REGULATED INDUSTRIES COMMISSION

Review of the State of the Water and Sewerage Authority of Trinidad and Tobago 2010-2015

April 2018

This "Review of the State of the Water and Sewerage Authority (WASA) 2010 – 2015", is being published for the information of all stakeholders as part of the recently commenced Price Review for WASA.

Information Document

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1. INTRODUCTION

The Regulated Industries Commission Act, No. 26 of 1998, established the Regulated Industries Commission (RIC) as the economic regulator for the water, wastewater and electricity sectors in Trinidad and Tobago. Amongst other things, the RIC is mandated to carry out studies of efficiency and economy of operation and of performance of service providers, publish results thereof and take action, where necessary, to protect the interests of customers and other stakeholders.

1.1 Objective of the document

This *"Review of the Status of the Water and Sewerage Authority (WASA) 2010 – 2015"*, is being published for the information of all stakeholders as part of several documents that accompany the recently commenced Price Review for WASA. The purpose of this document is to present information on certain aspects of the operational and financial state of WASA over the period 2010-2015. This information informs the WASA Price Review 2018-2023, as it provides an understanding of how WASA has performed on an annual basis and allows for a comparison of WASA's performance against other utilities, where appropriate[1].

1.2 Structure of Document

The remainder of this document is arranged into four major sections. Section two describes the water and wastewater sectors in Trinidad and Tobago and the institutional structure that governs them. Section three and four provide an assessment of WASA's operational and financial performance respectively. The existing tariff structure and rates are presented in Section five followed by a brief Conclusion.

[1] Information for the preparation of this document was requested in early 2016, however, there were delays in obtaining information from WASA. Thereafter, the RIC engaged in a process of clarification and verification of the data provided by WASA before its inclusion in this document. The RIC has also performed its own calculations and derivations where required, using WASA data. Data pertaining to 2016 and 2017 (where available) will be factored into the RIC's calculations in the preparation of its Draft Determination for WASA.

1.3 Responding to this Document

This document is being released for information and the RIC can be contacted at the under-mentioned address:

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2. WATER AND WASTEWATER SECTOR STRUCTURE

2.1 Sector Overview

The water and wastewater sector in Trinidad and Tobago is a regulated sector that comprises a few key players.[2] The Water and Sewerage Authority (WASA) is a vertically integrated government owned statutory authority and is solely responsible for the transmission and distribution of piped water services throughout the country. WASA was established by an Act of Parliament in 1965 to manage the water and wastewater sector of Trinidad and Tobago. In its current configuration, WASA is headed by a Board comprised of up to seven (7) Commissioners, that are responsible for matters of general policy. WASA's management, which currently consists of a Chief Executive Officer and seven Executive Managers, is responsible for the daily operations of the Authority[3].

An essential component of WASA's mandate is the delivery of a safe, reliable and efficient water supply, to meet the demand of all sectors of the economy. WASA's water production asset base comprises 41 surface water treatment facilities, 55 groundwater treatment facilities, 37 rural intakes and spring sources, 229 wells, 70 service reservoirs, and 9 raw water impounding reservoirs. Its pumping and pipeline facilities comprise 111 pumping stations and approximately 5,800 kilometers of water mains (pipelines) ranging from 20 mm to 1350 mm in diameter. In 2015, 59% of WASA's production came from surface sources, with the remaining 23% and 18% produced from groundwater and desalination, respectively.

To satisfy water demand in the country, WASA supplements its own production with water purchased from two (2) desalination companies, the Desalination Company of Trinidad and Tobago Ltd (Desalcott) and Seven Seas Water. Desalcott is a single purpose entity originally formed in 1999 to produce and sell desalinated water to WASA) on a build own operate (BOO)

[2] The water sector does not include manufacturers and suppliers of bottled water, which is part of the beverage production and belongs to the food sector.

[3] As at September 2015, there were seven Executive Management positions listed on WASA's Organizational Structure Chart. It included the following positions: Director Operations, Director Customer Care, Director Corporate Services, Director Human Resources, Director Finance, Director, Programmes and Change Management, Corporate Secretary and General Counsel.

basis. The plant is located in Point Lisas since the primary market for the water produced by Desalcott was the Point Lisas Industrial Estate. Desalcott was originally contracted to produce 24 million imperial gallons of water per day (MIGD), however, in November 2012 Desalcott was contracted by WASA to increase its production to 40 MIGD for distribution to Central and Southern Trinidad. Seven Seas Water is a US based company operating in Point Fortin, Trinidad. Its plant, was commissioned in September, 2013 and was constructed under a build own operate transfer (BOOT) arrangement to deliver daily 5.5 MIGD to WASA's transmission system. In 2015 Seven Seas was asked to increase its production and is now delivering 6.7 MIGD to WASA for distribution primarily the in South Western peninsula of Trinidad[4].

WASA is also responsible for the collection, transmission, treatment and disposal of wastewater in Trinidad & Tobago and achieves this mainly through its Public Sewerage Systems which accounts for approximately 30% coverage of wastewater needs of the country. Its wastewater facilities include 4 centralized sewage treatment plants, 33 other WASA operated plants and approximately 1522 km of sewer mains. In accordance with a Government mandate issued in the late 1990's, WASA continues to adopt and refurbish over one hundred and fifty (150) wastewater facilities from private developers and various government authorities, which include the former National Housing Authority (NHA), now the Housing Development Corporation (HDC) and the Urban Development Corporation of Trinidad and Tobago (UDECOTT).

WASA's water and wastewater customers fall into either the domestic or non-domestic customer classes. As at December 2015 WASA's water customer base was 411,777, while its wastewater customer base was 77,245. In 2015, WASA supplied 382 million cubic meters of water and treated 90 million cubic meters of wastewater.

[4] Source: Seven Seas Water, http://sevenseaswater.com/en/our-projects/bringing-water-to-the-people-in-trinidad

2.2 Institutional Setting of the Water and Wastewater Sector

Apart from WASA and its two suppliers of desalinated water which play a direct role in service delivery for the sector/s there are other organizations that are involved in policy making and regulation of the sector. These organizations and their functions are listed in Table 1 below.

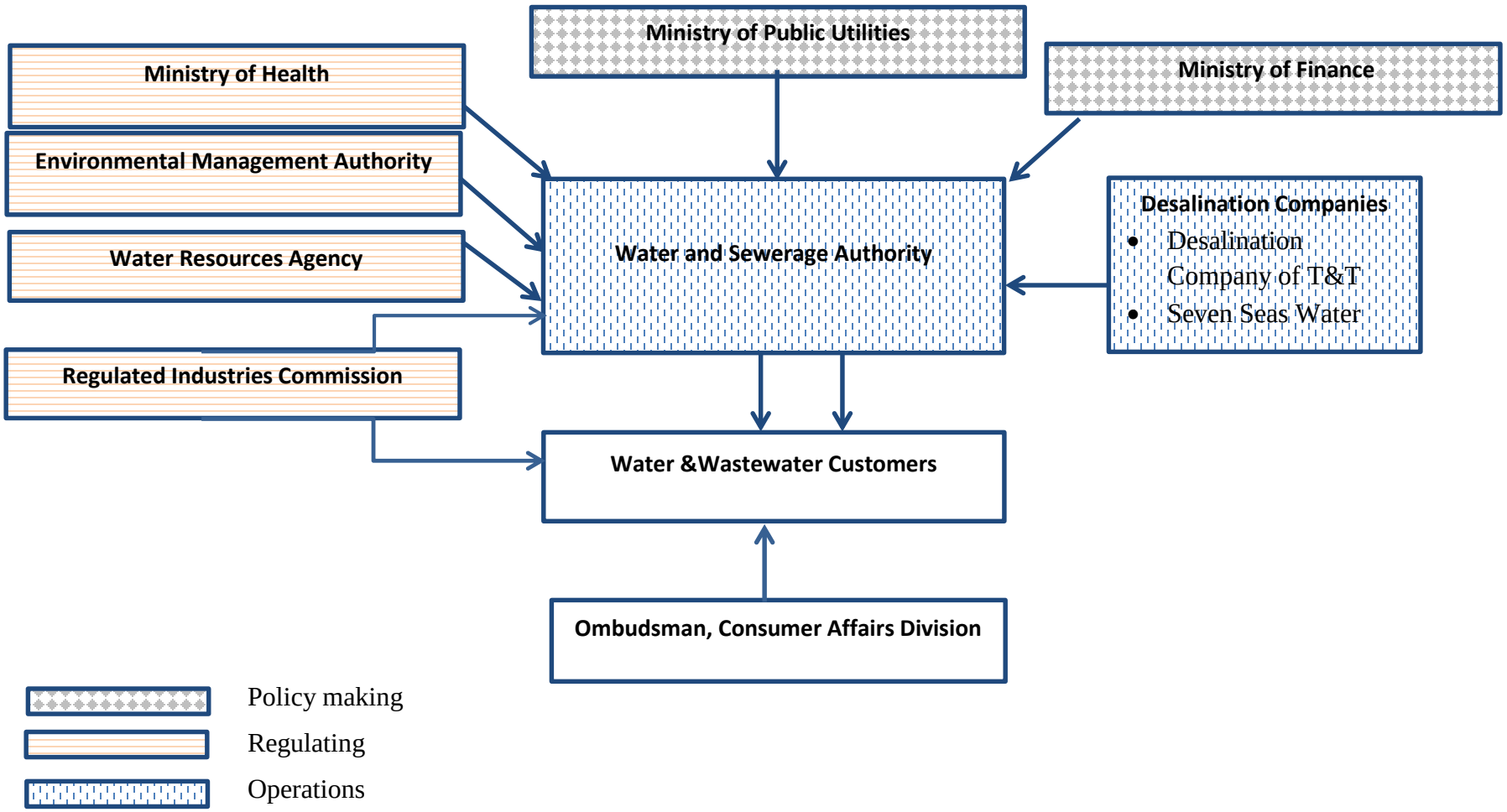
Table 1: Water Sector Policy and Regulatory Institutions

Organization	Institutional Settings and Functions
The Ministry of Public Utilities (MPU)	The MPU is the body of the Government of the Republic of Trinidad and Tobago responsible for policy formulation relating to the development and management of the water and wastewater sectors. The Minister (of Public Utilities), in accordance with the RIC Act, No. 26 of 1998, is responsible for granting licences to water and wastewater providers. Additionally, the Minister may, on the advice of the sector regulator make regulations prescribing: - (i) procedures for licence applications, (ii) the issue, suspension and cancellation of licences, (iii) terms and conditions of licences generally, and (iv) licence fees.
The Ministry of Finance	The Ministry of Finance has overall responsibility for all financial matters pertaining to the funding of government and government-owned entities. Particularly, the Ministry works in conjunction with the Ministry of Planning and Development and the line Ministry**,** when it is necessary to secure funding for WASA from multilateral financing agencies.
The Ministry of Health	The Ministry of Health is responsible for setting, monitoring and enforcing the standards for the quality of drinking water in Trinidad and Tobago. However, no drinking water standards specific to Trinidad and Tobago have been set and World Health Organization (WHO) standards are utilized instead.

Organization	Institutional Settings and Functions
The Regulated Industries Commission (RIC)	The RIC is the economic regulator for the water and wastewater sector in Trinidad and Tobago. The RIC's role as provided in its Act, includes- (i) advising the Minister of Public Utilities on the operations of the Act, including the granting of licences, (ii) ensuring that service providers operate under prudent management on terms that will allow sufficient return to finance investment, (iii) prescribing and publishing service standards, (iv) imposing sanctions for non-compliance to service standards, v) establishing principles and methodologies for rate-setting and (vi) investigating complaints by consumers of failure to obtain redress from utility service providers and facilitating redress.
The Water Resources Agency (WRA[5])	The WRA is responsible for issuing water abstraction licenses, which are legal contracts conferring a water use right, that is, a right to use the water abstracted from a surface or groundwater source. The Agency's data collection system comprises a monitoring network of gauges which measures and reports rainfall, streamflow, groundwater, evaporation and water quality parameters at strategically located sites throughout the country.
The Environmental Management Authority (EMA)	The EMA is the statutory body established by the EMA Act 1995, responsible for environmental protection and conservation, including monitoring and enforcing water pollution and trade effluent level.
The Office of the Ombudsman & The Consumer Affairs Division	These two bodies are responsible for addressing consumer concerns. They work in conjunction with the RIC to ensure that the interests of consumers in respect of service providers are protected.

[5] Prior to the formation of the WRA, in 1966 a Canadian team of experts were engaged to set up a body that would monitor the water resources of Trinidad and Tobago. Based on the recommendations of the consultant, a Water Resources Survey team merged with the Hydrological Section of Drainage Division of Ministry of Works in 1970. This led to the formation of a Water Resources Agency which was appended to WASA in 1976. Since that time, the WRA has been functioning as a division within WASA as per Cabinet-approved structure (1999).

Figure 1: Institutional Structure of the Water and Wastewater sector in Trinidad and Tobago



Source: Developed by the RIC

3. ASSESSMENT OF THE OPERATIONAL PERFORMANCE OF WASA 2010-2015

This section analyses WASA's operational performance over the period 2010-2015. WASA's operational efficiency is assessed in terms of service delivery capability, quality of its service to its customers and its efficiency in the use of resources to achieve organizational objectives. The service delivery capability assessment will evaluate WASA's ability to serve the population of the country as the monopoly supplier of water and waste water services in the country. The quality of WASA's service to the customers will be assessed in terms of the consistency of its supply to customers over a period and also by the number of customer complaints. The efficiency assessment will gauge WASA's ability to reduce operation and maintenance inefficiencies.

3.1 Service Delivery Capability

Water Coverage

Water coverage is defined as that percentage of the population, under a utility's nominal responsibility, with easy access to water services either through a direct service connection[6] or residing within 200m of a standpipe. For WASA, water coverage is an indicator of its ability to provide access to piped water services to the population and to new developments. According to WASA, water coverage by the Authority as at December 2015 was 93.6%[7].

It is noteworthy that based on data supplied by WASA, 11.4% of those with access to piped water services are classified as standpipe customers. These customers, in the absence of a direct water supply to their homes, gain access to water via public standpipes. Overall, there has been little improvement in the segment of the country's population with access to piped water over the period.

[6] International Benchmarking Network(IBNET), https://database.ib-net.org/Reports/Indicators/HeatMap?itemId=1

[7] With respect to Water Coverage, best practice is 100% and is based on the actual performance of the top 25% of utilities surveyed by the World Bank using data from 246 utilities in 51 developed and developing countries.

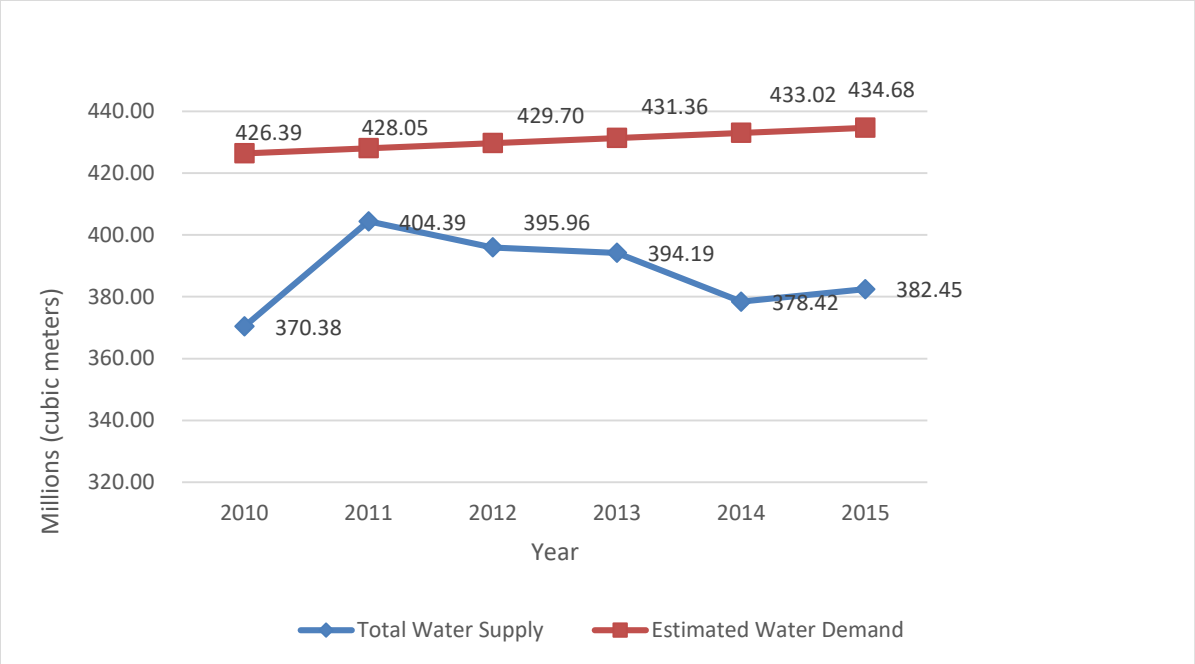
Wastewater Coverage

Wastewater Coverage is defined as that percentage of the population under a utility's nominal responsibility with a direct connection to sewerage services. This statistic is computed by dividing the population with sewerage services (direct service connection) by the total population under the utility's nominal responsibility, expressed as a percentage. In Trinidad and Tobago, WASA has estimated that approximately 30% of the population is served by its facilities as at December 2015. This roughly corresponds with the 2011 Population Census data of the Central Statistical Office which estimated that 64% of the population utilized septic tanks while 11% of the population utilized pit latrines.

Water Demand-Supply Balance

A key aspect of WASA's service obligation is to deliver potable water services to its customers; therefore, demand-supply balance is an indication of the utilities performance in this regard. When water production/supply is less than demand, customers will receive an intermittent water supply. Figure 2 below shows customer demand and WASA's supply of potable water over the period 2010-2015.

Figure 2: Demand/ Supply Balance 2010-2015

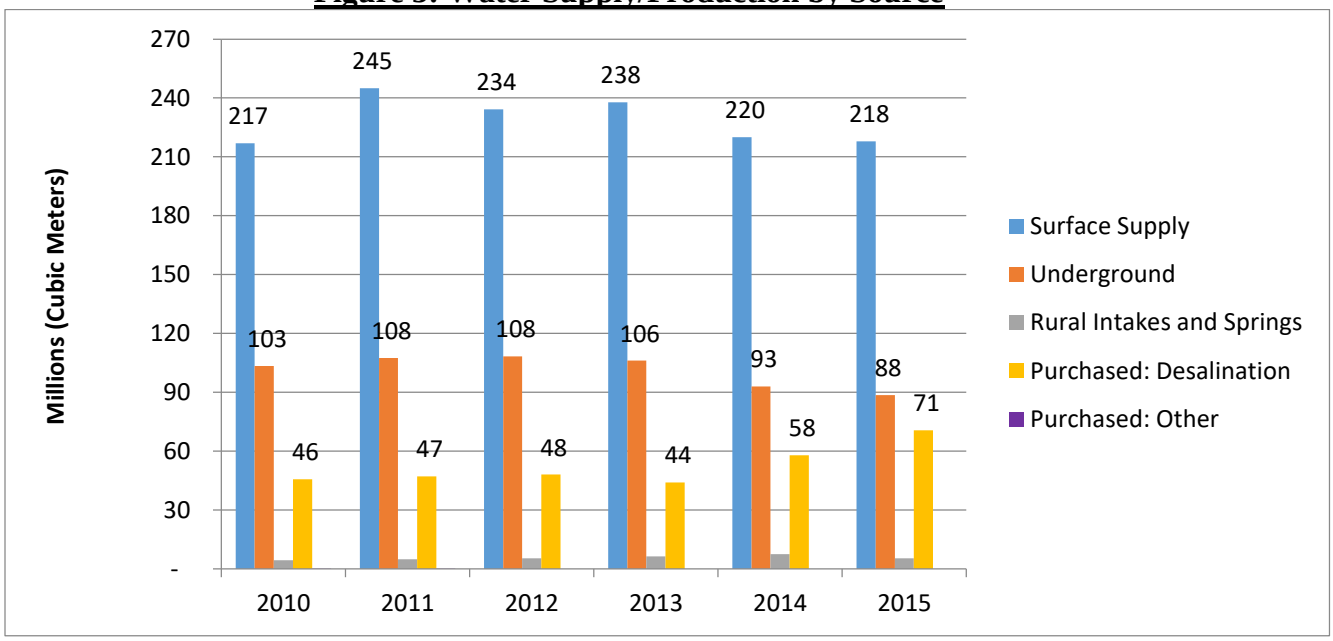


The shortfall between water demand and supply ranged from 23 million to 56 million cubic meters over the period and in 2015, the recorded shortfall was approximately 52 million cubic meters. This demand/supply imbalance is largely due to:

- high levels of leakage;
- lack of metering; and
- lack of water conservation.

WASA estimates per capita demand to be 343 litres per person per day or 76 gallons per person per day. Per capita demand in Trinidad and Tobago is high when compared with most other countries in the region. In addition, WASA's tariffs are comparatively low. The combination of low metering (less than 1% residential customers are metered) and low tariffs result in consumers having little or no incentive to limit consumption. While the demand for water has consistently increased over the period, there has not been a steady growth in water supply by WASA.

Figure 3: Water Supply/Production by Source



WASA's efforts to meet the demand shortfall over the period involved increasing its purchase of desalinated water and its production from rural intakes and springs as seen in Figure 3. Apart from the 54% increase in purchased desalinated water, the supply from the remaining production sources have either decreased or remained the same over the period.

3.2 Quality of Service

Service Continuity

Another important indicator of WASA's performance is continuity of service, which measures the average number of hours of service per day for water supply, which is indicative of the quality of the service provided by the utility. Data shows significant improvement in this indicator over the period 2010-2015. According to WASA, the percentage of the population served with a 24-hour supply increased from 17% in 2010 to 53% in 2015. Therefore, the remaining 47% of the population continued to receive a scheduled supply in 2015. Table 2 gives a break-down of the hours of service per week received by the population as at December 2010 and December 2015.

Table 2: Water Service Continuity 2010-2015

Class of Supply	No. of hours per week	2010 Percentage of Population in receipt of supply	2010 Estimate of population	2015 Percentage of Population in receipt of supply	2015 Estimate of population
Class I	168	17%	225,763	53%	749,408
Class II	120 to 168	29%	385,126	23%	316,672
Class III	84 to 120	21%	278,884	8%	106,491
Class IV	48 to 84	19%	252,324	12%	171,352
Class V	0 to 48	14%	185,923	4%	56,077

Customer Complaints

Customer complaints is a proxy measure for consumers' dissatisfaction with the quality of a product or service. WASA has recorded the complaints of its customers in terms of billing complaints, water service complaints and wastewater service complaints, as presented in Table 3 below.

Table 3: Customer Complaints 2010-2014

Customer Complaints	2010	2011	2012	2013	2014
Total Billing Complaints	22,679	19,601	17,940	17,576	12,964
Billing Queries Resolved	10,070	11,707	8,936	12,005	8,357
Billing Queries Outstanding	12,609	7,894	9,004	5,571	4,607
Total Water Service Complaints	90,327[8]	50,284	41,053	44,768	41,579
Water Service Complaints Resolved	55,936	35,492	35,027	35,970	37,713
Water Service Complaints Outstanding	34,391	14,792	6,026	8,798	3,866
Total Wastewater Service Complaints	825	757	609	640	537
Wastewater Service Complaints Resolved	179	61	73	432	108
Wastewater Service Complaints Outstanding	646	696	536	208	429

*** The RIC has queried the information supplied by WASA for 2015 therefore, the data was not included in this table. The RIC is awaiting WASA's response.**

According to data supplied by WASA, the number of complaints made over the period 2010-2014 reduced by 43%, 54% and 35% for billing, water services and wastewater services respectively. At the same time, WASA has reported that some improvements were made in resolving incoming complaints for billing and water service over the period. WASA has, however, not been as consistent in resolving complaints for wastewater service over the period. It is noteworthy that at the end of 2014, eighty percent (80%) of wastewater service complaints were outstanding.

3.3 Efficiency Measures

Non-Revenue Water

The level of Non-Revenue Water (NRW) is one of the best indicators of water utility efficiency. NRW represents the difference between the new production (the volume of water delivered into the network) and consumption (the volume of water that can be accounted for by legitimate consumption, whether metered or not). Higher NRW reflects greater inefficiency because costs are incurred to collect, treat and distribute a certain quantity of water and a significant portion of

[8] It is noteworthy that one of the worst dry-seasons in recent time was experienced in Trinidad and Tobago in 2010, which is the most likely reason for the unusually large number of water related complaints to WASA for that year.

the treated water is lost without the possibility of recovering the cost through sales. Further, substantial capital expenditure programs are often promoted to meet the ever-increasing demand. Losses can be real losses (through leaks, sometimes also referred to as physical losses) or apparent losses (for example through theft or metering inaccuracies). NRW is typically measured as the volume of water "lost" as a share of net water produced. High levels of NRW are detrimental to the financial viability of water utilities, as well to the quality of water itself, as leaking pipelines can allow potentially harmful contaminants into the water.

WASA has estimated NRW to range between 40% and 50% in 2015[9]. A substantial amount of distributed water is lost, due to technical losses, reflecting the poor state of its pipeline network. Also, the level of NRW is amplified due to unbilled authorized consumption (unbilled unmetered customers) and unauthorized consumption from illegal usage. While the ideal is for NRW to be as low as possible[10], according to the World Bank, reducing NRW to 20-25% is a reasonable objective. Therefore, a water loss strategy in the form of infrastructure improvement and a programme of active leak control[11] must become one of the major operational tasks for WASA, if reductions in the level of NRW are to be realized. It is important to note however, there are fewer financial incentives for a utility to reduce NRW if there is no or little metering (revenues are independent of actual consumption), or if volumetric tariffs are low. WASA can be incentivized to reduce NRW from a public health and drinking water quality point of view, as it is argued that the level of real water losses should be as low as possible, in order to minimize the risk of drinking water contamination in the distribution network.

Pipe Network Performance

Pipe network performance is an efficiency and reliability metric that is directly related to the level of NRW. The pipe network performance tells of a utility's achievement in maintaining and

[9] Estimated NRW in other Caribbean territories - 24% Belize. 38% the Bahamas, 50% Jamaica, 55% Barbados.
[10] From an economic point of view, it may not be prudent to reduce NRW to the lowest possible level, as this can be extremely costly. Instead, it is advisable that the water utility estimate the economic level of leakage, which is the optimum leakage level below which the costs of reducing leakage further exceed the costs of producing water from another source.
[11]Active leakage control is deployment of utility staff to find leaks, which have not been reported by customers or other means.

retrofitting aging infrastructure to minimize leaks, and pipe breaks. Pipe network performance can be assessed in terms of the number of pipe breaks relative to the scale of the system (per kilometer (km) of the water distribution network), or the total number of pipe breaks per year expressed per number of water connections.

In the case of WASA, its pipeline network is, over fifty years old in many areas, WASA reported in 2012, that 53% of its PVC, ductile iron, and steel and high density polyethylene pipelines are in good condition, while the remaining 47% of cast iron, galvanize wrought iron, asbestos cement and grey PVC are in need of upgrading or replacement. Corrosion appears to be a significant contributor to leakage of the metallic water pipes that have little protection for corrosion. Encrustation of older pipes combined with undersized pipes limits available flow to customers and the quality of service. The frequency of pipe breaks is exacerbated as a result of encrustation, since WASA has to increase the water pressure to compensate for the restriction in diameter, which in turn causes breakage. Despite efforts to either replace portions of and/or expand the network, pipe network performance remains well below international best practice. Consequently, in 2015 WASA experienced approximately 8.7 breaks per km of water distribution network per year compared to a well maintained utility which has approximately one break per km per year of distribution network. Table 4 illustrates pipe breaks by region for the period 2012-2015.

Table 4: Number of Pipe Breaks 2010-2015

	2010	**2011**	**2012**	**2013**	**2014**	**2015**
North: Pipe Breaks	33,277	25,286	24,252	26,927	25,536	22,037
South: Pipe Breaks	31,902	29,005	29,760	33,594	27,875	24,594
Tobago: Pipe Breaks	6,526	5,484	5,638	6,161	5,329	4,775
Total Pipe Breaks	**71,705**	**59,775**	**59,650**	**66,682**	**58,740**	**51,406**

The high incidences of pipe breaks are indicative of WASA's inability to maintain and replace aged infrastructure. It is also an indication of poor network efficiency as the pipe breaks are likely to cause interruptions in service to customers.

Metering Level

Metering is an essential element of water use efficiency and management. In the absence of meters, customers are billed at a flat rate, that is, that they pay the same amount regardless of how much water they use. Metering enables utilities to use pricing to encourage water conservation and efficiency and allows customers to monitor their usage. Charging customers by volume consumed sends a price signal to customers to use the resource more efficiently. Metering therefore allows for fair pricing and transparency of utilities' operations, moreover, metering allows for greater control of service quality monitoring and regulation of these services.

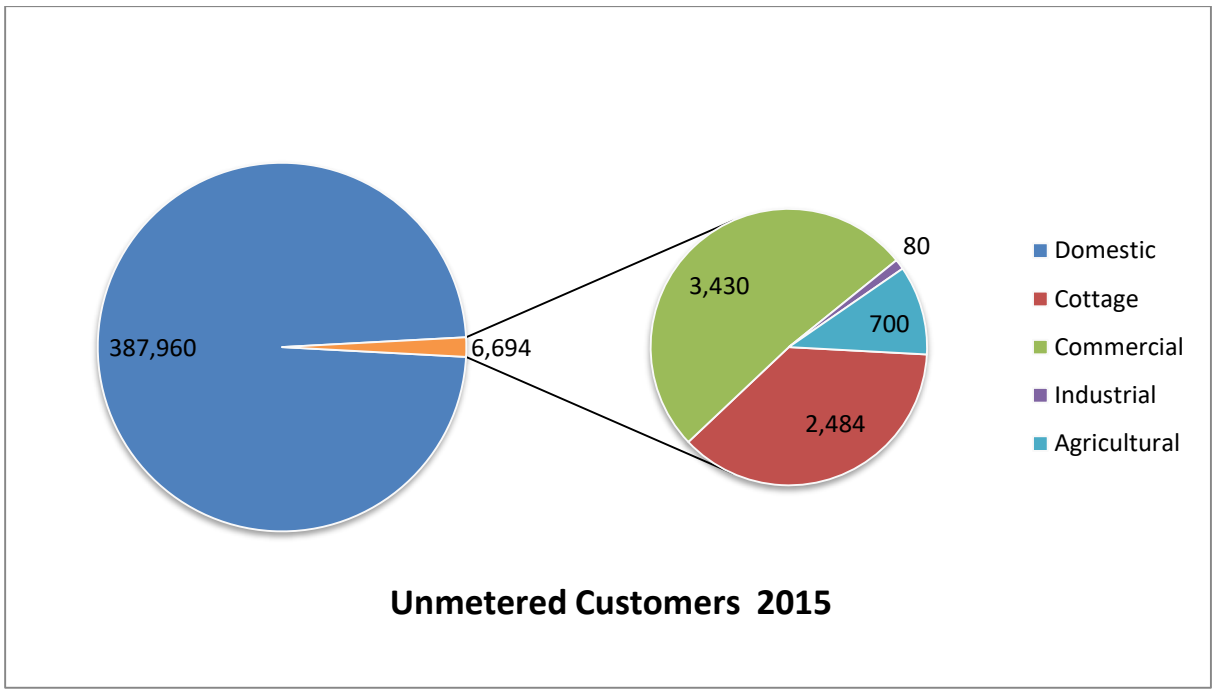
WASA's metering of residential customers' consumption is considerably low. In 2015 only 3% of WASA's residential customer base of 398,117 was metered, a 1% increase over the period, from 2% in 2010 as shown in Table 5. In 2015 WASA's metering levels for commercial, industrial and agricultural customers were comparatively better at 51%, 81% and 40% respectively, with significant room for improvement to attain best practice metering levels of 100%. Figure 4 below shows the composition of unmetered customers by customer class for 2015. Given WASA's high levels of unaccounted for water the key to managing commercial losses is the implementation of a proactive and robust metering practice. Effective metering is also a necessary precondition for sound tariff policy and for long term and stable development of the utility.

Table 5: Metered Customers 2010-2015

	2010	2011	2012	2013	2014	2015
Metered Residential Customers	5,976	7,128	7,962	8,755	9,546	10,157
Total Residential Customers	**363,030**	**367,616**	**374,728**	**382,468**	**388,444**	**398,117**
% Metered Residential Customers	2%	2%	2%	2%	2%	3%
Metered Commercial Customers	5,446	5,578	5,748	5,858	6,007	6,149
Total Commercial Customers	11,032	11,465	11,760	11,878	11,936	12,063
% Metered Commercial Customers	49%	49%	49%	49%	50%	51%
Metered Industrial Customers	326	332	337	337	343	344
Total Industrial Customers	445	454	419	411	414	424

	2010	2011	2012	2013	2014	2015
% Metered Industrial Customers	73%	73%	80%	82%	83%	81%
Metered Agricultural Customers	472	476	478	474	472	473
Total Agricultural Customers	1,146	1,151	1,165	1,172	1,153	1,173
% Metered Agricultural Customers	41%	41%	41%	40%	41%	40%
Total Metered	**12,220**	**13,514**	**14,525**	**15,424**	**16,368**	**17,123**
Total Customer Base	375,653	380,686	388,072	395,929	401,947	411,777
% of Customer Base Metered	3%	4%	4%	4%	4%	4%

Figure 4: Unmetered Customers 2015



Staffing Levels

Staffing analyses and planning are critical for any organization to ensure that staffing by functional areas is adequate and also efficient. Staffing levels are influenced by numerous factors including the size characteristics of the utility supply area, the level of service provided to the consumer, staff salaries, work culture, organizational structure and extent of outsourcing, control and

optimization. WASA's staffing levels are presented in Table 6 below and shows that staff levels in water operations have increased over the period from 4648 in 2010 to 4959 in 2015, while there has been no significant change in the staffing levels for wastewater operations. It is noteworthy that 52% of the monthly paid staff for water is involved in administrative work, while the corresponding percentage for wastewater is 25%.

Table 6: Staffing Levels Water and Wastewater 2010-2015

Water	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Monthly Paid Administrative	1,226	1,499	1,537	1,210	1,351	1,518
Monthly Paid Technical	1,969	1,453	1,478	921	1,300	1,408
Daily Paid	1,453	1,563	1,906	1,585	1,690	2,033
Total Water	**4,648**	**4,515**	**4,921**	**3,716**	**4,341**	**4,959**
Wastewater						
Monthly Paid Administrative	37	37	39	38	39	43
Monthly Paid Technical	135	135	144	131	127	127
Daily Paid	157	157	143	142	157	157
Total Wastewater	**329**	**329**	**326**	**311**	**323**	**327**
Total Staff Numbers[12]	**4,977**	**4,844**	**5,247**	**4,027**	**4,664**	**5,286**

Staff per connection is a measure of the efficiency of human resources management as more efficient use of human resources in a utility is manifested by a low staff per 1,000 connection ratio. As seen in table 7 below, the number of employees increased by 397 from 4,977 to 5,286 over the period 2010-2015, while the increase in the number connections was 42,000 over the same period. WASA's staff per 1000 connections fluctuated between 14 and 16 and remains high at 15 at the end of 2015. Despite efforts to reduce staff levels WASA has been unable to attain best practice[13] in this area.

Table 7: Staff per Connection 2010- 2015

	2010	**2011**	**2012**	**2013**	**2014**	**2015**
Number of employees	4,977	4,844	5,247	4,027	4,664	5,286
Number water connections 000's	323	328	337	346	353	365
Staff per 1000 water connections	15	15	16	12	13	15

[12] Total staff in 2009 was roughly 4,600.

[13] According to World Bank (2000), a range of 4-6 staff per 1000 connections is regarded as good practice for a well-managed water utility in developing countries.

Voluntary Separation of Employment Packages (VSEP) were offered to staff as the company sought to achieve increased viability and efficiency. Between 2012 and 2014 a total of 966 of WASA's staff accepted VSEP as seen in Table 8. below. The total number of staff in water operations that accepted VSEP over the period 2012-2014 was 908 with 667 of that number accounting for VSEP in 2013, which represented 15% of the total number of staff in water operations for that year.

Table 8: VSEP Numbers 2012-2014

Water	**2012**	**2013**	**2014**	**2012-2014**
VSEP Monthly Paid Administrative	31	222	46	299
VSEP Monthly Paid Technical	30	219	62	311
VSEP Daily Paid (Labourers)	27	226	45	298
Total VSEP	**88**	**667**	**153**	**908**
Total Water Staff	**4921**	**3716**	**4341**	
% VSEP Water	**2%**	**18%**	**4%**	
Wastewater				
VSEP Monthly Paid Administrative		4	2	6
VSEP Monthly Paid Technical	1	8	11	20
VSEP Daily Paid (Labourers)	14	15	3	32
Total VSEP	**15**	**27**	**16**	**58**
Total Wastewater Staff	**326**	**311**	**323**	
% VSEP Wastewater	**5%**	**9%**	**5%**	
Total Water and Wastewater VSEP	**103**	**694**	**169**	**966**
Total Water and Wastewater	**5247**	**4027**	**4664**	
% VSEP Water and Wastewater	2%	17%	4%	

In wastewater operations the total number of staff that accepted VSEP over the period 2012-2014 was 58, as a result, the staff numbers for wastewater was reduced by 5%, 9% and 5% respectively in 2012, 2103 and 2014. Overall there is concern that staff numbers are highest in 2015, post WASA's efforts to reduce staff numbers to efficient levels alongside the normal attrition of staff at the Authority.

4. ASSESSMENT OF THE FINANCIAL PERFORMANCE OF WASA 2010-2015

This section presents an analysis of WASA's financial position utilizing information from both its management accounts and audited financial statements for the years 2010 to 2015. The analysis is intended to assess WASA's ability to control its costs and earn sufficient revenue to offset its costs and to measure key areas of the utility's commercial practices over the period. Financial ratios and highlighted trends useful for examining WASA's financial health over the outlined period will be presented in the discussion.

4.1 Expenditure Analysis

Expenditure for WASA typically covers either its operating cost or capital investment outlays towards improving its fixed assets.

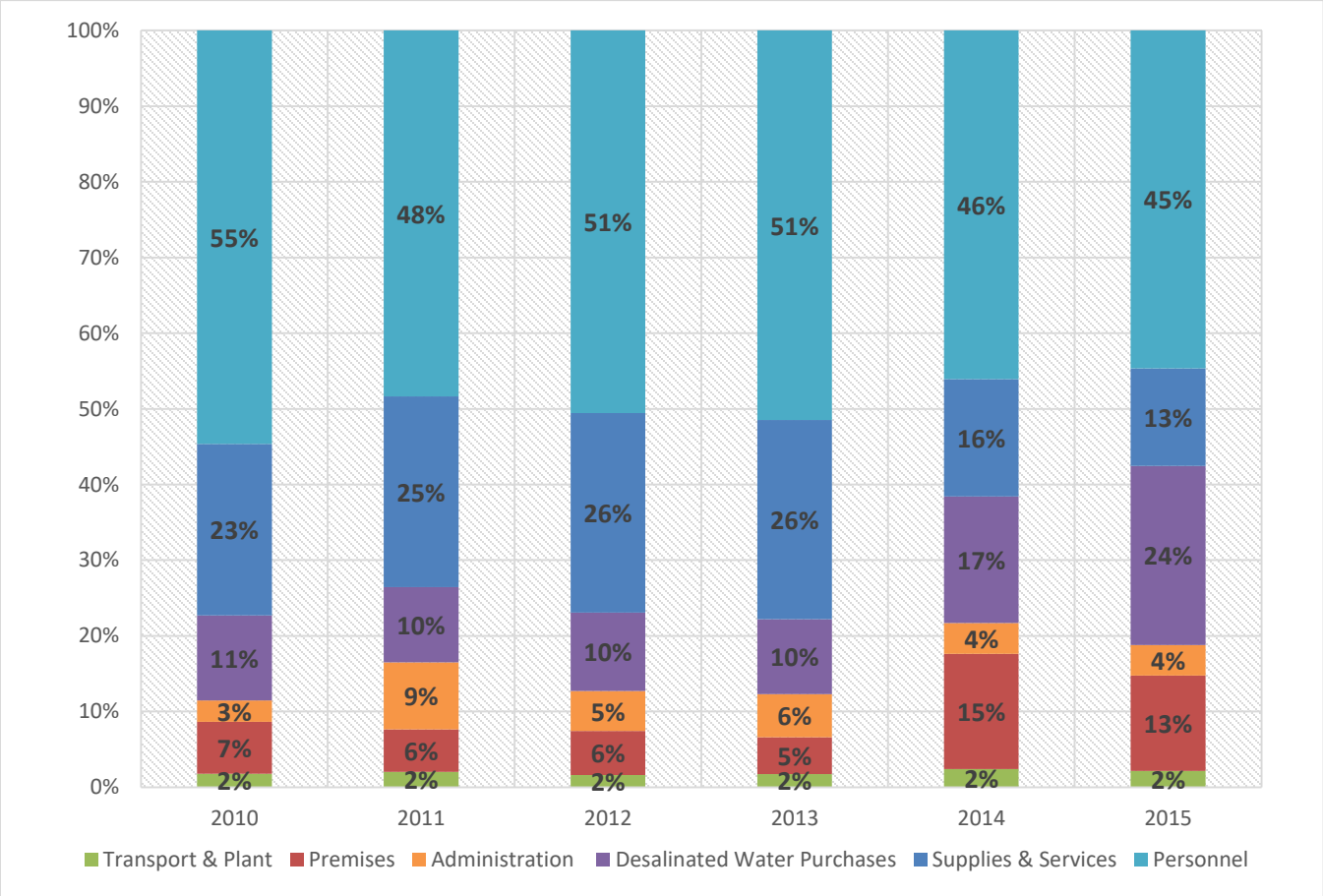
Operating Expenditure

Operating costs refer to the operations and services, maintenance and administration costs incurred at the core business level. Analyzing trends in operating cost provide a measure of how efficient a service provider is in areas which are relatively more controllable in the short-term. Operating costs for a utility are significant as they cover items such as labour, materials, contracting and energy costs. Table 9 shows the composition of WASA's operating expenditure for the period 2010-2015. Over the period operating expenditure for WASA increased by 45% from $1.6 billion in 2010 to $2.3 billion in 2015. Notably, desalinated water purchasing cost increased by 206% as a result of an increase in the quantum of water purchased, alongside the increased price per cubic meter purchased in accordance with the water sales agreement with the desalination companies. The RIC has noted that there was a 25% increase in the quantity of desalinated water purchased over the 2010-2015 period, while the costs associated with desalinated water increased by 206%. Premises costs increased significantly by 166% during the period and peaked at $334 million in 2014, meanwhile, personnel expenditures increased by 19% over the same time period. Supplies and services expense is the only component of operating expenses that did not increase over the period.

Table 9: WASA's Operating Expenditure 2010-2015

	2010	2011	2012	2013	2014	2015	2010-2015	
Operating Expenses	$Mn	$Mn	$Mn	$Mn	$Mn	$Mn	$Mn	%
Personnel	857	906	970	1,168	1,009	1,018	161	19%
Supplies & Services	356	472	507	598	340	294	(62)	-17%
Desalinated Water Purchases	176	186	199	224	366	539	363	206%
Administration	44	166	102	130	90	92	48	108%
Premises	108	105	112	110	334	287	179	166%
Transport & Plant	28	38	31	39	52	49	21	76%
Operating Expenses	**1,570**	**1,873**	**1,920**	**2,269**	**2,191**	**2,280**	**710**	**45%**

Figure 5: Operating Cost – Allocations 2010-2015



Other than the increases in expenditure, another useful way of assessing the expenses of a utility would be an examination of its cost structure to get an understanding of the significant shifts during the period under review. For WASA, personnel expenditure dominated the cost structure of operating expenses despite having declined in share from 55% in 2010 and to 45% in 2015 as seen

in figure 5. The decline in personnel expenses to overall costs was not due to a reduction in personnel expenditure but rather an increase desalination purchase expenses which increased at a faster rate and more than doubled from 11% in 2010 to 24% in 2015. Expenditure on premises also increased faster than personnel expenditure from 7% in 2010 to 13% in 2015 while supplies and services decreased from 23% in 2010 to 13 % in 2015. During the period, transport & plant cost and administration costs continued to account for the smallest portion of total operating expenses. In 2015 together they accounted for just about 6% of the total operating expenses.

Capital Expenditure

Capital expenditure is the amount spent to acquire or upgrade productive assets (such as buildings, machinery and equipment, vehicles) in order to increase the capacity or efficiency of the utility for more than one accounting period. Capital expenditure is recorded as an asset, rather than charging it immediately to expense. The fixed asset is then charged to expense over the useful life of the asset, using depreciation. Table 10. shows WASA's capital investment over the period 2010-2015. The data shows that in any year during the period the majority of WASA's capital investment was in water assets with the percentage ranging from 84% in 2011 to 98% in 2014. Over the period 2010-2015 WASA's investment in water assets and wastewater assets increased by 156% and 138% respectively and total capital investment was approximately $3.6 billion.

Table 10: WASA's Capital Expenditure 2010-2015

Capital Expenditure	2010	2011	2012	2013	2014	2015	2010-2015
	$ Mn	$ Mn	$ Mn	$ Mn	$ Mn	$ Mn	$ Mn
Water	325	428	334	697	837	830	3,449
Wastewater	11	82	11	22	17	26	168
Total Capital Investment	**335**	**509**	**345**	**718**	**854**	**855**	**3,617**

4.2 Revenue Analysis

Operating Revenue

Operating revenue includes any money the utility receives for its services including income from water and sewerage rates, tap connection fees and penalties. WASA's main source of operating revenue is derived from its water (potable and abstraction) and wastewater operations.

Table 11: Operating Revenue 2010-2015

	2010	2011	2012	2013	2014	2015	**2010-2015**	
	$ Mn	$ Mn	$ Mn	$ Mn	$ Mn	$ Mn	$ Mn change	% change
Water Revenue								
Domestic	185.94	191.77	217.88	229.54	240.54	249.31	63.37	34%
Commercial	68.34	71.12	72.05	72.76	74.09	76.96	8.62	13%
Industrial	242.83	284.37	394.85	443.44	428.19	416.84	174.01	72%
Cottage	9.55	10.91	10.78	10.90	10.85	10.65	1.10	11%
Agriculture	2.01	1.93	1.91	1.96	1.94	1.90	-0.11	-5%
Total Water Revenue	**508.67**	**560.10**	**697.47**	**758.59**	**755.60**	**755.66**	246.99	49%
Water Abstraction	**7.44**	**3.47**	**3.50**	**4.27**	**4.50**	**4.70**	-2.74	-37%
Wastewater Revenue								
Domestic	23.63	25.01	26.53	26.63	27.21	27.34	3.72	16%
Commercial	15.15	16.34	16.11	15.68	15.52	15.49	0.33	2%
Industrial	1.60	1.55	1.46	1.16	1.34	1.32	-0.28	-18%
Cottage	1.11	1.20	1.13	1.13	1.13	1.08	-0.03	-3%
Agriculture	0.01	0.01	0.00	0.00	0.00	0.00	0.00	-77%
Wastewater Revenue	**41.50**	**44.11**	**45.23**	**44.60**	**45.20**	**45.23**	3.73	9%
Total Operating Revenue	**557.60**	**607.68**	**746.20**	**807.47**	**805.30**	**805.58**	247.98	44%

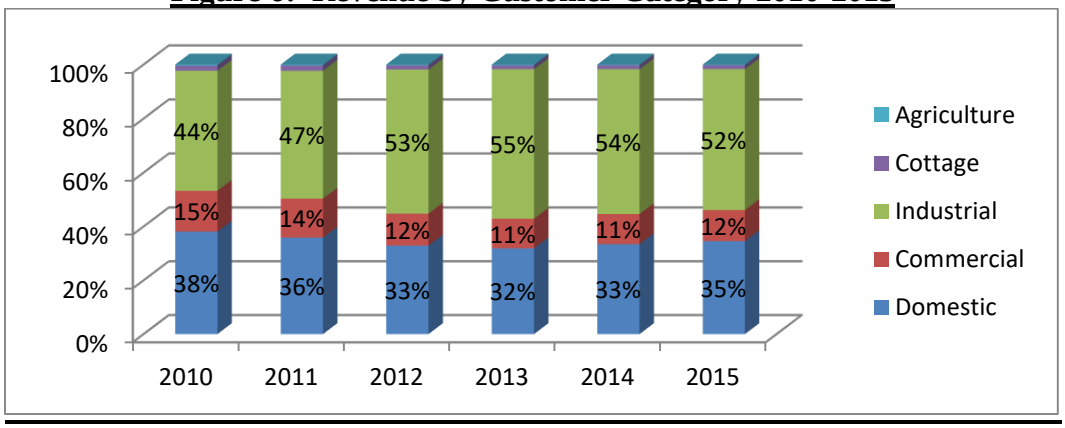
Table 11 shows WASA's operating revenue disaggregated by water (potable and abstraction) and wastewater and by customer category. Between 2010 and 2015 WASA's total water operating revenue increased by 44% from $557.6 million to $805.58 million. Over the period industrial water sales revenue and domestic water sales revenue increased by 72% and 34% respectively. The substantial increase in industrial water sales revenue is mostly attributed to the Water Improvement Rate Order, 2011 which resulted in an increase in the water improvement rate, from $4.00 per

cubic meter to $8.50 per cubic meter[14], to industrial water customers on the Point Lisas Industrial Estate. The increase in water sales revenue from domestic customers can be attributed to several factors including an increase in the number of domestic customers over the period, as well as, WASA's application of increased water rates to some domestic water customers where service levels have improved in accordance with PUC order 83. Although revenue for potable water increased by 49% over the period, there was a 37% decrease in water abstraction revenue.

Total wastewater revenue increased by 9%, from $ 41.5 million to $45.23 million for the same period. While there was an overall increase in wastewater revenue over the period, it is noteworthy that WASA's revenue from industrial, cottage and agriculture customers fell by 18%, 3% and 77% respectively.

Figure 6 below shows that there has been some change in WASA's revenue structure by customer base over the period. In 2015, over 50% of WASA's revenue came from its industrial customers, an increase from 44% in 2010. The share of revenue from domestic and commercial customers has decreased minimally over the period from 38% to 35% and 15% to 12% respectively.

Figure 6: Revenue by Customer Category 2010-2015



In addition to WASA's operating revenue the entity receives a significant portion of its income from the Government through subventions and a lesser amount from other sources. In every year throughout the period 2010-2015 the amount received from Government subventions was greater than its operating revenues as shown in Table 12. In fact, operating revenue ranged from 22% to

[14] As a result of the Water Improvement Rate Order, 2011, industrial customers on the Point Lisas Estate pay a tariff of $12.00 [$8.50 (water improvement rate) + $3.50 (tariff as per PUC order 83)] per cubic meter.

31% of total revenue over the period with the majority of the remainder of WASA's revenue attributed to government subventions. WASA's interest income, sundry income and deferred contributions revenue accounted for between 3% and 11% of total revenue over the period, while subvention revenue accounted for between 73% and 64% total revenue.

Table 12: Operating Revenue and Other Income

	2010	2011	2012	2013	2014	2015
	$ Mn	$ Mn	$ Mn	$ Mn	$ Mn	$ Mn
Total Operating Revenue	**557.60**	**607.68**	**746.20**	**807.47**	**805.30**	**805.58**
Other Income						
Interest income	49.05	55.62	69.05	167.21	22.51	24.00
Sundry Income	10.86	54.30	65.16	73.22	12.00	24.51
Deferred Contributions	54.61	109.86	50.98	133.16	45.89	96.51
Government Subventions	1845.65	1836.31	1845.56	2137.56	1708.77	1762.09
	1960.16	**2056.10**	**2030.74**	**2511.15**	**1789.17**	**1907.11**
Total Revenue	**2517.77**	**2663.78**	**2776.94**	**3318.62**	**2594.47**	**2712.69**

4.3 Profitability Analysis

Profitability is the ability of a business to earn a profit. WASA would be considered a profitable entity if its revenue from operations is greater than its total cost of providing water and wastewater services to its customers. For WASA, its total annual cost is the sum of its operating expenses and its financing costs and depreciation expense as shown in table 13 below. WASA's total cost has increased from $2.29 billion in 2010 to $2.88 billion in 2015.

Table 13: Total Cost

	2,010	2,011	2,012	2,013	2,014	2,015
	$Mn	**$Mn**	**$Mn**	**$Mn**	**$Mn**	**$Mn**
Total Operating Revenue	558	608	746	807	805	806
Total Cost						
Operating Expenses	1,570	1,873	1,920	2,269	2,191	2,280
Non-Operating Expenses						
Depreciation	155	157	168	174	242	219
Financing	562	592	426	289	321	376
Total Non-Operating Expenses	717	749	594	462	564	595
Total	**2,286**	**2,622**	**2,514**	**2,732**	**2,755**	**2,875**

Figure 7 shows WASA's total (operating) revenue[15] and total cost[16] between 2010 and 2015 and net operating position. Over the period, WASA's total revenue increased by 44%, from $557.6 million to 805.6 million, while its cost increased by 26%, from $2.29 billion to $2.88 billion. Since in each year over the period its revenue from operations was inadequate to meet its costs, WASA maintained an operating deficit position for the entire period. WASA's operating deficit position worsened over the period from $1.7 billion in 2010 to $2.1 billion in 2015.

Figure 7: Total Operating Revenue and Total Cost of WASA

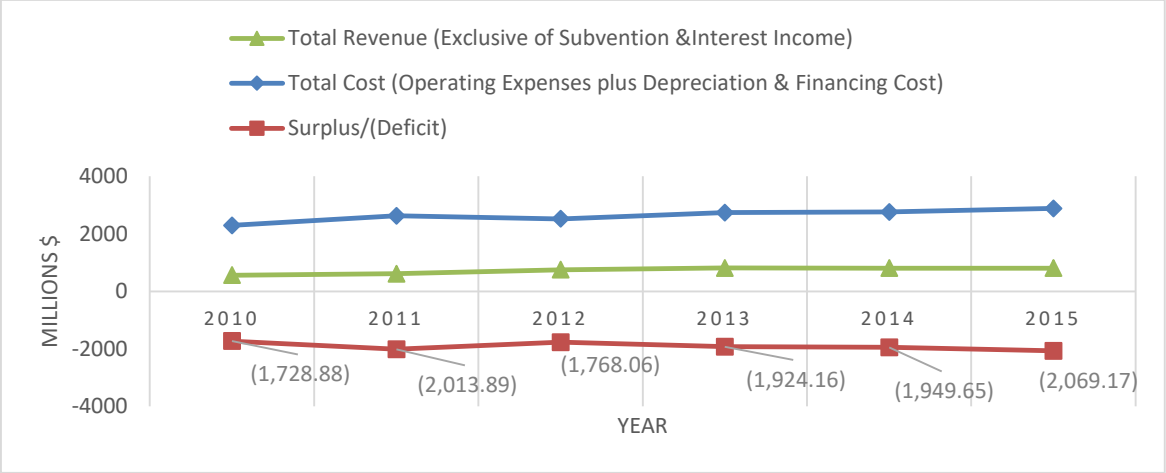
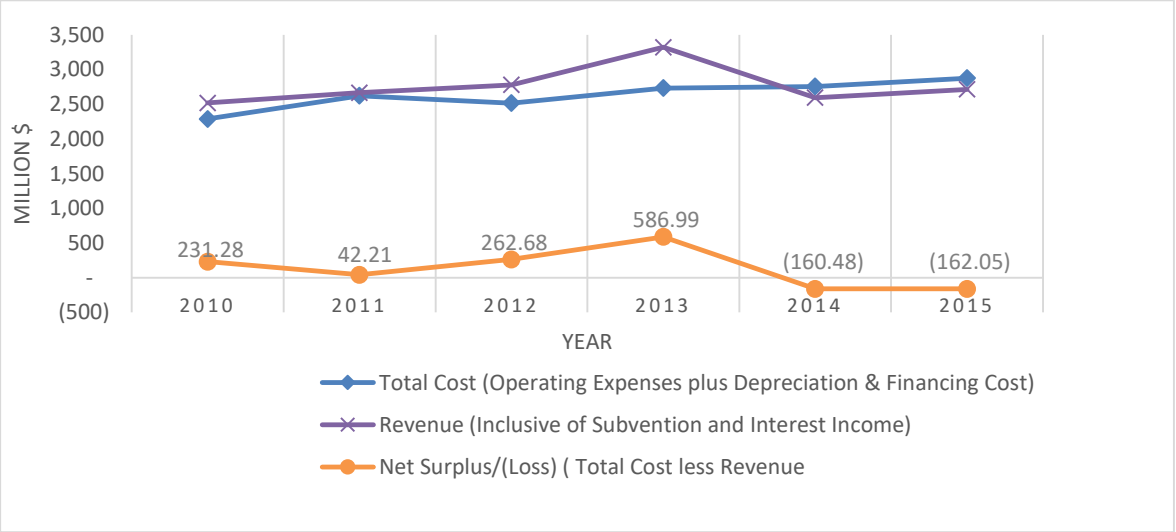


Figure 8: Total Revenue (Operating Revenue & Other Income) and Total Cost of WASA



[15] Total operating revenue is derived from income from potable water and wastewater services and water abstraction.
[16] Total cost is derived from expenses related to the operations, administration and financing of WASA.

Figure 8 shows WASA's total revenue[17] and total cost between 2010 and 2015. For the period total revenue inclusive of subvention income (received from government) exceeded the total expenses of WASA during 2010 to 2013 but not during 2014 and 2015. Without assistance from government subventions, WASA would be unable to pay wages for its staff or may not be able to meet the majority of its financial obligations. As such there has been no positive returns for the period 2010 to 2015.

4.4 Receivables Analysis

One indicator that is usually used to measure the relative efficiency of a utility's commercial practices is the "Collection Period" (i.e. Accounts Receivable in days). Delayed collections can lead to significant cash flow problems. Table 14 shows WASA's annual receivables by customer category. WASA's receivables for both domestic and industrial customers have significantly increased over the period by 11% and 34% respectively, while there has been a decline in the annual receivables from the commercial, cottage and agriculture customers. Overall there was a 4% increase in annual receivables from 2010- 2015 and domestic debt remains the highest proportion of collectibles for WASA. The utility is struggling to collect this debt and needs to develop strategies to recover the outstanding amounts especially from its domestic customers.

Table 14: Receivables by Customer Category

	2010	2011	2012	2013	2014	2015
Receivables by Customer Category	$ Mn	$ Mn	$ Mn	$ Mn	$ Mn	$ Mn
Domestic	392.49	387.15	388.79	382.27	400.57	435.87
Commercial	59.34	59.31	48.12	40.68	32.74	37.86
Industrial	36.19	40.25	51.57	40.64	46.99	48.41
Cottage	6.65	6.27	5.04	4.81	4.59	5.04
Agriculture	7.61	7.64	7.16	6.44	5.60	5.47
Total Receivables (Non Public Sector)	**502.28**	**500.62**	**500.68**	**474.83**	**490.48**	**532.64**
Public Sector Indebtedness (Water Abstraction and Others[18])	92.03	92.02	94.96	87.86	77.53	84.66
Total Trade Debtors	**594.31**	**592.64**	**595.64**	**562.69**	**568.01**	**617.30**

[17] Total revenue is operating revenue plus other income.
[18] Includes amounts due from central government, local government and state enterprises.

When receivables are compared to sales of the utility as in table 15 below, it can be seen that although WASA has been able to recover a larger proportion of its sales over the period, its annual receivables are still significant. In 2015, the final year of the period, the receivables to sales was 40%, indicating that a substantial amount of WASA's cash is tied up with slow playing customers.

Table 15: Receivables (Non Public Sector) to Sales Revenue

	2010	2011	2012	2013	2014	2015
	$ Mn	$ Mn	$ Mn	$ Mn	$ Mn	$ Mn
Total Sales Revenue	1,045.18	1,104.43	1,228.28	1,282.98	1,291.28	1,333.23
Receivables (Non – Public Sector)	502.28	500.62	500.68	474.83	490.48	532.64
Receivables/ Sales	48%	45%	41%	37%	38%	40%

Table 16. shows the level of public sector indebtedness to WASA. Over the period public entities have consistently impacted WASA's receivables position. In 2015 WASA's receivables from these agencies was $84.66 million.

Table 16: Public Sector Indebtedness

	2010	2011	2012	2013	2014	2015
Public Sector Indebtedness	$ Mn	$ Mn	$ Mn	$ Mn	$ Mn	$ Mn
Central Government	14.31	14.25	8.32	8.47	7.77	9.65
Local Government	0.67	0.69	0.58	0.24	0.29	0.41
State Enterprises	19.87	16.25	22.96	16.06	13.00	17.91
Faecal Matter	2.54	2.38	2.32	1.78	1.83	1.79
Water Abstraction	54.65	58.45	60.79	61.30	54.63	54.90
Total	**92.03**	**92.02**	**94.96**	**87.86**	**77.53**	**84.66**

Notably, during the period WASA provision for doubtful debts increased by $43 million or 11%, from $400 million in 2010. A provision for doubtful debts is when an entity believes that it will not recover the debt owed to it. At the end of 2015, WASA's provision for doubtful debt was $444 million.

4.5 Leverage Analysis

WASA's ability to meet its financial obligations has worsened over the period 2010 to 2015. From 2010-2015 both funds flow and cash interest coverage were well below the targeted ranges which suggests that WASA may have experienced difficulty in meeting its finance costs. Funds from operations (FFO) was negative throughout the period and thereby insufficient to match the operating expenditure demands which resulted in negative figures derived for the debt payback period. If a company does not have available funds, it will be unable to repay its debt. This would suggest that any debt repayment for WASA during this period was derived from sources external to the company in the form of Government Subventions. Debt as a portion of Property, Plant and Equipment (PPE) remained above the target of 65% which suggests that borrowed funds were used to finance not just capital expenditure but operational expenditure as well. The loans used to finance operational expenses contributed to WASA's gearing ratio failing to remain within the ideal target of less than 60%.

4.6 Liquidity Analysis

According to the indicators presented in Table 17, WASA was unable to achieve a stable liquidity position during the period 2010 to 2015. In 2011 the utility peaked at a 0.88:1 current ratio but still failed to achieve an acceptable target of 2:1, by the end of 2015 the current ratio had deteriorated to 0.25:1. The operating ratio, which compares net sales to operating costs remained well below acceptable levels for the period 2010 to 2015. Annual revenue covered between 32% and 37% of the operating cost during the period. WASA's failure to achieve an operating ratio of more than one (1) negatively impacted the utility's ability to provide internal financing for the acquisition of capital or operational activities.

4.7 Efficiency Analysis

Based on the information highlighted in table 17, it would appear that WASA has improved its debt collection as the ratio was 38% in 2010 and increased to 51 % in 2015. The collection period although not ideal at the target of one (1), reduced from 7.46 in 2010 to 5.89 in 2015. However,

from the receivables analysis above, it was seen that collections did not actually improve but rather the provision for bad debts increased at a higher rate than the accounts receivable balances for the period 2010 to 2015. The working capital ratio remained relatively constant at 0.39 in 2010 to 0.37 in 2015 indicating that WASA's current assets cannot cover its current liabilities. If WASA is required at any time to immediately honour its current liabilities, the utility would be unable to meet this request.

Table 17: Summary of Financial Indicators

Financial Measure	2010	2011	2012	2013	2014	2015	Target
Profitability							
Return on Property Plant & Equipment (PPE) (%)	-23%	-28%	-25%	-24%	-24%	-23%	≈ 9%
Return on Equity	14%	18%	17%	13%	71%	53%	
Return on Capital Employed	13%	13%	14%	17%	12%	12%	
Asset Turnover Ratio	11%	9%	11%	11%	11%	10%	
Leverage							
Funds Flow Interest Cover (Times)	-2.71	-2.95	-3.48	-5.22	-5.2	-4.79	Between 2 to 3
Debt Pay Back Period (Years)	-7.52	-7.33	-7.87	-5.84	-5.32	-5.29	Between 5 to 7
Cash Interest Cover (Times)	-1.71	-1.95	-2.48	-4.22	-4.2	-3.79	Greater than 1
Debt as a portion of PPE (%)	176%	206%	195%	141%	129%	122%	Below 65%
Gearing Ratio (%)	184%	162%	159%	151%	157%	153%	60%
Debt Service Coverage ratio	38%	34%	37%	50%	34%	35%	
Liquidity							
Current Ratio	0.38	0.88	0.7	0.42	0.35	0.25	2
Operating Ratio	35%	32%	38%	36%	37%	35%	
Cash Flow from Operations Ratio	-0.55	-0.63	-4.59	-0.43	-0.56	-0.53	
Efficiency							
Collection Rate (%)	38%	42%	40%	27%	59%	51%	
Collection Period	7.46	6.92	7.18	8.72	4.91	5.89	0.5 year
Working Capital Ratio (Times)	0.39	0.38	0.45	0.46	0.38	0.37	1

5. RATES AND TARIFFS

5.1 WASA Tariff Schedule

WASA's current tariffs were implemented in December 1993, following PUC Order 83. These tariffs increased rates by a weighted average of 22%. It was only the third time in the last sixty years that tariffs were increased, the previous times being 1937 and 1985. There are five main classes of WASA customers: domestic, commercial, industrial, cottage and agriculture for both water and wastewater services. The prevailing tariff structure that applies to these customers is shown in Table 18 and 19 for water and wastewater respectively.

Residential water customers and charitable institutions both fall into the domestic customer class and are billed quarterly. Residential customers with access to water via a standpipe or who are externally serviced via a yard tap are charged fixed monthly bills. Internally serviced unmetered residential customers are charged based on the annual taxable value of their property while internally serviced metered customers are charged under an inclining block[19] structure consisting of two tariff bands. Charitable institutions which are metered are charged under the same inclining block structure as internally serviced metered residential customers, while those that are unmetered are charged a flat rate per cubic meter consumed.

All non-domestic customers are billed on a monthly basis. Unmetered industrial and commercial customers pay a fixed bill while for those that are metered a flat rate is applied to per cubic meter consumption. Unmetered cottage customers are charged a fixed monthly bill, while those that are metered are charged under an inclining block structure with two consumption bands. Unmetered agriculture customers are charged based on the annual taxable value of their property, while for those that are metered, a flat rate is applied for each cubic meter consumed.

[19] The inclining block rate tariff structure is commonly used to charge for water usage. The feature of this tariff structure is that the more one uses, the higher the average price.

Table 18: WASA's Current Tariff for Water Services

Customer Class	Category	Metered charges		Unmetered		
		TT m^3 /qtr	Min. charge			
DOMESTIC:						
Standpipe	A_1			$33.75/qtr		
Externally serviced	A_2			$67.50/qtr		
Internally serviced (Unmetered)	A_3			ATV (TT$)	% ATV	Minimum TT$/qtr
				0 – 500	95	108
				501 – 1000	81	118
				1001 – 2000	54	203
				over 2000	47	270
					Maximum charge 304/qtr	
Internally serviced (Metered)	A_4	$1.75 first 150$m^3$, then $3.50	$30/qtr			
Charitable institutions	A_5			$108/qtr		
Charitable institutions (Metered)	A_6	$1.75 first 150$m^3$, then $3.50	$30/qtr			
NON-DOMESTIC:						
Industrial	B_3			$474/mth		
Industrial (Metered)	B_4	$3.50	$35/mth			
Commercial	C_3			$474/mth		
Commercial (Metered)	C_4	$3.50	$35/mth			
Cottage	D_3			$300/mth		
Cottage (Metered)	D_4	$2.50 first 150$m^3$, then $3.50	$25/mth			
Agricultural	E_3			15% of ATV Min. charge: $105/mth		
Agricultural (Metered)	E_4	$2.25	$20/mth			
Unserviced premises	F			$50/mth		
OTHER:						
Swimming pool				$160/qtr		
Building tap:						
Domestic		A_4 charges		or A_3 charges		
Non-Domestic		B_4 , C_4, charges		or B_3 or C_3 charges		

Subsequent to the last rate adjustment for WASA, the Water Improvement Rate (Point Lisas Industrial Estate) Order, 1998 allowed for a special water improvement rate of $4.00 per cubic meter to be implemented at the Point Lisas Industrial Estate where customers paid $7.50 per cubic meter.

The Water Improvement Rate (Point Lisas Industrial Estate) (Variation) Order, 2011 resulted in an increase in the water improvement rate, from $4.00 per cubic meter to $8.50 for industries on the Point Lisas industrial estate.

Wastewater customers are charged either a fixed percentage of their water bills or a fixed quarterly or monthly bill is applied for domestic and non-domestic customers respectively.

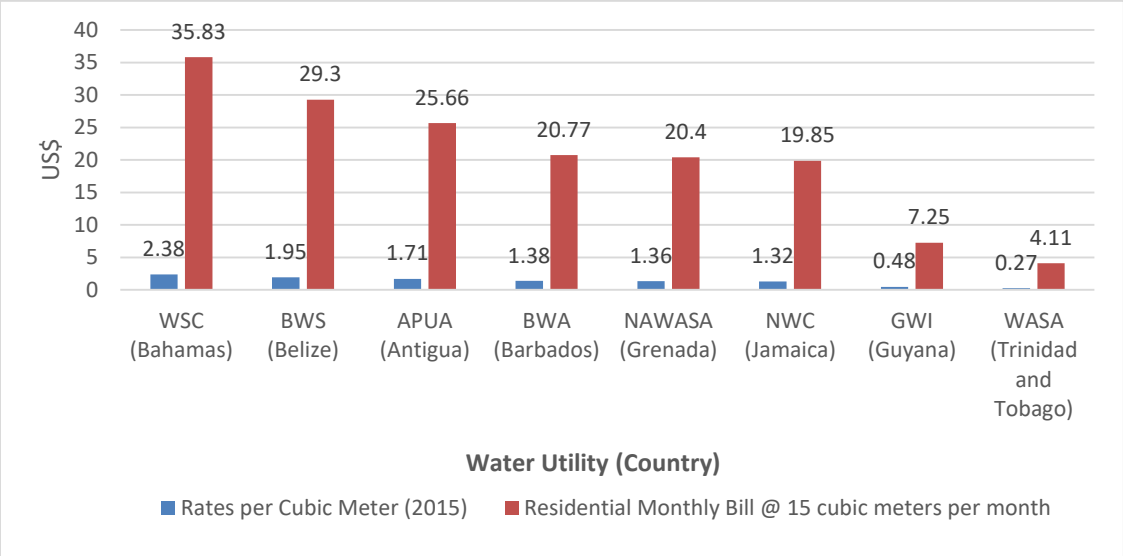
Table 19: Current Tariffs for Wastewater Services

Customer class	Category	Water metered	Water unmetered
DOMESTIC:			
Internally serviced	A_3		Water bill<$202.50/qtr, $75.50/qtr Water bill>$202.50/qtr, $93.50/qtr
Internally serviced (M)	A_4	50% of water bill	
Charitable institutions	A_5		$75.50/qtr
Charitable institutions (M)	A_6	50% of water bill	
NON-DOMESTIC:			
Industrial	B_3		$237/mth
Industrial (M)	B_4	50% of water bill	
Commercial	C_3		$237/mth
Commercial (M)	C_4	50% of water bill	
Cottage	D_3		$100/mth
Cottage (M)	D_4	50% of water bill	
Agricultural	E_3		
Agricultural (M)	E_4	50% of water bill	

5.2 Comparison of Water Tariffs

Figure 9 below presents a residential tariff comparison for regional utilities and the associated monthly bill based on a 15 cubic meter consumption level. Based on the data presented, Trinidad and Tobago has the lowest tariff among the observed regional countries.

Figure 9: Regional Residential Water Rate and Bill Comparison

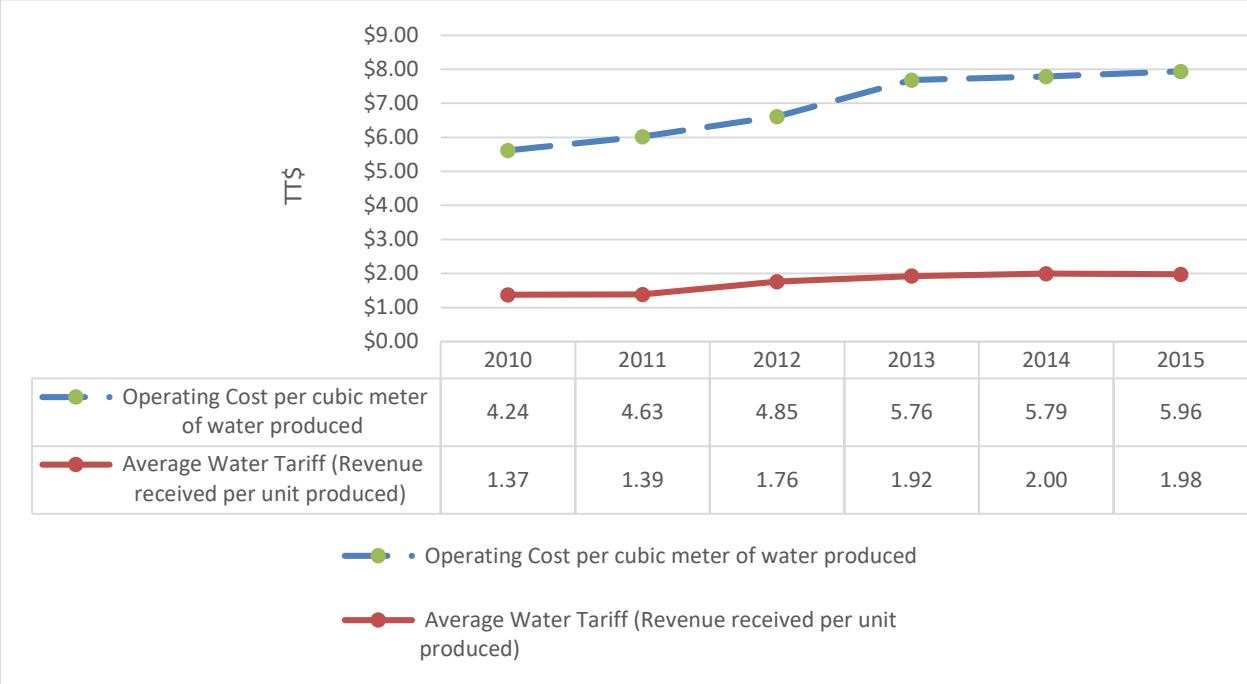


Source: Castalia Strategic Advisors

The corresponding monthly bill which also considers non-consumption charges shows that residential metered customers of WASA pay significantly lower bills than those in other Caribbean jurisdictions. The disparity between a monthly residential customer bill in Trinidad and Tobago and a customer bill in Barbados for example, is approximately US$ 21.00 at a 15 cubic meter consumption level.

5.3 Average Water Tariff

Figure 10: Average Water Tariff and Operating Cost per unit produced



	2010	2011	2012	2013	2014	2015
Operating Cost per cubic meter of water produced	4.24	4.63	4.85	5.76	5.79	5.96
Average Water Tariff (Revenue received per unit produced)	1.37	1.39	1.76	1.92	2.00	1.98

Figure 10 above shows WASA's average water tariffs, which is its revenue received per unit of water produced. Over the period 2010 to 2015, WASA's average tariff increased by approximately 44%[20]. While the utility's average tariff has increased it is noteworthy that operating cost[21] per unit of water produced is significantly higher and has increased at almost the same rate over the period. This further highlights the utility's inability to recover operating cost from revenues.

[20] Primarily because of an increase in the water improvement rate.
[21] Based on data from WASA, approximately 95% of its operating cost is attributed to water operations.

6. CONCLUSION

The review of the operational and financial state of WASA reveals two different perspectives in terms of WASA's performance. It is clear from the information presented that WASA's operational and financial performance is well below the internationally accepted level for a well performing water utility. WASA has been unable to achieve any cost efficiencies during the period. All the indicators for the period show that the level of cost of service provision has been increasing rapidly without a concomitant increase either in service quality or the organization's productivity. Indeed, radical changes are needed if WASA is to improve its performance going forward.

The RIC recently commenced the first price review for WASA and will address some of the observations coming out of this document.