jamaica	IDB	(JA-0114)	Kingston Water and Sanitation Project	W and WW	June 2004
Jamaica	WB	4819-JM (P091299)	Inner City Basic Services for the Poor Project	Multiple Sectors	March 2006
Trinidad and Tobago	IDB	2600/OC-TT (TT-L1018)	WASA Modernization and WW Infrastructure Rehabilitation Program	WW	October 2011
Trinidad and Tobago	IDB	2890/OC-TT (TT-L1026)	Multi-Phase Wastewater Rehabilitation Program – Phase I	WW	December 2012

Note: W = water sector, and WW = wastewater sector.

B.1.2 Institutional strengthening components in loans aim at improving the countries' absorptive capacity for wastewater funding

All the loans from the development banks have had institutional strengthening components. These components aim at improving the countries' absorptive capacity for wastewater funding. However, to date, their effectiveness has been limited.

All currently available development bank loans to the participating countries have an institutional strengthening component (see Table 4.8). These components account for anywhere from 0.8 percent to 41 percent of the total loan amount. In most cases, meeting the targets for the institutional strengthening component is not a precondition for loan disbursements. The IDB loan to Jamaica for the Kingston Water and Sanitation Project that was approved in 2004 is an exception. The loan agreement provided that once 60 percent of the disbursements were reached, the Bank would decide about further disbursements based on the progress made on the institutional strengthening targets.

Table 4.8: Wastewater and Institutional Strengthening Components

Country	Loan Contract (Proposal) Number	Total Loan Amount	Wastewater Component		Institutional Strengthening Component	
		US$ million	US$ million	%	US$ million	%
Barbados	2255/OC-BA	53	3.45	7%	6.4	12%
Belize	2486/OC-BL	10	9.6	96%	0.4	4%
Guyana	2428/OC-GY	10	9.8	98%	0.3	2%
Jamaica	(JA-0114)	54.7	4	7%	7.6	14%
Jamaica	4819-JM	32.8	<2	<6%	3.9	13%
Trinidad	2600/OC-TT	50	29.4	59%	20.6	41%

and Tobago						
Trinidad and Tobago	2890/OC-TT	246.5	242.3	99.2%	4.2	0.8%

Note: The percentage of the wastewater component is calculated as the amount of funds allocated to the wastewater component (except institutional strengthening) of the loan divided by the total amount of the loan.

The institutional strengthening components recognize the fact that the participating countries need help to undertake large investments in their wastewater sectors. The components target the institutions that are key to the execution of the loan—the governments, the utilities, and, in the case of community-based management of wastewater infrastructure, the communities. The components aim at improving the readiness of these key institutions to successfully carry out the initial investment and adequately operate and manage the new or rehabilitated wastewater assets in the future.

Some of the institutional strengthening components address the main issues that limit the countries' absorptive capacity for wastewater funding and thus prevent the adequate development of the sector (see Table 4.9). Three examples of such components, which can be found in the existing loans, are:

- **Measures for improving the overall efficiency of utilities, especially in the water sector**—These measures aim at reducing the utilities' operating expenses, for example through reducing their non-revenue water. As utilities improve operating efficiency, thereby decreasing operating expenses, this can improve their financial situation such that they reduce the need for subsidies to cover the cost of providing water services. This reduced need for subsidies for operating water services may translate into more funds being available for developing and operating wastewater assets
- **Capacity building for staff on wastewater systems operation and maintenance—**These measures provide for training of the utilities' staff members in critical aspects of wastewater management. To date, the utilities in the participating countries prioritized water services. The skillsets of their employees are therefore skewed towards water services. Capacity building in wastewater operations and maintenance aims at preparing staff in the utilities to adequately operate and maintain wastewater systems in the future
- **Launching a public awareness campaign about the benefits of wastewater services**—This is a step in the right direction to making households and businesses understand that their free-rider behavior with regard to connecting to wastewater systems might have negative environmental and health consequences in the future. A successful awareness campaign might encourage households and businesses to voluntarily connect to wastewater systems or to put pressure on the Government to rehabilitate or expand wastewater systems, and to find a socially acceptable way of financing their maintenance and operation.

However, the institutional strengthening components are subject to the two following limitations:

- In practice, the institutional strengthening targets are "soft" with no sanctions in the event that they are not met. As mentioned above, loan disbursements are not usually dependent upon progress on the institutional strengthening components
- The institutional strengthening components do not address all critical issues that limit the countries' absorptive capacity for wastewater funding. For example, none of the existing loan agreements requires the Governments to find ways to encourage or force households to connect to piped wastewater systems.

Table 4.9 below describes the institutional strengthening component of seven projects in the participating countries.

Table 4.9: Description of Institutional Strengthening Components

Country	Project Number	Component Name	Component Description
Barbados	BA-L1015	Reorganization and modernization of the BWA	▪ Preparation of a long-term business plan including a human resources strategy, the implementation of approved organizational changes, an operational strategy (standard operational procedures), change management, benchmark performance standards, 24-hour service provision, a long-term customer service plan, and a review of the role of the BWA as regulator of water abstraction – to prepare the BWA for regulation by the Fair Trading Commission ▪ Integration of IT systems ▪ Installation of the Customer Information System (CIS) and subsequent training ▪ Preparation of a public awareness campaign/stakeholder management
Belize	BL-L1015	Institutional Strengthening	Since BWS is a new executing agency for Bank-financed projects, institutional strengthening will focus on providing the knowledge transfer through: ▪ Training sessions for BWS staff for new technologies and activities related to the construction oversight ▪ Public awareness campaigns to promote public education on wastewater management and to increase understanding of the construction process and customer responsibilities ▪ Establishment of benchmarks for replication of additional wastewater investment projects in Belize
Guyana	GY-L1025	Institutional Strengthening of GWI	This component will strengthen GWI's Wastewater Management Division and GWI's Energy Efficiency Group through: ▪ Development of an asset management implementation strategy, focusing mainly on operation and maintenance of physical assets ▪ Knowledge transfer and staff training programs on wastewater operation and maintenance practices ▪ Public awareness campaigns, specifically targeted towards schools and business owners (hotels and restaurants in particular)
Jamaica	JA-0114	Reorganization and modernization of NWC	This component has the goal to have NWC operated and managed in an efficient and sustainable manner, in particular:

			▪ Customer service, to include billing and collection, customer information system, including the study to change the tariff structure, so that subsidies are targeted only to the fourth quartile of the population ▪ Capacity building and training, in areas such as procurement, asset management and maintenance, customer service, with the aim at not only improving technical skill but also to start a cultural change in NWC ▪ Customer education ▪ Strengthening the management information system, including compliance with the regulator and reporting to the Bank and mid and final evaluations ▪ Private sector participation, to include improving its model contracts for outsourcing services, both existing and new ones, and studies to identify opportunities for private sector participation ▪ Support for changes in the corporate structure. Concurrently, NWC is rationalizing its staff, a process that includes the payment of severance, retraining and counseling
Jamaica	P091299	Public Safety Enhancement and Capacity Building	This will finance integrated packages of consultant services, training and technical assistance focused on both short-term mitigation and conflict resolution and medium-term social prevention and capacity enhancement interventions. In particular, the component will finance the delivery of violence prevention services in five core social prevention areas including mediation and conflict resolution, alternative livelihoods and skills development, family support programs, youth education and recreation, and CBO capacity building. The component will also finance the mobilization of community liaison officers in project areas to serve as facilitators.
Trinidad and Tobago	TT-L1018	1) Reorganization of WASA 2) Institutional Strengthening of WASA in WW management	▪ Support to the implementation of transformational actions concerning the organizational structure, financing about 550 voluntary separation plans ▪ Voluntary vocational training for employees accepting the separation plan ▪ Preparation of O&M manuals for the new system and assets ▪ Training activities on O&M and the newly created SOP for the improved wastewater systems ▪ Training on environmental safeguards, and support to WASA's water quality monitoring program
Trinidad	TT-L1026	Institutional	▪ Implementation of key actions to improve corporate governance (such as the development

and Tobago		Strengthening for WASA	of comprehensive corporate governance policies, the improvement of the current transparency and disclosure practices, training on risk management and controls systems, the establishment of a permanent Financial Statements Team to strengthen auditing and internal control practices) ▪ Implementation of key actions to improve commercial management services (including new billing system) ▪ Training activities on contract management of outsourced operations, operation and maintenance, and environmental management.

B.2 Terms of Financing

The existing loans from the IDB and the World Bank to participating countries have similar terms of financing. This section provides an overview of the common characteristics of the terms of financing in the loans:

- In most cases the borrower is the Government (Section B.2.1)
- If the borrower is the Government, the banks require low levels of counterpart financing (Section B.2.2)
- All loans are concessional loans (Section B.2.3).

B.2.1 In most cases the borrower is the Government

In most cases, the national government is the borrower (see Table 4.10). The IDB loan for the Kingston Water and Sanitation Project (JA-0114) is an exception. In this case, the borrower is the National Water Commission.

If the loan is limited to the water and wastewater sectors, the utility is the executing agency. If the loan covers multiple sectors, the executing agency may be another Government institution, which will cooperate with the national utility with regard to the water and wastewater components of the loan. For example, for the loan from the World Bank in Jamaica, the executing agency is the Jamaica Social Investment Fund (JSIF). As far as the wastewater component of the loan concerns the NWC's service area, the JSIF cooperates with the NWC through a Memorandum of Understanding. Table 4.10 below shows that the government is often the borrower for loans from the muiltilaterals.

Table 4.10: Parties of the Loan

Country	Loan Contract (Proposal) Number	Sectors	Borrower	Guarantor	Executing Agency
Barbados	2255/OC-BA	W/WW	Government		BWA
Belize	2486/OC-BL	W/WW	Government		BWS
Guyana	2428/BL-GY	W/WW	Government		GWI
Jamaica	(JA-0114)	W/WW	NWC	Government	NWC
Jamaica	4819-JM	Multi-Sector	Government		Jamaica Social Investment Fund (JSIF)
Trinidad and Tobago	2600/OC-TT	W/WW	Government		WASA
Trinidad and Tobago	2890/OC-TT	W/WW	Government		WASA

B.2.2 If the borrower is the Government, the banks require low levels of counterpart financing

When the government is the borrower, the banks require a low percentage of local counterpart financing (see Table 4.11). Where the borrower is the utility, such as in case of

the IDB loan for the Kingston Water and Sanitation Project (JA-0114) in Jamaica, the counterpart financing requirement is higher. Furthermore, the bank requires that the local amount is funded by cash generated by the utility rather than by Government subsidies to the utility.

Table 4.11: Loan Amount and Percentage of Local Counterpart Financing

Country	Loan Contract (Proposal) Number	Total Amount	Bank Amount	Other Donor Agencies	Local Amount	
		US$ million	US$ million	US$ million	US$ million	%
Barbados	2255/OC-BA	**53**	50	0	3	**6%**
Belize	2486/OC-BL	**10**	5	CReW: 5	0	**0%**
Guyana	2428/BL-GY	**10**	OC: 4.75 FSO: 4.75	0	0.5	**1%**
Jamaica	(JA-0114)	**54.7**	40	0	14.7	**28%**
Jamaica	4819-JM	**32.8**	29.3	0	3.5	**7%**
Trinidad and Tobago	2600/OC-TT	**50**	50	0	0	**0%**
Trinidad and Tobago	2890/OC-TT	**246.5**	246.5	0	0	**0%**

Note: OC = Ordinary Capital; FSO = Fund for Special Operations

B.2.3 All loans are concessional loans

All existing development banks loans are concessional loans, meaning that they offer better conditions than market loans (see Table 4.12). Examples of the concessional conditions found in these loans are:

- Longer amortization periods than those available on the market (from 11.5 years up to 40 years)
- Longer grace periods (from 5.5 years up to 40 years)
- Lower interest rate than available on the market.

Table 4.12: Terms of Financing

Country	Loan Contract (Proposal) Number	Amortization Period	Grace Period	Disburse-ment Period	Interest Rate	Other Fees
		years	years	years	%	%
Barbados	2255/OC-BA	25	5.5	5	LIBOR-based	Max. 0.75%

Country	Loan Contract (Proposal) Number	Amortization Period	Grace Period	Disburse-ment Period	Interest Rate	Other Fees
Belize	2486/OC-BL	25	5.5	5	LIBOR-based	Max. 0.75%
Guyana	2428/BL-GY	OC: 30 FSO: 40	OC: 6 FSO: 40	5	OC: LIBOR FSO: 0.25%	OC: Max. 0.75% FSO: 0%
Jamaica	(JA-0114)	25	5	5	LIBOR*	Credit Fee: 0.25%*
Jamaica	4819-JM	11.5		6	LIBOR + Variable Spread	Front-End: 1% Commitment: 0.75%
Trinidad and T.	2600/OC-TT	25	5.5	5	LIBOR-based	Max. 0.75%
Trinidad and T.	2890/OC-TT	25	5.5	5	LIBOR-based	Max. 0.75%

Note: OC = Ordinary Capital; FSO = Fund for Special Operations

The commitment fee is applied to the unwithdrawn loan balance.

* These amounts are subject to adjustment.

B.3 Legal and Institutional Prerequisites for Executing Projects

This section provides an overview of the general conditions that ensure proper management of the loan and the project. It also provides an analysis of the special prerequisites relating to the operation and maintenance of wastewater systems as well as to revenue-raising measures.

B.3.1 The general conditions aim to ensure proper management of the loan and the project

The general conditions for legal and institutional prerequisites are similar in all existing development bank loans, and are not specific to wastewater services. They aim at ensuring proper management of the project and the loan disbursements. The general conditions in all existing development bank loans can be grouped under the following three categories:

- Conditions for first disbursement
- Execution conditions
- Conditions for financial information and internal control systems, inspections, reports and external audit.

Conditions for first disbursement

The conditions for first disbursement are conditions that need to be met before the banks make their first disbursement. These conditions are mostly related to setting up the project management and coordination between the banks and the Governments.

Chapter IV, Article 4.01 of the IDB General Conditions provide for the following conditions precedent to first disbursement:

- Bank received legal opinion that the obligations undertaken by the government are valid
- One or more government officials have been designated to represent the government in contract implementation
- Government has demonstrated that sufficient resources have been allocated to cover the execution of the project in the first calendar year
- Government has prepared an initial report that includes project planning, such as an implementation plan and a work schedule
- Government has an adequate financial information system and internal control structure for the purposes of the contract.

The IDB also defines special conditions prior to first disbursement in each loan agreement (see Table E.5 in Appendix E). The conditions are similar and can be summarized as:

- A Project Execution Unit has been established
- A Project Steering Committee has been established
- A Project Manager has been hired and key staff has been assigned
- Operational Manual for the project is approved by the Management and Board of Directors of the utility
- Government/Utility has an adequate financial information system and internal control structure for the purposes of the contract
- The Board of the utility has approved an Environmental and Social Management Plan (ESMP) for construction and operation.

Execution conditions

The execution conditions are not tied to disbursements. They are mostly aimed at ensuring that the borrower and the executing agency execute the project in compliance with the banks' guidelines and procedures, as well as with the banks' plans and budgets for the project.

Chapter VI of the IDB General Conditions provide for the following execution conditions:

- The project is executed in accordance with the plans, specifications, investment schedule, budget, regulations, and other documents approved by the Bank
- Contracts of works, procurement of goods, and rendering services for the project shall be undertaken at a reasonable cost which shall generally be the lowest market price, taking into account quality, efficiency, and other factors
- The goods acquired with the funding shall be used exclusively for the purpose of the project
- Borrower shall contribute in a timely manner all resources which might be necessary for the complete and uninterrupted execution of the project.

The IDB also defines special execution conditions in the individual loan contracts (see

Table E.6 in Appendix E). The conditions that are similar in all contracts can be summarized as:

- The Executing Agency shall execute the project in compliance with the Environmental and Social Management Plan (ESMP) and, in some cases, the utility's corporate environmental guidelines
- Goods and works shall be procured in accordance with the Bank policies for the procurement of goods and works financed by the Bank
- The selection and contracting of consultants shall be carried out in accordance with the Bank policies for selection and contracting of consultants financed by the IDB
- Submit to the Bank sufficient information to allow the Bank to carry out a midterm and final evaluation or hire independent consultant to carry out a midterm and final evaluation of the project
- Submit Annual Operation Plans (AOPs)[43] to the Bank for each year.

Conditions for financial information and internal control systems, inspections, reports and external audit

The development bank loans include similar prerequisites with regard to the monitoring and reporting of the projects. For example, Chapter VII of the IDB General Conditions provide for the following conditions for financial information and internal control systems, inspections, reports and external audit:

- Borrower or Executive Agency shall maintain an adequate financial information system and internal control systems
- The Borrower shall permit the Bank at any time to carry out inspections
- The Borrower commits to submit reports on the execution of the project, the investment of the sums lent, the use of goods acquired with sums, or the progress of the project
- The Borrower shall present to the Bank the financial statements
- The Borrower agrees to have the financial statements audited and other reports audited by independent auditors.

The special conditions of each loan agreement specify the general conditions. For example, they provide a detailed list of the required reports, and a detailed schedule of the frequency and due dates of these reports.

[43] Annual Operation Plans (AOPs). (a) The Borrower, through the Executing Agency shall submit to the satisfaction of the Bank, within thirty (30) days prior the conclusion of each calendar year during the execution of the Project, the corresponding AOP for the next year. This AOP shall include the report of the performed activities corresponding to the previous year and the proposed activities for the following year. The AOP shall include as a minimum, the following: (i) a report on the status of execution of the Project for each component; (ii) the procurement plan for the acquisition of works, goods, related services and consulting services, as well as the procurement plan for consultancy services including budget and disbursement projections; (iii) the accomplishment of goals and outcomes of the Project; (iv) progress in meeting results indicators for each component of the Project in accordance with the Results Matrix of the Project; (v) problems raised and solutions taken. The AOP shall be prepared in accordance with the guidelines previously agreed with the Bank and on the basis of reports referred to in Section 5.01.

B.3.2 The banks require adequate operation and maintenance of the wastewater facilities that they finance

The banks require adequate operation and maintenance of the wastewater facilities that they finance. They recognize that capital investments in wastewater infrastructure are not sufficient to improve wastewater services, but that utilities need to adequately operate and maintain the wastewater facilities once they are built. However, most of the banks' requirements with regard to operation and maintenance cannot guarantee that the utilities will actually maintain the assets properly once the loan has ended.

The execution conditions on operation and maintenance in the existing development loans provide two different sets of requirements (see Table 4.13):

- Requirements for the utilities to set up proper processes for planning and carrying out maintenance of the funded wastewater assets at least for the first years of their useful life (all loans except for those for Trinidad and Tobago)
- Requirements for the government to ensure that the utilities receive the funding that they need to properly operate and maintain the funded assets (only loans for Trinidad and Tobago).

Table 4.13: Prerequisites for Operation and Maintenance of Works

Country	Loan Contract (Proposal) Number	Conditions
Barbados	2255/OC-BA	▪ Ensure that all works and equipment included in the project are adequately maintained ▪ Present annual report on status of works and annual maintenance plan to the Bank ▪ Maintenance plan should include details of the organization responsible for maintenance, and information on the resources to be allocated for maintenance during the year
Belize	2486/OC-BL	▪ Ensure that the works and equipment included in the project are adequately maintained
Guyana	2428/BL-GY	▪ Ensure that all works and equipment included in the project are adequately maintained ▪ Present semiannual report on status of works and semiannual maintenance plan to the Bank ▪ Maintenance plan should include details of the organization responsible for maintenance, and information on the resources to be allocated for maintenance during the year
Jamaica	(JA-0114)	▪ NWC will present the Bank annually within the first calendar quarter of each year, for 10 years counting from completion of the first work of the project, an annual Operation and Maintenance plan for the systems financed with loan proceeds. This should include a report on their management in the preceding year and on the condition of the systems
Jamaica	4819-JM	▪ For community-based infrastructure projects, the Jamaica Social

		Investment Fund shall conclude satisfactory arrangements with the legal entity carrying out of the community-based subproject regarding the operation and maintenance of the assets created
Trinidad and Tobago	2600/OC-TT	▪ If WASA, due to the lack of financial resources to maintain its operating balance, requests financial resources from the Government, the **Government shall include in the national budget the necessary provisions to allow WASA to cover at least all of the operating costs relating to the wastewater treatment plants** which were rehabilitated with the loan, including the costs of administration, operations, maintenance, and, insofar as possible, replacement of existing assets
Trinidad and Tobago	2890/OC-TT	▪ Throughout the implementation of the program, **the Government will commit to adopt the necessary measures, so as to assure that WASA will cover its operation and maintenance costs**

The first set of requirements is helpful in terms of capacity building as it obligates the utilities to develop some discipline in proper maintenance planning. As the banks monitor the maintenance activities of the utilities, they encourage the utilities to set up a proper maintenance framework for at least the first years of the wastewater assets' life. However, a proper framework for maintenance planning and monitoring cannot guarantee that the utilities will actually adopt a sustainable approach to maintenance in the medium and long run. These requirements in the loan contracts have two weaknesses:

- They are "soft" requirements with no sanctions in case they are not met
- They are not addressing the most critical prerequisite for adequate maintenance, which is ensuring that the utilities receive the funds they need for their maintenance activities.

The second set of requirements—which is included only in the existing loan contracts for Trinidad and Tobago—is more appropriate to ensure that the utilities will actually maintain the funded assets. The banks require the Government of Trinidad and Tobago to find a way to provide the necessary funds to WASA for maintenance. Whether or not the Government of Trinidad and Tobago will comply with this requirement once the loan has ended may ultimately be a political decision. If the Government faces more pressing issues in other sectors, or does not receive enough pressure from customers to maintain the funded wastewater systems, it may not provide the funds that WASA would need to maintain these systems.

B.3.3 Some loans require revenue-raising measures for sustainability

In the three participating countries where utilities have a negative or low EBITDA margin, the development banks require that the Governments and utilities implement revenue-raising measures. As mentioned before, utilities need to achieve a sound financial and operational performance in the water sector before they can dedicate adequate attention and resources to improving the wastewater sector. Furthermore, the utilities can only adequately operate and maintain wastewater services if they receive the necessary funds. Therefore, some of the revenue-raising measures make sense. However, the measures in at least two of the three

countries—Barbados and Trinidad and Tobago—have not worked well. I describe those measures in detail in Table 4.14.

Table 4.14: Revenue-Raising Measures for Sustainability

Country	Loan Contract (Proposal) Number	Conditions
Barbados	2255/OC-BA	▪ Take appropriate measures to ensure that the rates for the services of wastewater collection and treatment of the particular system related to the project produce revenues at least sufficient to cover all operating expenses of the system, including those related to administration, operation, maintenance, and depreciation. If this does not generate sufficient resources to cover the timely service of the loan, take the necessary measures, which might include rate increases, to obtain the additional resources to achieve that purpose.
Jamaica	(JA-0114)	▪ The NWC needs to make satisfactory progress in the effective implementation of – The tariff approved by the OUR in December 2003 – The NWC Modernization Plan ▪ Within two years of the project execution, the NWC shall submit a new tariff study and request the OUR to approve a change in NWC's tariff structure to ensure targeting subsidies only to the fourth quartile of the population ▪ Have no later than the third year of project execution, operating revenues sufficient to cover operation, maintenance, administrative expenses and depreciation throughout the execution of the loan, or adopt appropriate measures to assure such coverage ▪ Have, no later than the third year of the project execution, internal net cash generation sufficient to cover at least 20 percent of NWC's capital expenditure plan, or adopt appropriate measures to assure such coverage ▪ The **Government shall limit subsidy transfers to NWC to payments to special projects such as environmental (wastewater treatment plants)** and social projects (communities in the fourth quartile of the Jamaica Poverty Map) ▪ The Government shall make timely payments, on a quarterly basis, to NWC for water consumed at standpipes ▪ An **agreement between the Government and NWC whereby the Government will commit to transfer funds to NWC to cover debt payment related to the subcomponents of the sewerage treatment plant**
Trinidad and Tobago	2890/OC-TT	▪ Prior to the end of the third year of the program's execution the Government, directly or through WASA, shall submit – Evidence that, once the competent authority has

		established new principles and methodologies by which WASA can determine the adjustments in the rates for the services it provides, such principles and methodologies are being implemented by WASA – A detailed plan for the attainment of WASA's self-sufficiency on a phased basis showing the impact of the adjusted rates on WASA's cost-recovery ▪ Prior to the end of the fourth year of the execution of the program, the Government, directly or through WASA, shall submit evidence that WASA has purchased and installed a new billing system

The IDB loan agreement for the "Water and Sanitation Systems Upgrade" project in Barbados requires that the revenue collected for the funded wastewater plant has to cover the cost of service of the plant. The cost of service includes operating expenses, and the debt repayment to service the IDB loan. If necessary, this needs to be achieved through tariff increases, or other measures.

The IDB loan agreement for the "Multi-Phase Wastewater Rehabilitation Program" project in Trinidad and Tobago requires that WASA adjusts its tariffs to achieve cost-recovery, and improves its billing system. Achieving a sound financial and operational performance in the water sector before WASA turns towards the wastewater sector is a good first step.

These approaches have two weaknesses:

- **As long as the utility does not have a sound performance in the water sector, the Government is not likely to dedicate enough resources to the wastewater treatment plant once the loan has ended**.
  - The BWA, the water utility in Barbados, has a negative EBITDA margin of minus 17 percent, and currently receives Government subsidies. Given this situation, I believe the Government will first secure funding for the water sector as it responds to pressure from households to provide water.
  - Since WASA may not be able to improve the performance of its water business in the short term, it seems unlikely that the Government will dedicate the needed funds to WASA's wastewater business. WASA's EBITDA margin is minus 219 percent. The resulting deficits are promptly and periodically covered by the Government in the form of subsidies. It seems thus unlikely that the Government will soon be in a position to transfer subsidies to WASA for covering wastewater costs.
- **The revenue-raising measures should not focus solely on cost-reflective wastewater tariffs.** For the reasons mentioned before, putting in place wastewater tariffs that are cost-reflective may be counterproductive until the quality of service provided by the water utilities improves. In fact, the Governments should be encouraged to look into alternative sources of funding for wastewater services other than tariffs.

B.3.4 Other special conditions

The existing development bank loans also provide for very project- or country-specific legal or institutional requirements. Table 4.15 provides an overview of these requirements.

Table 4.15: Other Special Execution Conditions

Country	Loan Contract (Proposal) Number	Conditions
Jamaica	4819-JM	For community-based infrastructure projects, the Jamaica Social Investment Fund shall: ▪ Perform an environmental and social screening of every subproject prior to its approval ▪ Enter into an agreement with a registered legal entity of the project community, whereby the legal entity undertakes to carry out the corresponding community-based project, and provides a community commitment to a minimum five-percent community contribution in cash or in kind, and satisfactory arrangements for the carrying out of the community-based subproject and the operation and maintenance of the assets created
Trinidad and Tobago	2600/OC-TT	▪ Prior to starting rehabilitation works in an abandoned wastewater treatment plant, the Government, through WASA, shall obtain the possession of the real property where that wastewater treatment plant is located ▪ The Government, through WASA, shall submit to the Bank evidence that a policy document aimed at preventing the abandonment of private wastewater treatment plants has been approved by WASA's Board
Trinidad and Tobago	2890/OC-TT	▪ Prior to the award of the contract for the construction of works for each of the wastewater treatment plants, the Government through WASA, shall present evidence that it has obtained the possession of the real property where the wastewater treatment plant will be built ▪ Prior to the issuance of the RFP for the tender of the construction of each wastewater treatment plant, the Government, directly or through WASA, shall submit a completed hydrological baseline and flood risk assessment, as well as an updated assessment of potential environmental and social risks and impacts, including details of the mitigation measures to be implemented during the design, construction and operation of the respective wastewater treatment plants

Appendix C: Checklist to Assess a Country's Readiness

Institutional framework

- Do the institutions involved in the wastewater sector have experience with the wastewater business?
- Who is responsible for collecting and treating wastewater? If there are multiple entities responsible for doing so, list the jurisdiction and entity.
- Do the utilities already operate in the wastewater sector?
  - If so, does the water utility have a department with adequate capacity that's dedicated to wastewater treatment and collection?
- Does the utility have any contracts with private companies for operations and maintenance of wastewater facilities? If so, list those contracts.

Legal and regulatory framework

- Is there any law or regulation that forces or encourages people to connect to a centralized wastewater collection system?
  - If so, does the utility charge customers who are supposed to connect, even if they did not connect?
- Are there any laws or regulations in place that specify effluent standards?
  - If so, does any entity verify compliance with the effluent standards?
- Is there a regulatory framework in place for setting tariffs and quality of service standards?
  - If so, does any entity verify the compliance with the tariff setting mechanism and quality of service standards?
- Does the legal framework allow contracting private companies to design, build, and operate and maintain wastewater facilities?

Demand for wastewater services

- Are there regions where wastewater has become a threat to human health and the environment, and where people or businesses are calling for improved wastewater services?
- Is there any region with expected rapid growth where demand and willingness to pay for wastewater services are high? (for example, in the tourism sector)

Performance of the wastewater sector

- What is the wastewater service coverage?
  - What is the percentage of access to improved wastewater services in the country?
  - What is the percentage of access to a centralized wastewater collection system?
- What is the quality of wastewater treatment?

- What is the percentage of wastewater treated appropriately in the country?

Performance of the service providers

- Does the water utility operate at a reasonable level of efficiency?
  - What is the water utility's level of Non-Revenue Water?
  - What is the water utility's staff efficiency (number of employees per thousand customers)?
  - What is the water utility's collection rate?
- Are the utility's customers satisfied with the quality of service they are receiving?
- If effluent standards exist, has the utility complied with them during each of the past three years?
- Does the utility publish information regarding the performance of its water and wastewater operations?
- Are there any existing wastewater facilities that are abandoned or not operational because the utility does not have the financial capacity or technical competence to operate those facilities?
- Does the water utility have adequate financial capacity?
  - What is the utility's operating cost recovery level?
  - What is the utility's debt service coverage ratio?
  - Has the utility registered positive net income in the past three years?
  - Is the utility able to cover any of its capital expenditures with internally-generated cash flows?
- Does the utility have a master plan or capital expenditure plan for wastewater?
  - If so, for what percent of the capital expenditure has it contracted funding?

Access to financing and financing mechanism

- Does the Government have access to sufficient financing (debt) to fund the reform process including investments in wastewater infrastructure?
- Is the Government willing and able to provide adequate subsidies to cover capital expenditures and operating expenses related to wastewater?
  - If so, approximately what percent of operating expenses are covered with these subsidies?
  - If so, how are these subsidies funded (for example through national taxes, property taxes)?
- Does the water utility charge tariffs for wastewater treatment and collection? Approximately what percent of operating expenses related to wastewater do those tariffs cover?
- Is there pressure on the Government to reduce or stabilize water and wastewater tariffs?

- If not, is there room for increasing the wastewater tariffs?
- Are the tariffs high compared to the region?

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Appendix E: Overview Tables

This section contains the following overview tables:

- Current Service Coverage and Government Objectives with Regard to Wastewater Services (Table E.1)
- Wastewater Service Providers and Their Service, Operational and Financial Performance (Table E.2)
- Ongoing and Planned Wastewater Projects and Current Level of Capital Expenditure (Table E.3)
- Available Funding for Wastewater Infrastructure by Multilateral Financial Institutions (Table E.4)
- Special Conditions Prior To First Disbursement (Table E.5)
- Special Execution Conditions (Table E.6).

Table E.1: Current Service Coverage and Government Objectives with Regard to Wastewater Services

Country	Access to Wastewater Facilities	Access to Centralized WW Services	Cartagena Convention?	LBS Protocol?	Government Objectives for WW Sector?	Government Objectives	References
Antigua and Barbuda	**98% (urban)** (2008)	**0%** (2006)	✓	✓	✓	Wastewater treatment system in Saint John's City by 2020	▪ Campbell, O., UN Report Ranks Antigua and Barbuda High on Sanitation ▪ GEF-IWCAM, A National Integrated Water Resources Management (IWRM) Policy
Barbados	**99.2%** (2010)	**4.7%**	✓	**X** (plan to ratify soon)	✓	Government Action Plan in preparation	▪ IDB, Loan Proposal, BA-L1015 ▪ IDB Country Strategy with Barbados (2009-2013) ▪ CDB, Barbados Country Assessment of Living Conditions 2010
Belize	**85% (urban) 32% (rural)** (2008)	**14%** (2008)	✓	✓			▪ Castalia, Belize Water and Sanitation Strategic Sector Plan
Guyana	**85% (urban) 80% (rural)** (2008)	**7%** (2008)	✓	✓	✓	Georgetown wastewater system rehabilitated	▪ IDB, Loan Proposal GY-L1025, 2010
Jamaica	**80%** (2011)	**15%** (2012)	✓	**X** (plan to ratify soon)	✓ 37% (2018), 60% (2020)	All (20) major towns have proper centralized wastewater services	▪ Jamaica Ministry of Water and Housing, Jamaica Water Sector Policy ▪ NWC Tariff Application 2013 ▪ WHO/UNICEF, Joint Monitoring Programme, 2013
Saint Lucia	**87%** (2001)	**5%** (2001)	✓	✓			▪ Castalia, Case Study Evaluating the Regulatory System of Saint Lucia
Saint Vincent and the Grenadines	**>60%** (2007)	**<1%** (2007)	✓	**X**	✓	Wastewater service to urban population and tourism industry	▪ CWSA Website ▪ Saint Vincent Ministry of Health and the Environment, Strategic Plan for Health
Suriname	**>85% (urban) 0% (rural)** (2010)	**0%** (2010)	**X**	**X** (plan to ratify soon)			▪ IDB, Loan Proposal SU-L1018, 2010
Trinidad and Tobago		**30%** (2012)	✓	✓	✓ 75% (2020)	Solution to"orphan" packaged wastewater treatment plants	▪ WASA, Wastewater Strategic Plan, 2011-2020

Table E.2: Wastewater Service Providers and Their Service, Operational and Financial Performance

Country	Short Name	Ownership	Sole Utility?	WW Service Coverage	W/WW Connections	NRW (%)	EBITDA Margin	Reference
Antigua and Barbuda	APUA			**0%** (2006)				▪ Castalia, Regulating Wastewater Services in Developing Countries, Explanatory Note 7
Barbados	BWA	100% Gov.	✓	**4.7%**	100'/4.5'	54%	-17.3%	▪ IDB, Loan Proposal, BA-L1015 ▪ CDB, Barbados Country Assessment of Living Conditions 2010 ▪ IDB, Country Strategy Barbados,. 2009-2013
Belize	BWS	Majority Gov.	✓	**14%** (2008)	43'/11'	27%	33%	▪ Castalia, Belize Water and Sanitation Strategic Sector Plan ▪ IDB, Loan Proposal BL-L1015
Guyana	GWI	100% Gov.	✓	**7%** (2008)	122'/48'	65%	27%	▪ IDB, Loan Proposal GY-L1025, 2010 ▪ Caribbean360, Loan granted to improve water supply in Guyana
Jamaica	NWC	100% Gov.	✓	**15%** (2012)	347'/98.7'	69%	5%	▪ NWC Tariff Application 2013
Saint Lucia	WASCO	100% Gov.	✓	**5%** (2001)	57'/1.2'	45%	23%	▪ Castalia, Case Study Evaluating the Regulatory System of Saint Lucia
Saint Vincent and the Grenadines	CWSA	100% Gov.	✓	**<1%** (2007)		35%		▪ Castalia, Benchmarking of Water Utilities for the WSC, The Bahamas
Suriname	SWC	100% Gov.		**0%** (2010)		45%		▪ IDB, Loan Proposal SU-L1018, 2010
Trinidad and Tobago	WASA	100% Gov.	✓	**30%** (2012)		40%	-219%	▪ WASA, Improving Water and Sanitary Services in Trinidad and Tobago

Table E.3: Ongoing and Planned Wastewater Projects and Current Level of Capital Expenditure

Country	Short Name	Ongoing Wastewater CAPEX Projects	Planned Wastewater CAPEX Projects	Average Annual Total CAPEX	Average Annual WW CAPEX	Reference
Antigua and Barbuda	APUA					
Barbados	BWA	▪ Sanitation Systems Upgrade (US$3.45 million)	▪ West Coast Sewerage Plant (US$150 million), Septage Handing Facility	US$6 million		▪ IDB, Loan Proposal, BA-L1015 ▪ Barbados Audit Office, Special Audit of the BWA ▪ Castalia, Case Study Evaluating the Regulatory System of Barbados
Belize	BWS	▪ Ambergris Caye Water and Sewerage Extension Project ▪ Placencia Sewerage System (US$10 million)	▪ Belize City, Belmopan, Caye Caulker, Corozal Commercial Free Zone, Hopkins and Sittee River (US$149 million)	US$3.3 million		▪ Castalia, Belize Water and Sanitation Strategic Sector Plan ▪ IDB, Loan Proposal BL-L1015 ▪ BWS Annual Report 2012
Guyana	GWI	▪ Georgetown Sanitation Rehabilitation (US$7.5 million)				▪ IDB, Loan Proposal GY-L1025, 2010
Jamaica	NWC	▪ Kingston Sanitation Rehabilitation Project (US$4 million) ▪ Port Antonio Water and Sewage (US$15 million)	▪ Wastewater systems for 20 major towns (Planned WW CAPEX 2013-2022: US$580 million)	US$83.6 million	US$6.2 million	▪ NWC Tariff Application 2013
Saint Lucia	WASCO			<US$1 million		▪ Castalia, Case Study Evaluating the Regulatory System of Saint Lucia
Saint Vincent a.d.G.	CWSA					
Suriname	SWC					
Trinidad and Tobago	WASA	▪ Multi-Phase WW Rehabilitation Program, (US$246.5 million) ▪ WASA Modernization and WW Infrastructure Rehabilitation Program (US$50 million)	▪ Wastewater service expansion from 30% in 2011 to 75% by 2020 (Estimated total WW CAPEX: $4.1 billion)		No substantial investments into WW	▪ IDB, Loan Proposal, TT-L1018, 2010 ▪ IDB, Loan Proposal, TT-L1026, 2013

Table E.4: Available Funding for Wastewater Infrastructure by Multilateral Financial Institutions

Country	IDB	CDB	WB	EIB
Antigua and Barbuda			Eligible: IBRD	
Barbados	**BA-L1015** Water and Sanitation Systems Upgrade (South Coast Sewerage System) US$3.45 million			
Belize	**BL-L1015** Integrated Water and Sanitation Program for the Placencia Penninsula US$10 million	**No. 15/12-BD** Ambergris Caye Water and Sewerage Project (Loan for Consulting Services) US$750,000 **BNTF 7** Various Water and Sanitation Projects tbd (<US$5.5 million) **BNTF 4, 5, 6** Various Water and Sanitation Projects 2012: BZ$1.5 million (BNTF 5 and 6)	Eligible: IBRD	
Guyana	**GY-L1025** Georgetown Sanitation Improvement Program US$7.3 million	**BNTF 7** Basic Needs Trust Fund (7th Cycle)	Eligible: IDA	
Jamaica	**JA-0114** Kingston Water and Sanitation Rehabilitation Project US$4 million	**BNTF 7** Basic Needs Trust Fund (7th Cycle) <US$1.7 million	**P091299** Inner City Basic Services for the Poor Project <US$2 million	**20010071** Port Antonio Water and Sewage US$15 million
Saint Lucia		**BNTF 7** Basic Needs Trust Fund (7th Cycle)	Eligible: IDA	
Saint Vincent and the Grenadines		**BNTF 7** Basic Needs Trust Fund (7th Cycle)	Eligible: IDA	
Suriname			Eligible: IBRD	
Trinidad and Tobago	**TT-L1026** Multi-Phase Wastewater Rehabilitation Program- Phase I US$246.5 million **TT-L1018** WASA Modernization and Wastewater Infrastructure Rehabilitation Program US$50 million		Eligible: IBRD	

Not a member country or not eligible
No active sanitation project ongoing

Table E.5: Special Conditions Prior To First Disbursement

Loan Contract (Proposal) Number	Special Conditions Prior to First Disbursement
2255/OC-BA	▪ A Project Execution Unit and Project Steering Committee has been established ▪ A Project Manager has been hired ▪ Operational Manual for the project is approved by the Management and Board of Directors of the BWA
2486/OC-BL	▪ A project manager has been appointed and project management within the BWS has been established ▪ The Government and the BWS have signed a subsidiary agreement for the transfer of resources of the financing and the implementation of the activities of the project ▪ The Government and the BWS have complied with the condition precedent to first disbursement with respect to the Non-Reimbursable Financing Agreement that will be signed between the Bank and Belize under the project "Testing a Prototype Caribbean Regional Fund for Wastewater" ▪ The BWS has presented the final version of the Environmental and Social Management Report (ESMR)
2428/BL-GY	▪ Executing Agency has designated a project manager from its staff ▪ Operational Manual for the project is approved by the Board of the GWI and has entered into effect
(JA-0114)	▪ Agreement between the Government and the NWC in which the Government commits to transfer funds to NWC to cover debt payments for several subcomponents ▪ A Steering Committee has been established ▪ A Project Implementation Unit has been established ▪ A Project Manager and key personnel has been appointed ▪ A sound accounting system and adequate mechanisms for internal control have been established ▪ The Board of the NWC approved the parameters and data for the baseline to measure the effectiveness and progress of the project
2600/OC-TT	▪ Agreement for the transfer of the resources of the loan and the execution of the program has been signed and entered into effect ▪ WASA has designated a Program Manager from its staff ▪ The Board of WASA has approved the Operations Manual for the Program including an Environmental and Social Management Plan (ESMP)
2890/OC-TT	▪ Agreement for the transfer of the resources of the loan and the execution of the program has been signed and entered into effect ▪ WASA has hired two Program Managers ▪ The Board of WASA approved an Environmental and Social Management Plan (ESMP) for construction and operation ▪ The Government put in place an Environmental and Social Management (ESMF) framework

Source: Loan Contracts between the Governments and the IDB and the World Bank respectively.

Table E.6: Special Execution Conditions

Loan Contract (Proposal) Number	Execution Conditions
2255/OC-BA	▪ The Executing Agency shall execute the project in compliance with the Environmental and Social Management Plan (ESMP) ▪ Goods and works shall be procured in accordance with the Bank policies for the procurement of foods and works financed by the Bank ▪ The selection and contracting of consultants shall be carried out in accordance with the Bank policies for selection and contracting of consultants financed by the IDB ▪ Submit to the Bank sufficient information to allow the Bank to carry out a midterm and final evaluation of the project
2486/OC-BL	▪ The Executing Agency shall execute the project in compliance with the Environmental and Social Management Plan (ESMP) ▪ Goods and works shall be procured in accordance with the Bank policies for the procurement of foods and works financed by the Bank ▪ The selection and contracting of consultants shall be carried out in accordance with the Bank policies for selection and contracting of consultants financed by the IDB ▪ Submit Annual Operation Plans (AOPs) to the Bank for each year ▪ Hire independent consultant to carry out a midterm and final evaluation of the project
2428/BL-GY	▪ The Executing Agency shall execute the project in compliance with the Environmental and Social Management Plan (ESMP) and the GWI Corporate Environmental Guidelines ▪ Goods and works shall be procured in accordance with the Bank policies for the procurement of foods and works financed by the Bank ▪ The selection and contracting of consultants shall be carried out in accordance with the Bank policies for selection and contracting of consultants financed by the IDB ▪ Submit Annual Operation Plans (AOPs) to the Bank for each year ▪ Submit to the Bank sufficient information to allow the Bank to carry out a midterm and final evaluation of the project
(JA-0114)	▪ Goods and works shall be procured in accordance with the Bank policies for the procurement of foods and works financed by the Bank ▪ The selection and contracting of consultants shall be carried out in accordance with the Bank policies for selection and contracting of consultants financed by the IDB ▪ The NWC will collect, store and retain all necessary information, indicators and parameters, and participate in the midterm review and the final evaluation ▪ The NWC undertakes the obligation to perform jointly with the Bank a midterm review to examine the overall progress made in the project execution and the extent to which performance indicators have been fulfilled. **The commitment of resources above 60 percent of the loan resources requires the non-objection of the Bank after a conforming evaluation made by the Bank and NWC of project benchmarks and performance indicators**.
4819-JM	▪ Goods and works shall be procured in accordance with the Bank policies for the procurement of foods and works financed by the Bank ▪ The selection and contracting of consultants shall be carried out in accordance with the Bank policies for selection and contracting of consultants financed by the World Bank ▪ The project is carried out in accordance with the Operations Manual, including the Environmental Management Framework (EMF) and the Land

	Acquisition and Resettlement Policy Framework (LARPF)
2600/OC-TT	▪ The Executing Agency shall execute the project in compliance with the Environmental and Social Management Plan (ESMP), as well as with its own environmental guidelines ▪ Goods and works shall be procured in accordance with the Bank policies for the procurement of foods and works financed by the Bank ▪ The selection and contracting of consultants shall be carried out in accordance with the Bank policies for selection and contracting of consultants financed by the IDB ▪ The execution of the program shall be governed by the terms and conditions set forth in the Operations Manual (OM) ▪ Hire independent consultant to carry out a midterm and final evaluation of the project
2890/OC-TT	▪ The Executing Agency shall execute the project in compliance with the Environmental and Social Management Plan (ESMP), as well as with the terms and conditions of the Certificate of Environmental Clearance (CEC) issued by the national Environmental Management Authority (EMA) ▪ Goods and works shall be procured in accordance with the Bank policies for the procurement of foods and works financed by the Bank ▪ The selection and contracting of consultants shall be carried out in accordance with the Bank policies for selection and contracting of consultants financed by the IDB ▪ Submit Annual Operation Plans (AOPs) to the Bank for each year ▪ The execution of the program shall be governed by the terms and conditions set forth in the Operations Manual (OM) ▪ Hire independent consultant to carry out a midterm and final evaluation of the project

Source: Loan Contracts between the Governments and the IDB and the World Bank respectively.

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