



Inter-American Development  
Bank  
Attn: Yvon Mellinger

July 28, 2016

**Position Paper: Governance in the Water and Wastewater  
Sector in the Caribbean**

Dear Mr. Mellinger:

It is my pleasure to submit Castalia's proposal to provide the consulting services for "Position Paper: Governance in the Water and Wastewater Sector in the Caribbean" in accordance with your Terms of Reference, received on July 5, 2016.

We bring more than 30 years of experience working in the water and sanitation sector in the Caribbean. Indeed, we have experience working in the water and sanitation sector in 6 out of the 7 countries within the scope of this study. Our clients have included the Inter-American Development Bank, national government bodies, regulatory authorities, national and subnational water and sanitation utilities, and other development agencies. We have advised these clients on the development of institutional frameworks, policies, and financing mechanisms required to achieve sustainable universal access to water and sanitation services. As a result of our work, we have a good understanding of the challenges faced in the region, and how to overcome them. In particular,

- We are experts at **analysing water policy, regulatory, and institutional frameworks**. Our work is underpinned by a strong knowledge of best practices in the water and sanitation sector. For example, in Trinidad and Tobago, we evaluated approaches for organizational restructuring of the regulatory agency. In addition, we worked with the Barbados Water Authority to complete a management and operations audit, which included an in-depth review of all aspects of their performance, including their customer service and their human resources management.
- Further, we have a proven track record expertise at **developing institutional, policy, and regulatory reforms to incentivize sustainable water and sanitation service delivery**. Notably, we have worked in The Bahamas to help the Water and Sewerage Corporation ('WSC') develop a turnaround plan, design a new organizational

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structure, and prepare the WSC for economic and environmental regulation. After being hired to do the initial roadmap, we have been asked to assist the WSC further with the implementation of the plan.

I am proud to present our tremendously talented and versatile team, with proven track record of working effectively to deliver challenging assignments. For this assignment, we propose a team that will be led by **Nils Janson**, who has over 15 years of experience in the water and sanitation sector. Specifically, he has conducted financial and operational assessments of more than 50 water and sanitation utilities across the world, and developed and implemented strategies for improving their performance. Further, given his considerable experience in the design of financing mechanisms for water utilities, Mr. Janson will also serve as the Water and Wastewater Financing Expert. He will be supported by one expert, one specialist, and one analysts.

**Basil Sutherland**, the proposed Water and Wastewater Sector Expert, has extensive experience in all aspects of utility management, strategy, finance and regulation throughout the Caribbean. As former President of the Jamaican water utility, played a key role in the development of Jamaica's Water Sector Policy and Strategy, and he achieved a financial turnaround of the utility, making it profitable for the first time in more than a decade. Therefore, he understands how water utilities work and has the technical expertise necessary to review the performance of water utilities.

**Scarlett Piantini**, the proposed Water and Wastewater Sector Turnaround Specialist, has experience evaluating the performance of utilities and analyzing the legal and institutional frameworks of water and energy sectors in Latin America and the Caribbean. Specifically, she has worked on the turnaround of the Mexican, Panamanian, and Barbadian water utilities. Furthermore, the World Bank hired Castalia to develop a utility turnaround framework for public water utilities, and Ms. Piantini is analyzing previously attempted turnarounds to identify the dimensions needed for an efficient turnaround framework.

**Patricia de Jesus**, the proposed Analyst for this project, bring experience designing regulatory and institutional frameworks targeted to improve the performance and efficiency of water and sanitation service provision in the English-speaking Caribbean.

Thank you for your time and consideration. If you have any additional questions or concerns, please do not hesitate to contact me.

We remain yours sincerely,

A handwritten signature in black ink, appearing to read 'Nils Janson', with a stylized, flowing script.

Nils Janson  
Executive Vice-President



# **Position Paper: Governance in the Water and Wastewater Sector in the Caribbean**

**Proposal**

**28 July 2016**

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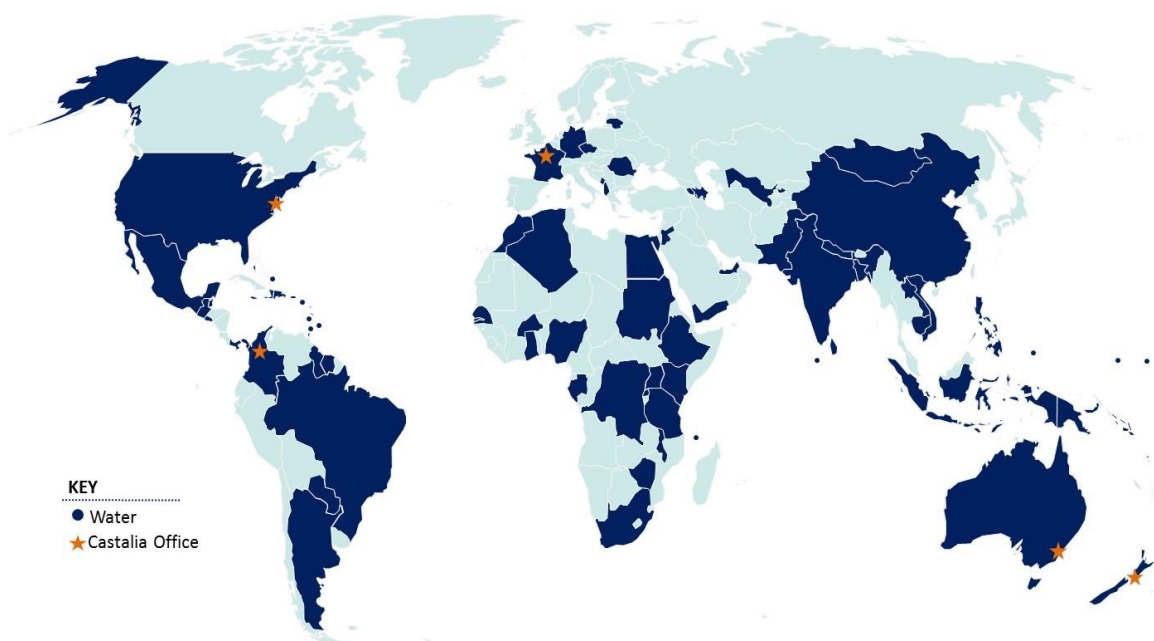
# 1 Consultant's Organization and Experience

This section presents our relevant experience in the water and wastewater sector. Specifically, Castalia has vast experience reviewing and reforming institutional structures in the water sector, analyzing policies and reforms to improve the water sector, and analyzing and creating financing mechanisms for water sectors and utilities.

## 1.1 About Castalia

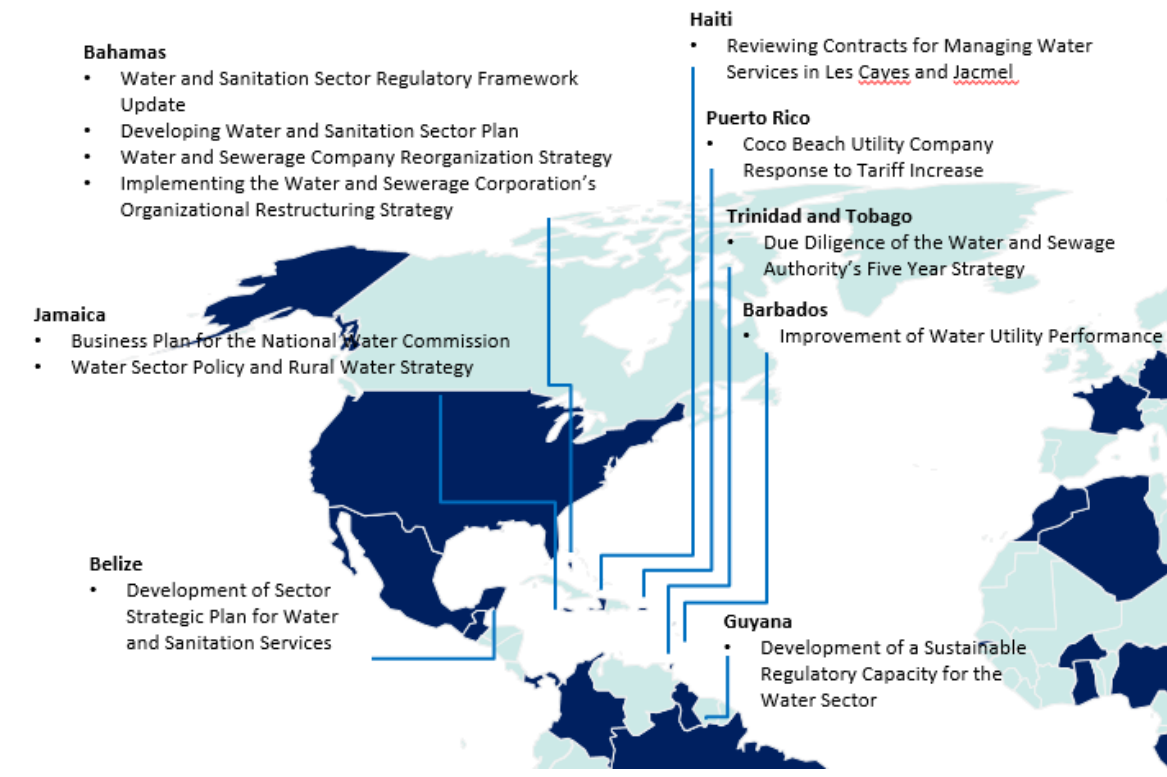
Castalia is an international economic advisory firm, founded in 1980 and built around innovative thinking on organizing and improving infrastructure sectors—water, energy, telecommunications, and transport. We have offices in Washington, DC (United States), Paris (France), Sydney (Australia), Wellington (New Zealand), and Bogota (Colombia). Castalia has over 45 staff members across its five offices, with experts in finance, economics, law, and institutional design. Our clients span the range of multilateral lending agencies, governments, and private firms, illustrating our ability to analyze and understand economic and policy issues from a range of perspectives. Figure 1.1 shows our global experience in the water sector.

**Figure 1.1: Castalia's Global Experience in the Water Sector**



In addition to understanding global best practice of governance in the water and wastewater sector, our experience in the water and wastewater sector of the Caribbean is unparalleled. Specifically, we have developed contacts across utilities, national governments, and regulators across the English-speaking Greater and Lesser Antilles. Indeed, we have worked on water-sector projects in 6 out of the 7 countries within the scope of this project. Therefore, we are able to speak to the unique characteristics of the water and wastewater sector of the Caribbean. Figure 1.2 shows the projects we have carried out in the Caribbean's water and wastewater sector.

Figure 1.2: Castalia's Experience in the Caribbean Water and Wastewater Sector



## 1.2 Relevant Experience

We are ideally placed to carry out this assignment due to our in-depth knowledge of the water sector. We have advised governments and water utilities in more than 170 projects in more than 50 countries. Our work includes advising water and regulatory agencies on the improvement of their institutional structures through the implementation of structural reforms and best practices. Further, we have experience in the analysis and design of national policies to improve the provision of water services and sustainability of water operators. Also, we have a strong experience evaluating and reforming financing mechanisms in the water sector. We believe that together, institutions, policies, and financing, provide incentives to improve the sustainable access, quality, and efficiency of water provision at country and regional levels. Below we detail our experience:

- Reviewing and reforming institutional structures in the water and wastewater sector
- Analyzing policies and reforms to improve the water and wastewater sector
- Analyzing financing mechanisms for water and wastewater sector.

### 1.2.1 Experience reviewing and reforming institutional structures in the water and wastewater sector

An important component of improving the institutions governing the water and wastewater sector is facilitating the institutional development of water and wastewater utilities. We have a long track record of successfully analyzing and reforming water and wastewater utilities.

Our work is underpinned by a strong knowledge of best practices in the water and wastewater sector. For example, in Barbados, we reviewed the water utility's operations and organization structure, benchmarked its performance, **and made recommendations for improving the utility's institutional structure and operation policies**. In The Bahamas, we helped the water utility to design and implement a new organizational structure, including an organizational chart for each division, performance indicators for each department, and a job matrix for different job posts.

- **Improvement of Water Utility Performance, Barbados, 2014**—Castalia was hired by the Barbados Water Authority (BWA) to recommend how to transform BWA into one of the top-performing water utilities in the region. Castalia reviewed all aspects of BWA's operations and organization structure from customer service and metering to non-revenue water management and plant operations. To identify the areas where BWA's performance could be improved, Castalia benchmarked BWA's performance, completed detailed reviews of BWA's operations, and carried out field visits. Castalia then made recommendations for improving the BWA's operations and organizational structure and developed a plan for implementing these recommendations. As part of this assignment, Castalia reviewed BWA's non-revenue water management efforts, developed a long-term customer service plan, and developed an organizational structure for BWA *C13092*
- **Implementation of the WSC's Organizational Restructuring Strategy, The Bahamas, 2012-Ongoing**—The Water and Sewerage Corporation of the Bahamas (WSC) has hired Castalia to assist with implementing the WSC's Organizational Restructuring Strategy. The Strategy, which was developed by Castalia in an earlier project, is designed to improve the efficiency and effectiveness of the WSC as well as prepare the WSC for the new regulatory environment. As part of this project, Castalia is helping the WSC to develop separation packages, improve its business processes, and outsource several activities. In addition, Castalia is assessing the WSC's training program and providing the staff of the WSC with training, and has drafted Terms of Reference (TORs) for key consultants that the WSC plans to hire *C12025*
- **Water Utility Reorganization Strategy, Bahamas, 2011**—Castalia was hired to design a new organizational structure for the Water and Sewerage Corporation (WSC) in The Bahamas and develop a strategy to help the WSC implement this new organizational structure. Castalia developed an organizational chart for each division, performance indicators for each department, and a job matrix, which includes the following for each position in the company: job duties, the reporting relationship, and the qualifications and skills needed. To help the WSC implement the strategy, Castalia estimated the costs of implementing the new organizational structure and developed a strategy for implementing it. The last part of this assignment was to develop a system for measuring employee performance and an employee incentives scheme. We also consulted extensively with senior staff at WSC throughout this assignment *C11049*
- **Developing an Operations Manual for the Water and Sewerage Corporation, Bahamas 2011**—The Water and Sewerage Corporation of the Bahamas hired Castalia to create an operations manual for a US\$81 million loan they received from the Inter-American Development Bank. The operations

manual establishes the rules and procedures for implementing each of the components of the loan. The loan is being used to finance a non-revenue water reduction contract, a program for the institutional strengthening of the WSC, an upgrade of the wastewater treatment plants, the preparation of a wastewater treatment action plan, and a reform of system of economic and environmental regulation *C11095*

- **Governance and Management Procedures Audit of Guyana Water Incorporated, Guyana** 2008-2009—Castalia provided technical support to Guyana Water Inc. (GWI) to support the GWI's turnaround plan. Castalia carried out a procedures audit at GWI, developed and implemented GWI's governance manual, and supported the change management activities at GWI. We also provided general management advice, as well as advice in connection with tariffs and financial decentralization *C08041*
- **Water Review and Redesign, Guyana** 2007—The Guyana Water and Sanitation Programme (GUYWASP) was designed to see through a suite of major institutional and governance reforms linked to associated investment and management support for the water and sanitation sector in Guyana. Castalia a turnaround plan that would cover the initial essentials to remove impediments to GWI's success. After detailed consultation with other members of staff and stakeholders, Castalia recommended that the company should focus on improving governance, financial management, and financial integrity *C07068*
- **New Approach for Managing the Water and Sanitation Utility, Guyana,** 2007—The Government of Guyana decided to terminate its contract with Severn Trent Water International to manage Guyana Water Inc. (GWI). Castalia was retained by the Department for International Development (DFID) to help the Government of Guyana develop a new approach to managing the Guyana water and sanitation sector. We developed a new management strategy for GWI, a new approach to recruiting management, and a new approach to governance of GWI. Castalia also developed a turnaround plan for GWI, and a financial strategy for GWI to achieve financial viability. Throughout this process, we helped to build consensus between the government, international donors, and the team of sector professionals appointed by the Government to help develop the new management strategy *C07002*
- **Water Utility Turnaround Framework, Global** 2016-Ongoing—The World Bank hired Castalia to develop a utility turnaround framework for public water utilities. This will be an analytic framework that practitioners will be able to use to guide efforts to turn under-performing public water utilities into highly successful companies—utilities that deliver good services to customers, efficiently and sustainably. After developing the utility turnaround framework, Castalia will customize it for two water utilities. Castalia researched and is analyzing success in previously attempted turnarounds of public water utilities, using data on performance and a framework for evaluating success. Castalia will then conduct six in-depth case studies, and develop models for financing public water utilities, and evaluate advantages and disadvantages to these models. With these inputs, Castalia will develop the utility turnaround framework. The framework will be customized for two cities chosen by the World Bank.

- **Development of a Strategic Business and Institutional Framework, Kenya, 2015**—The World Bank is providing financial and technical support to the Government of Kenya and Mombasa County to develop a long-term vision for water supply and sanitation (WSS) services and to propose institutional structures to ensure universal access to these services. Castalia was engaged by the World Bank to develop a strategic business and institutional framework for Mombasa County's WSS sector. This includes a review of policies, regulations, and laws that govern WSS services in Mombasa County; the institutional and organizational framework for WSS; and a diagnosis of key operational issues within MOWASCO. Castalia will also prepare strategic investment and business plans and a financing strategy for Mombasa County's WSS sector. We will also design and organize a study tour for officials to observe relevant cases in the United States or Europe *C15063*
- **Identification and Evaluation of an Improved Organizational Structure for Dhaka Water and Sewerage Authority, Bangladesh, 2015**—Dhaka Water Supply and Sewerage Authority (DWASA) has a highly centralized organizational structure, with limited autonomy and accountability at the operational level. For a large utility serving a city of 15 million people, this structure has tended to reduce efficiency and slow response to operational problems. Castalia and the National Water and Sewerage Corporation (NWSC) of Uganda were engaged by the World Bank to identify and evaluate options for an improved organizational structure for DWASA. First, we carried out a desk review of international experience with decentralized zonal management models for water utilities. We then conducted a diagnosis of DWASA's organizational structure and operations, including an analysis of financial management processes. Using the diagnosis, we are developing a revised organizational structure for DWASA to reflect the organization's priorities and for overall service improvement. We are also preparing outlines of job descriptions for key categories of staff and proposing a revised salary structure. Last, we will prepare an action plan to operationalize the organizational structure *C15006*
- **Assessment of Capabilities and Identification of Priority Actions—Lampung Water Supply, Indonesia, 2012**—PDAM Way Rilau was preparing an implementation plan for the proposed public-private partnership (PPP) project to construct a water treatment plant, transmission line, and new network to provide service to a previously unserved area of Bandar Lampung. The Castalia team prepared a detailed assessment of the existing water utility and the City Government of Bandar Lampung's capabilities and gaps that needed to be filled to ensure the success of the PPP project. The Castalia team undertook a detailed assessment of the operational, administrative, and financial capacity of the water utility and the local municipal government; undertook a detailed risk allocation, identifying high priority actions that needed to be taken to mitigate potential project risks; and developed a term sheet for a management services contract to assist the water utility in the operation of the new network. The team presented the findings and recommendations of this review in a 2-day workshop in Bandar Lampung in Indonesian *C12038*
- **Identification of Institutional Models for Durres Water Supply, Albania, 2011**—The World Bank and the European Investment Bank were willing to help

the Government of Albania finance a bulk water supply project that would address supply problems that the Durres Water Utility (UKD) was facing. Before implementing the bulk water supply expansion program, the Government of Albania wanted to identify a viable and legal institutional arrangement for improving UKD's performance. Castalia was engaged to identify appropriate institutional models that would allow for effective management of bulk water supply and distribution to the different jurisdictions in the Durres Water Service Area. Our work included carrying out a legal and regulatory review of Albania's water sector. We also assessed the operating and financial performance of UKD and developed a financial model to assess possible operating and financial scenarios *C11051*

- **Technical Assistance to Podgorica Water and Sewer Company, Montenegro, 2009**—Castalia was engaged by the World Bank to assist the Podgorica Water and Sewer Company and its owner, the Capital City of Podgorica, in its plans of upgrading and expanding the water and waste water services. We analyzed the company's operational and financial performance, and reviewed the management and governance structures of the company. We also assessed the local economic base and demographic demands in the service area. After our assessment we identified priority needs and undertook initial activities for capacity development *C09035*
- **Institutional Strengthening of Water Supply and Sanitation Utilities in Secondary Towns, Azerbaijan, 2006**—The Government of Azerbaijan wanted to improve institutional capacity to manage water supply in secondary towns in Azerbaijan. Castalia was engaged to develop institutional capacity in water utilities in three secondary towns by creating new Joint Stock Companies, to design performance based management contracts, and to procure specialist management contractors to manage the new utilities *C06016*

Another crucial component of improving the institutions governing the water and wastewater sector is developing the sector's legal and regulatory framework. Specifically, we have experience analyzing and reforming regulatory agencies. For example, in Trinidad and Tobago, we evaluated approaches for organizational restructuring of the regulatory agency. Also, we developed a funding proposal for the agency. In The Bahamas, we updated the economic and environmental regulatory framework for the water and sanitation sector. This included the design of institutional arrangements to establish a regulatory agency. In Guyana, we advised the regulator of the water sector on issues related to institutional strengthening, including its organizational structure, capacity building, tariff-setting methodologies, and monitoring and enforcing water standards.

- **Institutional Strengthening of WASA, Trinidad and Tobago, 2011**—WASA of Trinidad and Tobago was beginning a 5-year capital investment and reform program to improve its efficiency and effectiveness. Castalia was engaged to evaluate the proposed approach for organizational restructuring and to help WASA develop a funding proposal. First, we analyzed existing reports and conducted interviews with stakeholders and WASA staff to determine the main areas, activities, and preparations that were being carried out to transform WASA. We conducted a detailed examination of WASA's new human resources policy, and provided an oversight of the targets to be reached regarding the number of

employees in WASA, the mechanism to be used for a voluntary attrition program, and the related funding needs. As part of this assignment, we also performed a basic review of WASA's performance as a water and sanitation provider *C11064*

- **Water and Sanitation Sector Regulatory Update, Bahamas, 2009**—A consortium led by Castalia was engaged by the Inter-American Development Bank to update the economic and environmental regulatory framework for the water and sanitation sector in The Bahamas. Castalia was responsible for developing principles and recommendations for economic regulation and the institutional arrangements. The goal of this work was to establish the Utilities Regulation and Competition Authority (URCA) as economic regulator of water utilities in the Bahamas, and guide URCA's regulatory process based upon lessons and best practice examples from elsewhere in the Caribbean *C09055*
- **Regulatory and Monitoring Framework for Small Private and Community Based Water and Sewerage Providers, Jamaica 2008**—The Office of Utilities Regulation (OUR) wanted to put in place a framework to efficiently regulate small private and community based water and sewerage service providers. The OUR engaged Castalia to develop, implement, and monitor a new set of rules that would form part of the proposed new regulatory regime. *C08024*
- **GUYWASP Output to Purpose Review, Guyana 2004**—DFID supported the development of a sustainable regulatory capacity in the water sector in Guyana by providing consultancy assistance to the Public Utilities Commission (PUC). DFID engaged Castalia to assist the PUC to become an effective, independent regulator of the water sector. Castalia provided recommendations for institutional strengthening and tariff regulation, as well as poverty and social impact considerations *C04044*
- **Development of a Sustainable Regulatory Capacity for the Water Sector, Guyana 2003**—The Government of Guyana was undertaking a program to reform its water and sanitation sector. Castalia was engaged to ensure the sustainable provision of effective regulation in the water sector by advising the Public Utilities Commission (PUC) on institutional strengthening to enable it to carry out its regulatory responsibilities. We amended the PUC's organizational structure, provided training, and advised on an appropriate tariff setting methodology for the water sector. We also assisted the PUC in defining its approach to monitoring and enforcing of water standards *C03028*
- **Training Commissioners of the National Water and Sewerage Commission, Saint Lucia 2009**—The National Water and Sewerage Commission (NWSC) was created to regulate the Water and Sewerage Company's (WASCO) activities under the new ownership arrangements. The Ministry of Public Utilities engaged Castalia to train new commissioners in the NWSC on the scope and the details of their regulatory responsibilities. Castalia analyzed all the newly issued rules and regulations, which described the extent of the NWSC's regulatory powers and responsibilities. Then Castalia developed training materials that clearly outlined these responsibilities and incorporate examples from relevant international best practice. Castalia presented training materials to NWSC commissioners during a collaborative one-day workshop in St. Lucia *C09019*

- **Enhancing Effective Regulation of Water and Energy Infrastructure and Utility Services, Pacific and Caribbean** December 2008 to November 2011—The Asian Development Bank contracted Castalia to do a study on energy and water regulation of small island countries. This work included identifying current regulatory options for small island countries and carrying out case studies to assess the experience, capacity and effectiveness of energy and water regulation in the Caribbean. *C08105*
- **Performance Audit of the Water Resource Management Institutions, Bangladesh**, 2010—Castalia was engaged by the World Bank to assess the operational performance of the water and environmental institutions in Bangladesh and use this appraisal to identify feasible options for developing the sector. First, we conducted an operational and institutional analysis and identified areas in which Bangladesh's water resources sector was not producing desired outcomes, and reasons for these shortfalls. Next, we made recommendations to address weaknesses and strengthen sector performance, to ensure that future investment would provide maximal benefits to the country. Castalia analyzed pollution regulation in Dhaka, focusing on governance problems and developing ways to overcome them. In particular, we developed a decentralization model for effluent treatment plants in Dhaka's garment districts, where dye and other treatment chemicals were polluting rivers. We developed a financial and institutional model for these decentralized treatment plants. *C10008*
- **Economic and Policy Support for the Establishment of a Utility Regulatory Authority, Vanuatu**, 2007—Following previous recommendations from Castalia under a World Bank project to improve utility regulation in Vanuatu, the Government of Vanuatu decided to establish a Utility Regulatory Authority (URA) to monitor the Government's concession contracts for water, electricity and telecommunications services. The World Bank appointed Castalia as economic and regulatory advisors to assist the Government of Vanuatu in establishing the URA. This included developing an implementation plan, structure and staffing, and processes for the URA, as well as training URA staff and Commissioners. *C07009*
- **Sector Review and Assessment for Improved Water and Sanitation Service Provision in Urban Areas, Mongolia**, 2008—The Government of Mongolia wanted to improve service quality and cost recovery of multi-utilities that provide water, sewerage, and heating services in Mongolia's provincial capitals and wanted to understand how it could achieve this through possible institutional reform. Castalia advised on the financial position of the Ulaanbaatar Water and Sewerage Company (USAG) and Public Urban Service Organizations (PUSOs). We also advised on fiscal flows in the sector, the legal framework for the sector, and international experience and best practices. In addition, we provided recommendations for Mongolia with pros and cons of each option. *C08091*
- **Regulatory Framework for Bulk Water Supply Projects, Philippines**, 2006—The National Water Resources Board (NWRB) is the agency responsible for regulation of water resources in the Philippines. NWRB, as a result of constrained resources, is not able to properly fulfill all of its regulatory obligations. Most recently NWRB's regulatory capacity is being tested as a result of NWRB's role in granting water rights for local water districts. NWRB is in need of economic and legal

assistance to confront its role on these types of cases, and to develop the rules, procedures and capacity to deal with cases of this nature in the future. The International Finance Corporation (IFC) offered to assist NWRB by sourcing economic and legal consultant that could support NWRB on this matter *C06005*

- **Development of Multi-Sector Regulator, Armenia 2003**—Castalia supported the Armenian Energy Regulatory Commission as it extended its jurisdiction beyond the energy sectors to include water and sanitation, and telecommunications. We were responsible for overall project management and lead client contact. We drafted water sector tariff methodology, and quality of service recommendations, and provided on-site training on various tariff issues and financial modeling. We oversaw other aspects of the project work including recommendations for restructuring the Commission; requirements for staffing and other forms of organizational support; and development of the legal and regulatory framework required to establish the authority of the Commission as a multi-sector regulator *C03001*
- **Establishment of Multi-sector Regulatory Agency, Comoros Islands 1999**—A concession for electricity and water services had been let. The Government needed to develop a credible and competent regulatory agency to oversee the concessionaire. Castalia assisted in establishing the Electricity and Water Supply Sector Regulator, and provided training and advice on organization and procedures *C99007*

Based on vast global experience, Castalia has produced numerous knowledge publications in the water sector that have been used as guides for formulating regulatory frameworks and governance parameters.

- **Compilation of AusAID Funded Water Supply and Sanitation Sector Work in SAR Countries, Bangladesh, India, Maldives, Nepal, Sri Lanka, 2013**—This project summarized ten reports on improving water services in various South Asian countries, and drew out common themes and lessons, to producing a readable report for dissemination to water sector policy-makers throughout South Asia. Castalia worked closely with a World Bank team to identify key messages, and synthesize them into a compelling overview of strategic options and approach for the region. The need for improved services and the growing risks to the sector were presented, and the reasons for the problems analysed. The need for integrated solutions to create capable providers, incentives for performance, and adequate financing as presented, along with examples of reforms South Asian countries are currently implementing that can build such solutions. The overview was supported with reader-friendly, standardized five page summaries of the ten studies. The countries covered by the reports included India, Bangladesh, Sri Lanka, Nepal and the Maldives *C13077*
- **WBI Water Utility E-Learning Modules 6 & 7, Global, 2012**—The World Bank was developing a core learning program (CLP) called Designing and Implementing Successful Utility Reform in Water Supply and Sanitation. The World Bank wished to use an e-learning program because it would allow them to reach a broad audience, including the Arab Water Academy. Castalia was engaged to develop material for the CLP on public private partnerships (PPPs) in water supply. Castalia

helped to prepare content for modules 6 and 7, which covered the following topics, respectively: developing systems for comprehensive asset management and non-revenue water (NRW) reduction, and developing a water safety plan. The final deliverables for the assignment included multi-media presentations, course notes, simulation exercises, case studies, and readings for the course *C12005*

- **WBI E-Learning Courses Module 5, 8, and 10, Global, 2011**—The World Bank was developing a core learning program (CLP) called Designing and Implementing Successful Utility Reform in Water Supply and Sanitation. The World Bank wished to use an e-learning program because it would allow them to reach a broad audience, including the Arab Water Academy. Castalia was engaged to develop material for the CLP on public private partnerships (PPPs) in water supply. Castalia helped to prepare content for modules 5, 8, and 10, which covered the following topics, respectively: good service management: understanding your customer, planning stages of change, and selling the reform plan. The final deliverables for the assignment included multi-media presentations, course notes, simulation exercises, case studies, and readings for the course *C11091*
- **Development of Water Utility Reform E-Learning, United States, 2011**—The World Bank Institute (WBI) commissioned Castalia to assist in the development of an e-learning course aimed at promoting reform of utilities in the water and sanitation sector. The objective of the course is to provide government officials, senior managers of utilities, and technical staff with the knowledge, skills, and tools for initiating and sustaining reform. Castalia assisted the WBI in converting the program into an e-learning format. Castalia's work involved developing a script for the course, developing power point slides and case studies, and developing interactive exercise quiz questions *C11030*
- **Gridline Piece on Designing Effective Regulation, Global, 2007**—Under the PPIAF-funded project Improving Water and Sanitation Regulation, Castalia wrote a PPIAF Gridline note on how government can design economic regulation to improve services. The objective of this note was to disseminate an earlier output from the project to a broad audience in a concise and easy to read format. The note emphasizes that effective economic regulation can take many forms and that, in designing regulation, government need to be clear about the objectives to be achieved, and the extent to which regulation can achieve these objectives. Accordingly, the Public Private Infrastructure Advisory Facility has asked Castalia to explore the challenges faced by these small island nations in introducing and regulating PPI projects *C07079*
- **Sectorial Dimensions of Anti-Corruption in Urban Water Supply and Sanitation, Global, 2007**—The World Bank undertook major initiatives to strengthen its efforts to reduce corruption in World Bank financed projects. The objective of this assignment was to prepare guidance for practitioners in the urban water supply and sanitation sector, covering sectorial and project level corruption risk assessment and remedial measures. Castalia assessed global knowledge and experience regarding corruption in utility services; identified best practice in anti-corruption initiatives and measures; and developed source books and guidance notes to help practitioners understand, identify, and prevent corruption in the urban water supply and sanitation services *C07044*

### 1.2.2 Analysis of policies to improve the water and wastewater sector

Based on our global experience, we have analysed and recommended initiatives to improve the policies and strategies governing national water and wastewater sectors. In Jamaica, we **drafted a new national water policy** that emphasized the need for Integrated Water Resources Management (IWRM), including a focus on environmental sustainability and climate change adaptation. In Belize, we drafted a policy note on the country's water and wastewater sector. This note included an **overview of the policies governing the water and wastewater sector, and how they could be improved to overcome the challenges facing the sector**. In The Bahamas, we **designed a ten-year Water and Sanitation Sector Plan** for the Government of The Bahamas and **prepared a comprehensive policies and procedures manual for The Bahamas water utility**.

Furthermore, we have experience evaluating and proposing policies and strategies for improving the quality of rural water sectors. As part of the water sector policy **in Jamaica, we developed a strategy to achieve universal access to safe drinking water in rural areas**. This Rural Water Strategy identified environmentally sustainable solutions that are affordable for rural households. In Panama, we advised the National Council on Sustainable Development on the policy changes needed to improve water and sanitation services in rural areas of two provinces.

- **Water Sector Policy and Rural Water Strategy, Jamaica, 2013**—The National Water Commission (NWC) hired Castalia to update the Jamaican National Water Policy and to prepare strategy to expand access to safe water to all rural Jamaicans. To update the Water Sector Policy, Castalia reviewed sector performance, including through consultations with stakeholders in national and local government. Based on this review, the team drafted a new national water policy that emphasized the need for Integrated Water Resources Management (IWRM), including a focus on environmental sustainability and climate change adaptation, and effective private sector participation in service delivery. The policy also set a path to implement IWRM in improving water supply, sanitation, irrigation, and drainage services, including policy measures to achieve universal access to safe water and sanitation. In addition, Castalia developed a strategy to achieve universal access to safe drinking water in rural areas. The Rural Water Strategy identified environmentally sustainable solutions that are affordable for rural households. For the Strategy, the team mapped rainfall levels, water sources, and rural households across the entire island in GIS software. Based on this data, we determined that rainwater harvesting solutions are low-cost and environmentally and institutionally sustainable for many parts of the country, and recommended viable alternatives for areas without sufficient rainfall. Both the updated Water Sector Policy and the draft Rural Water Supply Development Strategy have been submitted to the Ministry of Water, the Environment, and Climate Change in Jamaica, and are expected to be presented to the Cabinet for approval as national policy *C13021*
- **Water and Sanitation Policy Note and Recommendations for Improving the Sector's Performance, Belize, 2012**—The Government of Belize and the Inter-American Development Bank (IDB) are working to develop a country strategy for the period 2013-2017. Castalia has been hired by IDB to help guide these efforts by developing a Policy Note on Water, Sanitation, and Solid Waste in Belize. This policy note will update the 2009 Strategic Sector Plan for water and sanitation sector

in Belize that Castalia developed and will expand the Strategic Sector Plan's scope to include solid waste. The policy note will provide an overview of the performance of the sector, will identify the development challenges facing the sector, and will make short-term and medium-term recommendations for improving the sector's performance *C12088*

- **Preparing a Comprehensive Policies and Procedures Manual, The Bahamas 2010-2011**—Castalia was engaged by the Bahamas Water and Sewerage Corporation (WSC) to prepare a comprehensive policies and procedures manual. For this assignment, Castalia is evaluating WSC's control environment and governance structure, assessing risks related to each primary financial system, assessing the adequacy of existing policies and procedures to control risks, and developing a work plan for WSC's Internal Compliance and Control Division to use to monitor procedural effectiveness
- **Developing a Water and Sanitation Sector Plan, the Bahamas 2008-2009**—The Inter-American Development Bank retained Castalia to help the Government of the Bahamas (GOB) design a ten-year Water and Sanitation Sector Plan (WSSP) and to update the Corporate Business Plan for the Water and Sewerage Company (WSC). Developing these plans required a sector diagnosis to take stock of current sector performance and identify key challenges facing the sector. The project included a review of the existing analytical information of the water and sewerage sector, including current coverage and institutional situation, and financing of the sector. Castalia was also responsible for proposing actions, timelines and financing strategies to address the identified challenges and conduct consulting workshops with GOB authorities *C08096*
- **Strategic Plan for Attaining Universal Coverage, Belize, 2007**—The Inter-American Development Bank engaged Nils Janson of Castalia to develop a Water and Sanitation Strategic Plan (SSP) for Belize. The SSP defines a long term vision for the water and sanitation sector, and a set of alternatives for World Bank intervention to support the country in attaining universal coverage. We carried out a sector diagnosis and developed a feasible set of alternatives for sector development *C07083*
- **Water Sector Regulation, Saint Lucia, 2005**—To help the Government of St Lucia prepare for sale of shares in its water utility, we developed detailed rules and regulations to govern tariffs, service standards and other regulatory matters in the sector. We also assisted with institutional development, including preparing a detailed set of internal rules and procedures to govern the operation of the new water regulatory agency *C05037*
- **Water Sector Reform Strategy and Performance Review of the National Water Commission, Jamaica 1997-1999**—The Government of Jamaica engaged Castalia to advise on options for institutional improvements and private sector management of the national water utility, the National Water Commission (NWC). Castalia reviewed the performance of the National Water Commission and recommended institutional, regulatory and policy improvements that could have a positive impact on the utility's performance. Additionally, Castalia Analyzed the

options for introducing competition through franchise bidding, and through dividing the island into a number of zones

- **Strengthening the Commercial and Operating Performance of Water and Sanitation Systems in the Provinces of Bocas del Toro and Chiriqui, Panama, 2010-2011**—The National Council on Sustainable Development (Consejo Nacional para el Desarrollo Sostenible CONADES) hired a consortium, which included Castalia, to advise on the policy changes needed to improve water and sanitation services in urban and rural areas of the provinces of Bocas del Toro and Chiriqui. Castalia carried out a comprehensive financial and economic analysis of water and sanitation services in these provinces by the national water utility (Instituto de Acueductos y Alcantarillados Nacionales IDAAN). Castalia analyzed successful models for managing water and sanitation systems, and held a workshop for representative of CONADES, IDAAN, and the Ministry of Health, to agree on a model for managing the systems in these provinces. Next, we implemented a pilot decentralization program in these two provinces, in which the utilities would remain under ownership of the state, yet operate with significant autonomy
- **Water Reform and Private Participation, Australia, 2010**—Rural-dwelling Australians generally have access to low quality and less reliable water than urban-dwelling Australians. The failures of local water utilities in rural areas of New South Wales and Queensland are well documented; however, the causes of these problems are not entirely clear. Castalia was engaged by Infrastructure Partnerships Australia to assess the problems and suggest solutions. We conducted a survey of the financial performance of 60 rural Queensland water utilities and developed a simple model for estimating the future investment requirements for the rural water utilities. We then looked at ways of overcoming these problems, and concluded that new regulations were required to incentivize rural councils to overcome problems with financial performance, service quality and infrastructure investment *C10078*
- **Policy Note for the Water and Sanitation Sector, Panama, 2013**—The Inter-American Development Bank (IDB) hired Nils Janson, a Senior Vice President at Castalia, to develop the Policy Note for the Water and Sanitation Sector of Panama (Policy Note for the Sector). The main objective of the Policy Note for the Sector is to update the Strategic Plan for the Water and Sanitation Sector, which was prepared in 2009. Additionally, the Political Note for the Sector is meant to serve as a basis to guide the dialogue of the new Government of Panama when it develops the Strategy for the Country for 2015-2019. For this reason, the Policy Note for the Sector presents strategic guidelines for improving the sector's performance, and recommends specific actions that the IDB can take to support the implementation of these strategic guidelines *C13084*
- **Advising the Transformation Committee on Reforming the Water and Sanitation Sector, Panama, 2012**—Castalia was hired by the national water utility in Panama (IDAAN) to continue implementing the water sector reform. Under this contract, Castalia will provide ongoing support to the Transformation Committee created to implement the sector reform. Castalia prepared the new bill (which will reform the sector when passed into law), and draft essential documents for the restructured service provider. Additionally, Castalia drafted a Sector Strategy that will guide the actors in the sector for the period 2014-2018 *C12059*

- **Implementing the Water and Sanitation Sector Reform and Performance Review of Instituto de Acueductos y Alcantarillados Nacionales in Panama 2011-2012**—The Government of Panama is implementing a new legal and structural framework for the water and wastewater sector. After having previously developed the “Strategy for the Reform of the Water and Wastewater Sector”, Castalia was engaged to help implement the strategy. Castalia was responsible for strengthening the national water utility (Instituto de Acueductos y Alcantarillados Nacionales—IDAAN) by developing a business plan for IDAAN, as well as performance contracts. The business plan provided a review of the current management and operations, and based on the current situation provided targets for improving service. The performance contracts between IDAAN and the regional units provided a tool for improving performance. We also proposed a new organization structure for the company
- **Support for the Implementation of the Water and Sanitation Sector Reform, Panama, 2011**—After having previously developed the Strategy for the Reform of the Water and Wastewater Sector, Castalia was engaged to help implement the strategy. Castalia was responsible for drafting new laws for the sector and developing a fund to distribute subsidies more efficiently. Castalia also developed financial models, a business plan, and performance contracts for Instituto de Acueductos y Alcantarillados Nacionales (IDAAN), Panama's water and sanitation company. We also proposed a new organization structure for the company *C11079*
- **Reform Strategy for the Water and Wastewater Sector, Panama, 2011**—The Government of Panama is restructuring the nation's potable water and sanitation sector. Castalia was hired by the Government, with the assistance of the Inter-American Development Bank, to determine the sector's weaknesses, to propose a new structure for the sector, and to identify the legal and institutional changes necessary to implement the structure proposed. Castalia created a financial plan that would allow the provision of service in urban areas to become financially sustainable. In addition, Castalia developed a strategy that would strengthen the sector's policy-making body, the regulator, and the provider of water and sanitation services *C11048*
- **Reforming the Water and Sewerage Sector, South Africa, 2011**—Castalia was contracted by Deloitte Consulting (Pty) Ltd., to help advise the Department of Water Affairs of South Africa on a strategy for reforming the water and sewerage sector. The objective of the reform was to realign the institutional framework of the water sector to ensure its effectiveness. Responsibilities involved the development of an institutional framework that clearly defined the roles and responsibilities within the water value chain, while guiding water institutions so they could achieve economies of scale and raise funds to invest in water infrastructure. Lastly, a realignment of current institutions was necessary so that they would report to the Ministry, which would in turn allow the Ministry to effectively control and manage water institutions *C11047*
- **Analysis and Strategies for improving Delhi's Water Supply, India, 2011**—Castalia was engaged to recommend reforms to the Delhi Jal Board. Working intensively with high-level decision makers, we assisted with a technical, institutional, and operational analysis diagnosing the key problems in Delhi's water

supply. We identified options to improve water services. One recommendation was to introduce a decentralized model. Castalia assessed the hydraulic boundaries and water balance in Delhi and proposed ways to increase autonomy at the local level *C11003*

- **Diagnostic Study of the Water Sector, Philippines, 2008**—Many water sector reforms had been recommended in the Philippines in the past 20 years, but few of these had been implemented, and progress in the sector was stagnated. Castalia was engaged by the World Bank to review the lessons from past reform attempts, and recommend a direction for the future. All significant regulatory, institutional and financial reform recommendations were catalogues and investigated. From these investigations it was possible to assess the reasons the recommendations were not implemented. In some cases it was because they were simply not good ideas. In other cases good recommendations faltered because of a lack of sustained support from a champion, or inadequate consultation to build consensus. We developed recommendation on the processes that should be followed to allow reforms to be developed and implemented successfully, as well as suggesting a way forward for the water sector to achieve its goals *C08047*
- **Strategies for the Water and Sanitation Sector in the State of Sao Paulo, Brazil, 2006**—The Secretariat of Energy and Water Resources (SERHS) in the State of Sao Paulo had contracted a consortium to provide specialized technical services for the elaboration of a study for the development of strategies for achieving universal coverage in water and sanitation. The consortium was responsible for estimating the costs of achieving such universal coverage and for providing advice regarding specific policies that could be implemented by the State regarding the sector regulatory framework, tariffs, private sector participation, and sector financing. Castalia was responsible for leading the activities related to tariff setting, private sector participation and sector financing. The project aimed to develop a strategy for the state of Sao Paulo's basic sanitation sector, to identify opportunities for private-sector involvement, and to map out the roles of the public and private sectors in developing basic sanitation. The development of a pricing model for rational water use, which included long-range marginal cost studies of the independent water and sewer systems, was also a central component of the project *C06018*
- **Water Sector Legal & Regulatory Reform, Malawi, 2006**—As part of comprehensive urban water and sanitation supply reforms, the Government of Malawi sought to develop an enabling environment for improved service delivery and attainment of financial viability for its two urban Water Boards in Lilongwe and Blantyre. Castalia developed an appropriate legal and regulatory framework, and institutional structure, to support the goal of the reforms *C06074*

### 1.2.3 Experience evaluating and reforming financing mechanisms for the water and wastewater sector

We are experts **drafting tariff studies and formulating business plans** for Caribbean water utilities, with the goal of ensuring water utilities' financial viability. We have prepared tariff studies for the water utilities in Jamaica and The Bahamas. We also prepared a business plan for the Jamaican water utility and provided recommendations for implementing it. In The

Bahamas and Trinidad and Tobago, we conducted a valuation of the water utilities' assets for the purposes of a tariff reset.

- **Tariff Study and Business Plan for the National Water Commission, Jamaica** 2012-2013—Castalia was hired by the National Water Commission (NWC) to prepare a tariff proposal that would ensure NWC's financial viability as it invests to improve services and meet growing demand. In preparing the tariff proposal, we carried out a cost of service study, a marginal cost study, and a social impact study. In addition, we prepared a business plan and provided recommendations for implementing it. As inputs for the business plan we conducted an asset-revaluation, and analyzed the tax and statutory obligations of the company. Finally, we recommended a tariff regime, where we analyzed how the K-factor and X-factor could be used to make that the tariff incentivized the NWC to become more efficient, while giving the commission enough revenue to be able to operate *C12092*
- **Water and Sewerage Corporation Tariff Study, The Bahamas** 2015-present—The Water and Sewerage Corporation (WSC) of the Bahamas hired Castalia to complete a tariff study. The Government of the Bahamas is working to establish an economic regulator that will regulate the WSC. The WSC has hired Castalia to complete a tariff study so that it can submit a tariff application as soon as it becomes regulated and so that it can take a proactive role in shaping the new regulatory framework. To complete the tariff study, Castalia is recommending a tariff-setting mechanism for the WSC and then determining the appropriate tariff levels and tariff structure for the WSC. To determine the appropriate water and sewerage tariffs for the WSC, Castalia will update and complete the WSC's financial model, estimate the WSC's efficient cost of service, and estimate the marginal cost of providing service to different geographic areas and types of customers. In addition, Castalia will prepare a social impact analysis and recommend targets for the WSC's financial and operational performance *C15002*
- **Valuation of the Fixed Assets of the Water and Sewerage Corporation, The Bahamas** February 2011 to July 2011—Castalia was hired by the Bahamas Water and Sewerage Company (WSC) to develop an asset register that describes the fixed assets owned by the WSC and the value of these assets. Castalia worked with the WSC to gather the necessary information, carry out spot checks of the data, and conduct on-site inspections of assets. Castalia developed a memorandum that defines the policies and procedures for determining the value of fixed assets and created an Asset Inspection Checklist for evaluating the condition of the assets. Lastly, Castalia wrote a memorandum that lists the current costs of different assets and that presents an index of historical construction costs *C11011*
- **Updating the Water and Sewerage Corporation's Financial Model, Bahamas** September 2010 to March 2011—Castalia was engaged by the Bahamas Water and Sewerage Corporation (WSC) to update its financial model. Castalia had originally developed this model in 2009 during an assignment to build a ten-year water and sanitation plan for the Bahamas. *C10062*
- **Capital Expenditure Plans and Asset Valuation, Trinidad and Tobago** 2008—The RIC wanted to review the asset valuation methodology and capital investment plans of the Water and Sewerage Authority for the purposes of a tariff

reset. Castalia was asked to provide advice on the most appropriate asset valuation method for determining the valuation of WASA assets for establishing prices, propose a reasonable asset base for the chosen method, and provide advice on whether the proposed capital expenditure plans for WASA are reasonable and represent an efficient level of capital expenditure *C08035*

- **Prioritization of Water Resources Initiative, Mexico** 2015-2016 (Manager)—Castalia is part of a consortium hired by 2030 WRG to assist in developing CONAGUA’s strategic capacity to effectively plan and program capital investments in the Mexican water sector. As part of the work, we are designing, implementing and supporting a multi-variate capital investment prioritization system.
- **IDAAN Action Plan 2016-2019 Implementation, Panama**, 2016-Ongoing (Manager)—The water utility responsible for providing water and sewerage services in all urban areas in Panama (*Instituto de Acueductos y Alcantarillados Nacionales—IDAAN*) hired Castalia to draft and assist in the implementation of its Action Plan for 2016-2019. The Action Plan is IDAAN’s business plan for the period from 2016 to 2019, and sets out targets to improve performance and service quality.
- **Business Development Plan for the Water and Sewerage Company of Paraguay (ESSAP), Paraguay** 2006—The Government of Paraguay, with the assistance of the World Bank, is in the process of determining the most appropriate road forward for establishing the financial and operational stability of the Paraguayan Water and Sewerage Company (ESSAP). Castalia was retained to lead the preparation of a business plan for ESSAP that will provide guidance on key issues that must be addressed such as required capital investment and related financing, tariff levels, debt reconciliation, and potential private sector participation in ESSAP. This business plan included the steps required for its implementation. *C06011*

We are experts evaluating financing programs in the water and sanitation sector. For The Bill and Melinda Gates Foundation, we reviewed evidence on the effectiveness of Results-Based Financing (RBF) interventions in Water, Sanitation, and Hygiene (WASH) sector with the goal of generating guidance for future interventions. In the Philippines, we **designed a unified financing framework** that brought numerous over-lapping and conflicting programs into a single national program for the Water Services and Sanitation (WSS) sector. In Mexico, we **analyzed and proposed changes to financing instruments and programs that water operators can use** to finance energy-efficiency programs.

- **Review of Results-Based Financing for Water, Sanitation, and Hygiene, Global**, 2014—The Bill and Melinda Gates Foundation (BMGF) contracted Castalia to review evidence on the effectiveness of Results-Based Financing (RBF) interventions in Water, Sanitation, and Hygiene (WASH) sector with the goal of generating guidance for future interventions. Castalia began by building a census of all known RBF projects in WASH and then drew a stratified sample of 30 projects from it. The stratified sample included projects in water and sanitation and three types of RBF mechanisms: Output-Based Aid (OBA), Vouchers, and Conditional Cash Transfers (CCT). The research will explore those sample projects in depth by examining a range of factors that could impact or reflect success, as found through reviewing literature for the whole sample and interviewing stakeholders for a subset

of 10 projects in the sample. Castalia has been testing the hypotheses about what works well in what contexts and noting gaps in information. The findings will be presented in a written report along with an annotated table of contents for a proposed guidance document for future RBF interventions in WASH *C14049*

- **Financing Framework for Water Supply and Sanitation, Philippines, 2014**—The World Bank engaged Castalia to design a unified financing framework for the Water Services and Sanitation (WSS) sector. The framework brought numerous over-lapping and conflicting programs into a single national program capable of meeting investment needs and encouraging efficiency improvements, within a decentralized sector structure. First, Castalia assessed the previous attempts at sector reform, reviewed the operations of water service providers, and developed a financial model to determine the capital and operational expenditure needed to reach sector coverage goals. Then, we identified financial strategies for the sector including increasing the effectiveness of public financing and proposing options to make Water Districts more profitable. Finally, Castalia developed a financing framework for the sector, including an implementation plan and 5-year priority investment list *C14030*
- **Developing a Financing Scheme for Energy Efficiency Projects in the Water Sector, Mexico, 2013**—The Inter-American Development Bank hired Castalia to work with the National Water Commission (CONAGUA for its acronym in Spanish) in developing a financing mechanism for energy efficiency projects in the water sector in Mexico. The Castalia team analyzed the financing instruments and programs that exist in Mexico. Then, the team proposed changes to those programs and recommended a mechanism that water operators can use to finance energy efficiency programs. Finally, the Castalia team prepared a plan to implement the financing mechanism *C13081*
- **Review of the Access to, Availability of, and Organizational Readiness for Uptake of Funding for the Wastewater Sector, Caribbean Region, 2013**—The Global Environment Facility-funded Caribbean Regional Fund for Wastewater Management (GEF CReW) Project is a four-year project aimed at addressing some of the critical issues that Caribbean countries face in managing their wastewater systems. One of the Project's objectives is to promote successful regional and national financial mechanisms to facilitate sustainable financing of future wastewater investments. Castalia helped GEF-CReW analyze whether the participating countries currently have access to wastewater funding, and if so, under what conditions. Castalia also analyzed whether or not the countries have the organizational and absorptive capacity to effectively use the available funding. Castalia proposed an approach to help countries in the Caribbean achieve their objectives in the wastewater sector, and in doing so improve the management of their wastewater systems. Castalia presented these findings at the GEF-CReW Third Steering Committee Meeting in Saint Lucia *C13061*
- **Strategy for Financing the Water Sector, Mexico, 2007**—The National Infrastructure Program 2007-2012 established by the Federal Government of Mexico set ambitious goals for increasing both service coverage and provider efficiency in the water and sewerage sector. Castalia was engaged to review the role of the national development bank (BANOBRAS) and the national water

commission (CONAGUA) in financing the water sector in order to assist the Government of Mexico to streamline the mechanisms to foster significant investments in the sector that would contribute to achieving the goals established in the National Infrastructure Program for the period from 2007 to 2012. We analyzed key sector problems and developed financial options to address the problems *C07065*

- **Promotion of Local Private Sector Participation in the Water Sector, Albania, 2007**—The Government of Albania wanted to promote local private operators in the provision of Water Supply and Sanitation services in Albania. Castalia reviewed the existing institutional and legal environment in Albania's water sector and what changes were required to promote local private sector participation. We also reviewed and built the capacity of the local private sector to provide the services *C07018*

We also have analyzed output-based aid and concessionary financing initiatives in the water and sanitation sector. In Nigeria, we carried out an output based aid (OBA) scoping study for water supply in small towns. In Malawi, we helped the Government to prepare a strategy for prioritizing and making more effective investments in the water sector. In Southeast Asia, we developed a framework to quantify the subsidy element implicit in concessional finance, and suggested ways to better target these implicit subsidies.

- **Output Based Aid for Town Water Supply, Nigeria, 2013**—The World Bank engaged Castalia to carry out an output based aid (OBA) scoping study for water supply in small towns in Nigeria. To accomplish this task, we carried out a mission to Nigeria, where we visited four states (Ondo, Ekiti, Rivers, and Bauchi). Castalia assessed the feasibility of using OBA as a mechanism to effectively deliver sustainable water services in small towns and peri-urban areas within these states. We recommended two possible sites that could be considered for an OBA scheme. In addition, we prepared possible project designs, laying out contractual structure, oversight mechanisms, and the role of the different counterparties: private sector partners, water users associations, and government agencies, among others. We also assessed interest from local private operators and finance institutions *C13007*
- **Water Sector Investment Program, Malawi, 2011**—As part of the National Water Development Program, the Government of Malawi (the Government) wanted to prepare a strategy for developing a Water Sector Improvement Program (WSIP) that would ensure it was selecting water projects that were achieving the most benefits for Malawi. The World Bank engaged Castalia to help the Ministry of Irrigation and Water Development (MoIWD), and the Government more generally, to prioritize and make more effective investments in the water sector. Castalia evaluated what investments the Government could make, arranging these investments in a priority order to understand which ones the Government should make, and putting these into a strategy in which projects fit together and are complementary *C11028*
- **Training on the Water Sector Investment Plan of Malawi, Malawi 2012**—The Ministry of Agriculture, Irrigation and Water Development retained Castalia to provide key staff members with training on the Water Sector Investment Plan of Malawi. In 2011, the World Bank and the Agriculture, Irrigation and Water

Development to develop an investment plan for Malawi's water sector for the next twenty years. During this four-day training, Castalia provided staff members with training on key inputs used to develop the Water Sector Investment Plan. These included benefit cost analysis, the investment expenditure and financing model, and the project database. Following this training, the staff members were able to update and carry out analysis using the model *C12061*

- **Use of Funds for Mitigation and Adaptation to Climate Change, Mexico, 2011**—The OMM office in Mexico hired Castalia, through a contract with a senior staff member, to help CONAGUA identify existing climate change funds that could be used to finance mitigation and adaptation projects in the water sector in Mexico. Castalia prepared a document that serves as a guideline for financing mitigation and adaptation to climate change projects *C11015*
- **Working Paper on Concessional Finance and Subsidies, Southeast Asia Region, 2009**—The World Bank was interested in quantifying the level of subsidy implicit in ODA lending in the water sector. Castalia was engaged to develop a working paper based on regional experience in Southeast Asia and lessons from selected international experience. We developed the economic framework to quantify the subsidy element implicit in concessional finance, and suggested ways to better target these implicit subsidies. A combined World Bank and Castalia team applied this framework to assess the level of subsidies being delivered through concession financing in a number of South East Asian projects, and to compare the subsidy incidence against various targeting criteria. Results were published in a Working Paper at <https://openknowledge.worldbank.org/handle/10986/12977/C09007>
- **Water Sector Concessionary Finance Policy Note, People's Republic of China, 2008**—The World Bank was investigating ways to improve the performance of China's urban water utilities, and wanted assistance in preparing a policy note on concessionary finance. Castalia was engaged to work with local consultants to develop a policy note on concessional financing options for China. *C08010*
- **Output Based Aid to Improve Access to Water Services in Jakarta, Indonesia, 2005**—Water services in Jakarta are supplied by two concessionaires PALYJA and TPJ under 25-year concession contracts. In 2006, only 60 percent of Jakarta's population of 8 million was served. This project was designed to increase the provision of water services in poor communities of Jakarta through an Output-Based Aid subsidy program. Under the program, a subsidy will be provided by the Global Program for Output-Based Aid (GPOBA) to offset the cost of providing connections for eligible households. The concessionaires will be compensated based on the number of connections in the selected communities. Castalia was hired to advise on the design of the mechanism under which GPOBA funds would be used to expand access to improved water services. The work involved consultation and communication with the stakeholders, including the concessionaires, the regulatory body and the local governments to determine the appropriate subsidy amounts *C05055*

- **Output Based Aid for Improved Water Access, Brazil, 2005**—Castalia is engaged by Global Partnership for Output-Based Aid (GPOBA) to prepare the transaction by which GPOBA subsidies will be provided to Aguas de Amazonas (AdA), a private concessionaire, for improved services to low income

We have a proven track record of advising governments and water utilities on mechanisms for private-sector participation. In Haiti, we provided transactional support to the water utility when it was selecting an international operator. In Colombia, we are structuring a PPP for the design, construction, operation, and maintenance of a water and sewage system for the city of Santa Marta. In Mexico, we are advising on institutional and financial aspects of the process of designing performance-based PPP contracts to replace the existing commercial out-sourcing contracts.

- **Case Study on PSP in Water Sector, Haiti 2013**—The Inter-American Development Bank (IDB) and the Spanish cooperation (AECID) are supporting the Government of Haiti and the water sector regulator (DINEPA) in improving water and sanitation services in Port-au-Prince. Water services have long been deficient and the major earthquake that hit the city in January 12, 2010 aggravated the situation. DINEPA therefore contracted an international operator (LDE) to provide operational assistance (ATO) to the water utility of Port-au-Prince (CTE-RMPP). The three-year contract, a hybrid between a technical assistance and a management contract, was signed in February 2011. The IDB hired Castalia to review the successes and shortcoming of the contract in 2013. Castalia will draft a report outlining the lessons learned from this contract for Haiti and for other developing countries. Castalia will include recommendations for the design of future contracts of this type in the report *C13039*
- **Assessing the Operational Strengths and Weaknesses of the Water Utility of Port au Prince, Haiti 2010-2011**—The Inter-American Development Bank (IDB) and the Spanish cooperation (AECID) were supporting the Government of Haiti and the water sector regulator (DINEPA) in improving water and sanitation services in Port au Prince by providing operational assistance to the water utility (CAMEP) from an international operator. Castalia drafted the contract between CAMEP and the international operator—a hybrid between a technical assistance contract and a management contract. Castalia also acted as the transaction advisor to select the international operator. Our work involved assessing CAMEP's strengths and weaknesses, identifying the management and operational assistance needed, and capturing that in a contract. We also developed prequalification criteria, performance measures, financial incentives, and evaluation criteria *C10046*
- **Contract Review for Managing Water Services in Les Cayes and Jacmel, Haiti 2011**—The Direction Nationale de l'Eau et de l'Assainissement (DINEPA) of Haiti intended to improve the quality of service and increase access to potable water and sanitation in the city of Les Cayes through a public-private partnership (PPP). Castalia reviewed the draft PPP contract and three proposals that had been submitted by bidders in response to a Request for Proposals (RfP). Castalia also reviewed the draft PPP scheme. We recommended an approach to DINEPA and the IDB to help ensure value for money from the PPP while capitalizing on the time and effort already put into the procurement process *C11009*

- **Structuring a PPP for the Water Supply and Sewerage Systems of Santa Marta, Colombia, 2015**—The National Planning Department of Colombia is interested in implementing a PPP structure for the design, construction, operation, and maintenance of a water and sewage system, for the city of Santa Marta. Currently the rate of coverage and level of quality of water and sanitation services in Santa Marta is below the average for the country. Also, the contract with the private firm that currently operates the system and the infrastructure expires in April 2017. Castalia is leading all the economic, financial, transactional and institutional aspects of the development of the PPP contract. Castalia will design the arrangement to introduce private participation for water service provision based on the provisions of the National PPP Law and water sector regulations. For this, Castalia will set service levels and tariffs, as well as the payment formulas to the private party that will maximize value for money for the public sector. Also, Castalia will support the DNP and the municipal Government of Santa Marta in planning the process for introducing private participation. *C15083*
- **Guidelines for the Pre-Feasibility Study of PPP Projects, Indonesia, 2015**—The Indonesian Infrastructure Guarantee Fund (IIGF) wants to standardize the pre-feasibility studies prepared by the local governments for public private partnership (PPP) projects. Castalia was hired to draft the Guidelines for preparation of the pre-feasibility studies of PPP projects in general and draft two sector-specific Guidelines for water and power sectors. *C15019*
- **JICA Assistance to Philippines PPP Center, Philippines, 2014**—The Japan International Cooperation Agency (JICA) has hired Castalia to provide technical assistance to the Philippines PPP Center and counterparty government agencies. Castalia has been engaged to develop, implement, manage and facilitate bankable PPP transactions for major infrastructure projects in the water, transport, energy and health sectors. For each project, Castalia is carrying out all the required steps from PPP project identification, through to feasibility studies, and finally to drafting bid documents for each transaction. Castalia is also helping build the Philippines PPP Center's capacity to undertake PPP projects, by delivering training and decision support frameworks and tools needed at various project development stages of the PPP process. *C14077*
- **Water PPP for Mexico City, Mexico, 2014**—The public utility responsible for providing water supply and sanitation services in Mexico City (Sistema de Aguas de la Ciudad de México—SACMEX) is in the process of designing performance-based PPP contracts to replace the existing commercial out-sourcing contracts. Castalia is advising SACMEX on institutional and financial aspects of the process, including the type of PPP contracts that will be used, the performance indicators used to monitor the contracts, and the compensation formulas. Castalia is also reviewing the terms and conditions that will be included in the tender documents and identifying private firms that could be potential bidders. *C14029*
- **Small Town Water PPPs, Bangladesh, 2013**—The World Bank assisted the Government of Bangladesh with options for improving water supply in secondary town in Bangladesh, focusing on amalgamation of service providers for multiple towns and the use of public-private partnerships (PPPs) as possible options. Another consulting firm had studied several towns and developed

recommendations. However, the Bank found that the recommendations were not clearly expressed and justified, and a number of substantive elements were lacking. Castalia was engaged by the World Bank to summarize the reports into clear, readable documents, and to supplement the analysis and recommendations where necessary *C13099*

- **Designing a PPP Scheme for SACMEX, Mexico, 2013**—The public utility in charge of providing water and sanitation services in Mexico City (SACMEX) is in the process of designing performance-based PPP contracts to replace existing commercial contracts. SACMEX engaged Castalia to advise on the economic, financial, transactional, and institutional aspects of PPP contracts. Particularly, Castalia is advising SACMEX on defining the type of PPP contracts that will be used, as well as the compensation schemes and the performance indicators of the contracts. Additionally, Castalia is helping SACMEX structure its tendering scheme by revising the terms and conditions that will be included in the tender documents, identifying potential private companies that might be interested in bidding for the contracts, and advising on the process of awarding the contracts. Specific tasks have included: providing feedback on the proposed compensation scheme, helping define the performance targets for commercial and operational efficiency, and reviewing financial models developed to define the economic and financial aspects of the PPP contracts. *C13090*
- **PPP in Water and Sanitation, Vietnam, 2013**—The Government of Vietnam is working to bring private finance and operations into the country's water sector. The Ministry of Planning and Investment hired Castalia to develop a strategy for private participation in water and a pilot transaction. Castalia helped establish criteria for where private participation would be promoted. These were promulgated in a Ministerial Decree. We reviewed 13 projects against the criteria and selected a 50,000 m<sup>3</sup> per day bulk supply project serving Thu Dau Mot town (pop. 245,000) in Binh Duong province in the South of Vietnam, at a capital cost of US\$50 million. We are developing a term sheet for this pilot transaction, as well as a Toolkit for future private participation in water in Vietnam. We are also training Ministry and local government staff. *C13085*
- **Development of PPP for Water Supply Distribution in Bandar Lampung, Indonesia, 2013**—Castalia was engaged by the World Bank to support the municipally-owned drinking water utility in Bandar Lampung PDAM Way Rilau in its preparations for a public-private partnership (PPP) project aimed at dramatically increasing water service quality, quantity, and penetration in the city. This assistance involved finalizing the structure of a management services contractor to operate the new network (PPP2), developing a concept for a management services contractor to assist PDAM Way Rilau in improving service in their existing area (PPP3), and building consensus among stakeholders in Bandar Lampung around these proposed approaches. The Castalia team ran a series of small-group workshops with key staff in PDAM Way Rilau and the city government to refine the proposed contract models. This involved designing and refining key aspects of both contracts, taking into account the needs of the local context. This project closed with a final consensus-building workshop attended by senior decision-makers in the water utility and the city government, conducted by the Castalia team

in Indonesian, where all parties affirmed their commitment to the contract models developed under this advisory. The procurement process for both contracts are currently underway *C13023*

- **Bulk Water PPP Opportunities Market Sounding, Malawi, 2013**—The International Finance Corporation (IFC), as the potential transaction advisor for two identified bulk water public private partnership (PPP) projects in the cities of Lilongwe (US\$136 million) and Blantyre (US\$87 million) in Malawi, was seeking to assess the interest of potential project sponsors and investors. Castalia was engaged to perform this market sounding exercise. Castalia prepared a questionnaire and gathered detailed feedback from 18 sponsors and investors. Using this as a basis, we provided an assessment of the private sector market appetite, identifying (i) which of the two projects was more viable as a PPP, (ii) what was the preferred commercial and financial structure, (iii) which type of PPP option was best suited to the projects, and (iv) what guarantees would be required. We also advised the IFC on next steps to implement these projects *C13022*
- **PPP and Regulatory Support for Southeast Gobi Water and Sanitation Utilities, Mongolia 2012-Ongoing**—The ADB is funding consulting services to support the Government of Mongolia in carrying out recommendations for institutional reforms in the water and sanitation sectors. Castalia has been selected to develop and execute a long term PPP in the Dornogovi and Omnogovi Aimags and establish an independent service regulator system. The transaction advisory component will involve structuring the PPP arrangement, detailed financial and economic analysis, setting the procurement strategy and bidding support, and drafting and issuing tender documents. The regulation component will involve training and capacity building for the independent regulators of the water and sanitation system *C12050*
- **Karnataka Urban Water Modernization Project, India, 2012**—A recent World Bank project—Karnataka Urban Water Sector Improvement Project (KUWASIP)—experienced success in improving the water supply and sanitation (WSS) services in various wards within the cities of Belgaum, Gulbarga and Hubli-Dhawad. This prompted interest in using Public Private Partnerships (PPPs) to expand water services. The Government of Karnataka (GoK), through the Government of India (GoI), requested Bank support for a proposed \$190m investment project to improve service delivery in additional regions within these three cities (Karnataka Urban Water Supply Modernization Project—KUWSMP). Castalia was engaged to contribute to the development of PPP options that will improve the WSS services in additional regions in the Karnataka cities of Belgaum, Gulbarga and Hubli-Dhawad. The objective is to help the GoK develop PPP options that will deliver 24/7 water services, while being sustainable, both financially and institutionally. Castalia reviewed all relevant WSS material and provided comments on interim PPP proposals. We also led a workshop for the client and presented stakeholders with PPP options for the WSS sector *C12024*
- **Metro Clark Bulk Water Supply, Philippines, 2010**—The Clark Freeport Zone was growing and needed to secure increased water supply. At the same time, the operator was requesting a large tariff increase. The Philippines government engaged the IFC through the Clark Development Corporation (CDC) to act as the lead

transaction advisor to develop and structure the Metro Clark Bulk Water Supply Project as a public-private partnership (PPP). IFC hired Castalia as the technical advisor for the project. The project helped provide a sustainable water supply to serve the long-term economic development plans of the Clark Special Economic Zone (CSEZ) and surrounding municipalities and addressed the environmental, social, and economic consequences of overexploitation of the groundwater aquifer. Castalia's work included assessing retail demand for water in the Metro Clark area, screening of surface water supply options, and confirming the technical, financial, and economic viability of the project. We also updated demand forecasts, technical design, and costing to AACE standards for groundwater, infiltration wells, and a distribution network, and advised on the structure and implementation of the PPP transaction *C11029*

- **Tabora PPP in Water Services, Tanzania, 2007**—IFC was considering the merits of various PPP arrangements to rehabilitate and expand the water supply system in the municipality of Tabora, Tanzania. Castalia conducted due diligence on the water sources in the Tabora region and the sole water utility, the Tabora Urban Water and Sewerage Authority (TUWASA). We generated demand projections for the region and evaluated the key contractual counterparty risks facing a private sector water supply company. Castalia estimated the costs that would be borne by a private sector operator of the water supply infrastructure in Tabora *C07075*
- **Analysis of PPP Options for Water Distribution in the New Cairo Area, Egypt, 2007**—Castalia examined and developed viable options for private sector participation for water distribution in New Cairo. Our work involved developing a financial model of the system, modeling the fiscal cost of developing the system, and recommending ways to mitigate demand risk *C07038*
- **Pilot PPP Decentralization Model for Water Distribution, India, 2006**—The Municipal Corporation of Brihan Mumbai (MCGM) wished to adopt new technologies and management methods to improve water management and distribution. Castalia was engaged to develop a pilot decentralized PPP scheme for Water distribution in K-East Ward in Mumbai, a city of 20 million. First, we conducted a technical and financial review of MCGM's water operations. This included an assessment of the hydraulic boundaries in the K-East Ward (an administrative designation), including the flow of water in and out of the Ward and the amount of non-revenue water (NRW). We then created a management contract that gave an operator the autonomy to manage water supply services in the K-East Ward under an incentive-based contract. After consultation with the City Council, the plan was scaled up to be implemented throughout all Wards of Mumbai simultaneously. *C05049*

Based on vast global experience, Castalia has produced numerous knowledge publications in the water sector that have been used as guides for planning PPP programs and ensuring the financial sustainability of water utilities.

- **Manual for Private-Sector Participation in Water and Sanitation, Mexico, 2009**—Mexico's National Water Commission (Comisión Nacional del Agua or CONAGUA), wanted to update its manual for private-sector participation (PSP)

in the water sector and make it respond better to users' demands. Sub-national governments, and some units of the national government, use this as their primary resource when considering PSP in the water sector. Castalia created a manual that is succinct, practical, and can help policy-makers make informed decisions about PSP in the sector. This manual covered why PSP should be considered as an option, relevant PSP options, financing options, and steps for implementing a PSP contract *C09058*

- **Innovative Water Financing Case Studies for OECD, Global, 2009**—The Organization for Economic Cooperation and Development (OECD) contracted Sophie Tremolet to report on innovative ways to finance water and sanitation. Castalia was sub-contracted to provide innovative international experience and case studies for financing these sectors *C09011*
- **Development of Core Learning Module for Public-Private Partnerships in Irrigation, Global, 2009**—The Water Program of the World Bank Institute (WBI) introduced a global world class learning program on Agricultural Water Management. The WBI engaged Castalia to develop the Core Learning Module on Public Private Partnerships (PPP) in Irrigation. Castalia conducted an assessment of global knowledge and experience with PPP in irrigation. We then identified good practice in PPP in irrigation. We developed full curricula for one-day and three-day learning module/training courses on PPP in irrigation, including detailed lesson plans, PowerPoint presentations, exercises, course materials, and instructor notes *C09006*
- **UNITAR Financing Sanitation Module, Global, 2007**—The United Nations Institute for Training and Research (UNITAR), Capacity Building International, Germany (InWEnt), and the World Bank Institute (WBISD) decided to develop modules on sector governance in urban sanitation to enhance the capacity of local decision-makers to make the most efficient use of investments in sanitation. Castalia was responsible for the module on economics, pricing, and financing of the sanitation sector. Castalia presented the costs and sources of funding for the sector. We also identified possible actions at the local level *C07092*
- **Developing PPP Contents for an E-Learning Course, Global 2013**—Castalia was engaged by the World Bank Institute (WBI) to help convert the 2012 PPP Reference Guide—previously drafted by Castalia for the WBI—into a highly effective web-based platform. Specifically, Castalia was engaged to develop the second of three E-learning courses based on the material in the PPP Reference Guide and incorporating relevant case studies. The course covers “contract management”, and is based on Module 3, Section 7 of the PPP Reference Guide. This work involved firstly creating a “course map” to outline the contents of the E-course. Secondly, Castalia created three modules: (i) Establishing Contract Management Structures, (ii) Monitoring and Managing PPP Delivery and Risk, and (iii) Dealing with Change and Contract Expiry. Each module contains course units as subtopics. There are eight units in the course. Each unit consists of an overview section, a PowerPoint presentation and accompanying text, recommended readings, and a quiz. This assignment also involved doing desk research to find appropriate case studies on PPP implementation in developing countries *C13008*

- **PPP Reference Guide, Global 2011-2012**—The PPP Reference Guide is a joint initiative of the World Bank Institute, the Asian Development Bank, and FOMIN/MIF of the Inter-American Development Bank Group with funding and strategic support from the Public Private Infrastructure Advisory Facility (PPIAF). The Reference Guide shares knowledge with PPP practitioners in developing countries, building their capacity. The Guide covers the whole project cycle from planning PPP programs to managing transactions and monitoring contracts once closed. The Guide is available at <https://wbi.worldbank.org/wbi/document/public-private-partnerships-reference-guide-version-10> C11069

## 2 Technical Approach and Methodology

To successfully carry out this assignment, it is necessary to understand its objective. In the following section, we first describe our understanding of the objective of the assignment. We then explain our approach and methodology for carrying the assignment, focusing on how it will deliver the expected outputs.

### 2.1 Understanding of the Objectives of the Assignment

The objective of this assignment is to develop a position paper on the governance (i.e., policies, institutions, and financing) of the English-speaking Caribbean's water and wastewater sector. This position paper will build upon the IDB's Water and Sanitation Initiative's work and highlight key issues related to governance and financing of this sector. Specifically, the position paper will assess the governance of the water and sanitation sectors in The Bahamas, Barbados, Belize, Guyana, Jamaica, Suriname, and Trinidad and Tobago. The position paper will then recommend how to improve the governance of the water and sanitation sector in the region. Table 2.1 shows the 6 aspects of governance that the assessment will cover.

**Table 2.1: Components of Governance in the Water and Sanitation Sector**

Governance in the Water and Sanitation Sector		
Policies	Institutions	Financing
Prioritization of the sector within national agendas	Legal and regulatory framework	Financial sustainability of the water and sanitation sector, including tariff structures of water and sanitation utilities
Sector policies and strategy, including specific dispositions related to the rural sector	Institutional development of the water and wastewater utility	Financing options and private sector participation

### 2.2 Challenges Being Addressed

Caribbean countries have all subscribed to the United Nations Sustainable Development Goal (SDGs). Goal Six of the SDGs is “ensure availability and sustainable management of water and sanitation for all”. However, these countries are currently not meeting the dual principles of universal access and sustainable management of water and sanitation services. In order to achieve Goal Six of the SDGs, Caribbean countries need to address three challenges: an increasingly scarce water supply, ill-equipped institutions, and insufficient financing for investments in infrastructure.

First, many national governments are struggling to provide adequate supplies of freshwater because the Caribbean is a water-stressed region. Indeed, in many countries, the annual per capita freshwater availability falls below 1,000 cu.m—the target used to measure scarcity. Furthermore, the effects of climate change and climate variability aggravate the challenge of a restricted water supply. For example, rising sea levels, salt-water intrusion, hurricanes, drought, and extreme weather have impacted the ability of government to supply, store, and distribute of high-quality drinking water. These aggravating factors should be addressed strategically at the national and regional level.

Second, institutions governing Caribbean water and sanitation sectors, such as water utilities and regulators, are not equipped to meet the SDGs. For example, many water and sanitation utilities lack a long-term strategy for optimizing the life cycle of physical assets, lack processes and practices for operating and maintaining facilities, lack capacity-building programs, use inefficient data-handling systems for monitoring operations, and lack institutional learning strategies and financial resources. Consequently, these utilities often do not carry out enough preventative maintenance over assets critical for their operation.

Third, traditional sources of financing are too expensive for the large investments needed in infrastructure. Governments must make large investments in infrastructure to insulate Caribbean water sectors from the deleterious effects of climate change.

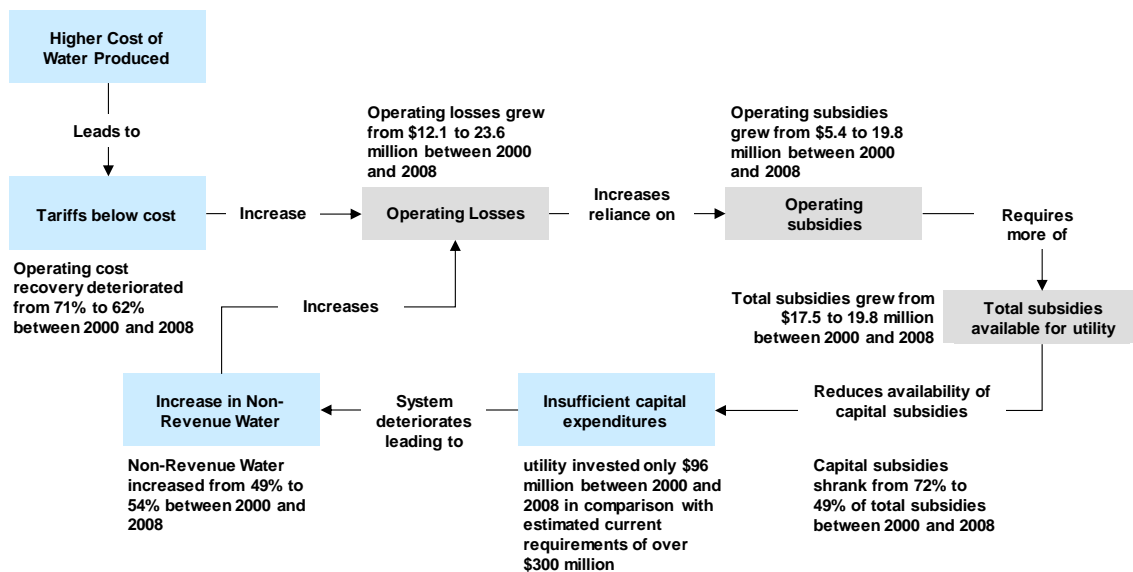
### 2.3 Approach to Services

In much of the Caribbean, the utilities responsible for providing water and sanitation services do not have the capacity and resources to achieve sustainable access to these services. Many of these utilities exhibit:

- **Water coverage** levels below universal access. Furthermore, in many countries, coverage levels outside of large municipal areas is substantially lower
- **Sanitation coverage levels** well below universal access—this is true for connection to sewerage networks and the treatment of collected wastewater
- **Quality of service** (for example, continuity and water pressure) well below customers' expectations
- **Quality of water** provided is sometimes below international standards—in a number of places, measurement to determine the quality of water is insufficient
- **Poor operating efficiency**—in particular, most utilities need to reduce levels of non-revenue water, increase collection ratios, and improve staff productivity
- **Inadequate cost recovery levels**—as a result of tariffs that are set below efficient cost of service and poor operating efficiency, many utilities cannot cover their operating expenditures with revenues collected from their customers. Very few utilities are able to set their own tariffs and, of those that are able to, nearly none do so at levels that cover their full cost of service. The resulting operating deficits are generally covered with transfers from the government
- **Lack of capacity to finance capital expenditures**—since many utilities are not able to cover operating expenses with revenues collected from their customers, they lack the capacity to finance any capital expenditures. This means the utilities depend on external resources, government transfers in most cases, for their capital expenditures. This limits the ability of utilities to plan adequately for developing the assets necessary to increase coverage, improve quality of service, and increase operating efficiency. In addition, some utilities are not able to fund the necessary maintenance and investments. This results in them having to replace assets prematurely and incurring higher costs than expected.

As an example, Figure 2.1 shows a system diagram highlighting the interaction between operating losses, lack of financing for capital expenditures, and further deterioration of operating efficiency.

**Figure 2.1: System diagram showing lack of sustainability of a utility responsible for providing water and sanitation**



Nonetheless, there are water and sanitation utilities that perform very well. These utilities—and the legal, institutional, and regulatory frameworks that supported them—can provide useful examples of effective policies and instruments. Examples of actions or interventions required to reverse the situation of utilities that are performing poorly and not able to provide universal access to water and sanitation services include:

- **Putting in place socially-acceptable tariffs that cover a greater portion of cost of service** (and are consistent with rest of financing plan)
- **Capital expenditures for expanding water and sanitation systems** and developing new water supplies
- **Capital expenditures for increasing the operating efficiency** of the utilities. Among others, these investments can include installing energy efficiency pumps, replacing old mains, and installing new customer information systems
- **Establishing mechanisms that can reliably provide funding to utilities** for multi-year periods. Reliable funding mechanisms allow utilities to better plan and ensure that their systems operate efficiently
- **Taking the steps required to ensure utilities have an efficient labor force**
- **Hiring specialized firms to address particular issues** (for example, implementing programs to reduce non-revenue water)
- **Establishing a credible process for disseminating information regarding performance of the utilities**

The difficulty with putting in place tariffs that cover the cost of service provided by water utilities may be the most fundamental issue for transforming these poorly-performing utilities into ones that are able to achieve sustainable access to water and sanitation services. Unlike

other utilities that provide public services, such as electricity and telecommunications, most water utilities do not have tariffs that cover the cost of service and, as a result, depend on external sources to cover their operating costs and capital expenditures. This means that, regardless of their efforts to increase operating efficiency and improve collections, without cost recovery tariffs, water utilities will depend on transfers (subsidies) from the national government, and sometimes subnational governments, to achieve the objectives in the water and sanitation sector.

The need for these government transfers, and the objectives they are intended to help achieve, mean that, in most countries, the following bodies are essential for developing and implementing a framework for achieving sustainable universal access to water and sanitation services

- **Executive Branch of the national government, in particular:**
  - **The Cabinet or highest level decision-making body** within the Executive Branch. Policy for the water and sanitation sector, in particular related to tariff setting and subsidies, is perceived to be a delicate political matter. Many policy decisions regarding the sector are often made at this level
  - The **Ministry of Finance (or its equivalent)**. This ministry is entrusted with allocating what are often limited financial resources across all the needs of the country, including transfers to water utilities. Since many water utilities depend on these transfers to cover operating expenditures and finance capital expenditures, the Ministry of Finance plays a key role in making sure water utilities receive an adequate level of financial resources (and in a way that's consistent with the long term planning required to perform well as a water utility)
  - The **ministry responsible for water and sanitation** (the sector ministry) or, in its absence, another government body responsible for coordinating actions and stakeholders in the sector, developing sector policies, and proposing instruments for achieving sector policies
- **Legislative bodies** responsible for approving sector legislation
- **Utilities** responsible for providing water and sanitation services. Depending on the country, these utilities may be responsible for providing services at the national, regional, or municipal level; owned and operated by the government or a private company; fully autonomous or a dependency of another government body (for example, a department within a municipality). Utilities should provide input regarding the technical and operating possibilities for the sector (for example, by preparing multi-year plans detailing the funding and other resources required to achieve specific objectives)
- **Bodies with supervisory or regulatory responsibilities** in the water and sanitation sector. Few of these bodies have the responsibility and authority to set tariffs (primarily because most water utilities are owned by governments and governments prefer to set the tariffs themselves) so one of their most important functions is providing credible information about the performance of the utilities
- **Civil society and customer organizations** that can inform policy makers about preferences and concerns in the sector

The bodies within the Executive Branch, ideally the sector ministry in close coordination with the Ministry of Finance, must lead the development of the framework. This will ensure a framework that's comprehensive, well-coordinated, prioritizes the objectives of the national government, and has the funding that's required to achieve the stated objectives. The issues that must be addressed within this framework, ideally as a policy that's approved by the national government, include:

- **Targets for water and sanitation coverage.** Due to the substantial capital expenditures that may be required, achieving these targets will generally require funding from the national government
- **Standards for quality of service and operating efficiency.** Since the national government plays an oversight role of government-owned utilities, and provides funding to most of them, it should have a role in setting the standards of quality of service and operating efficiency that should be achieved by the utilities. These standards must be consistent with the cost recovery levels of the tariffs and the subsidies the national government is willing and able to provide to the utilities
- **Financing policy.** This policy should define the financial support that the national government is willing and able to provide to the water and sanitation sector. The priority should be ensuring that utilities have financial resources (from tariffs, government transfers, and other sources) to cover the cost of service resulting from targets for coverage and the standards for quality of service and operating efficiency. The policy should also be clear about the requirements for eligibility and the allowable uses of the funding. This policy should be clear about:
  - **Subsidies and other instruments for providing funding and technical assistance to the sector**—in particular, any subsidies and transfers must be reliable and predictable. As appropriate, governments should consider the best vehicles for transferring subsidies to the utilities. For example, a government could establish a water fund that could then channel funding and technical assistance to water utilities
  - **Tariff setting mechanisms**—the national government should indicate the expected level of cost recovery to be achieved with the tariffs charged to customers and help establish appropriate processes and entities for putting adequate tariffs in place
- **Regulation and/or supervision of the utilities**—the policy should identify the entities and approaches that will be responsible for regulating and/or supervising the utilities and the role the national government will play in doing so.
- **Role of the private sector**—in some countries, the private sector has played an important role—for example, through improving the efficiency of utilities—in improving the sustainability of the sector. When government-owned utilities and their owners consider the options they have for improving their performance, it's important to take into account any restrictions (or incentives) that may exist for incorporating the private sector. The national government should be clear about its preferences (for example, restricting the sale of shares or assets of government-owned utilities) and what support (for example, model bidding documents or specific funding programs) it may provide for incorporating the private sector

With a national policy in place that covers the issues mentioned above, the national government can then best contribute to the required development of national and subnational utilities by developing vehicles, mechanisms, and tools such as:

- Entities that can provide funding and technical assistance to water utilities
- Model performance contracts that can be put in place between the utilities and the government
- Reporting standards and disclosure requirements
- Tariff-setting methodologies and processes
- Systems for regulating the performance of water utilities
- Model contracts and bidding documents for contracting specialized services that many utilities may require
- Country-level benchmarking systems that identify best performers and key areas that need to be addressed

The exact type and approach will vary depending on the existing structure within the sector. For example, the most common structures are:

- Unitary government with local governments having responsibility for providing water and sanitation services
- Unitary government with national utility having responsibility for providing water and sanitation to most of the country (this is primarily in smaller countries). In this case, rural areas may receive service for a different entity (for example, rural water boards)
- Federal government with state governments, and/or local governments, having responsibility for providing water and sanitation services

An adequate system for monitoring and evaluating the results of the policies and interventions put in place by the national government will contribute to making required adjustments.

## **2.4 Proposed Methodology**

Our proposed work plan for conducting an in-depth analysis of the policies, institutional structures, and financing mechanisms of the water and wastewater sectors in The Bahamas, Barbados, Belize, Guyana, Jamaica, Suriname, and Trinidad and Tobago is as follows:

### **2.4.1 Task 1: Project Inception**

The objective of this task is for the IDB and Castalia to agree on a set of expectations and plan of work for this assignment. We will begin the assignment with a meeting with the IDB to agree on an approach, the timing of the work plan, the countries that will be assessed, the workshops where we will present the assessment's findings, and the responsibilities of each party. We will work closely with the Water and Sanitation Division on this assignment to ensure the entire division understands and supports the framework we propose. This task would take place immediately after contract signing. The output of this task is a Project Inception Report with a finalized Work Plan for the assignment.

#### **2.4.2 Task 2: Review of existing information**

The objective of this task is to compile and review the universe of documents related to the governance of the water and sanitation sectors in The Bahamas, Barbados, Belize, Guyana, Jamaica, Suriname, and Trinidad and Tobago. We will identify and analyse any relevant documents we may not have previously reviewed. In particular, this may include documents recently prepared by the Inter-American Development Bank's Water and Sanitation Initiative. This task would take place immediately after we submit the Project Inception Report. We expect it may take 2 to 3 weeks. The output of this task is a compilation of documents related to the governance of the water and sanitation sectors in the above-mentioned countries.

#### **2.4.3 Task 3: Develop a baseline report**

The objective of this task is to analyze Caribbean experiences of institutions responsible for water and sanitation services. We will conduct case studies that examine the results of policies, institutional structures, and financing mechanisms in The Bahamas, Barbados, Belize, Guyana, Jamaica, Suriname, and Trinidad and Tobago. We will confirm the list of countries during the project inception. On a preliminary basis, for each case study, we propose presenting:

- Current performance of the sector
- The policies, institutional structures, and financing mechanisms in place at the national level
- An assessment of the extent to which the policies, institutional structures, and financing mechanisms have improved sector performance
- An identification of any particular policies or instruments that have been particularly effective.

Prior to beginning this task, we can agree on the content and structure of the case studies. The baseline report will also include a comparative analysis of common trends and challenges in the above-mentioned countries. We expect to begin working on the case studies 2 weeks after contract signing and expect they will take about 4 weeks to complete. The output of this task is a baseline report, which will be the first part of the Initial Report.

#### **2.4.4 Task 4: Develop preliminary framework for Action Plan**

The objective of this task is to develop a preliminary framework for an action plan to improve the governance of the water and sanitation sector in the region. Based on our previous experience and the information and analysis resulting from Task 2 and Task 3, we will develop a preliminary framework that could be used for achieving sustainable universal access to water and sanitation services in the English-speaking Caribbean. This preliminary framework will present analysis and recommendations, among others, on the following elements of governance:

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

During the Project Inception, we will agree on other elements that should be covered. The recommendations will be at a level of detail sufficient to illustrate the concepts such that the Water and Sanitation Division can provide feedback for further development of the aspects. We will start work on Preliminary Framework Report approximately 8 weeks after contract signing and expect they will take about 6 weeks to complete. The output of this task is an initial plan of action to improve governance in the region, which will be the second part of the Initial Report. Therefore, after we complete this task, we will submit the Initial Report to the Water and Sanitation Division.

#### **2.4.5 Task 5: Present baseline report and action plan to stakeholders**

The objective of this task is to present the Initial Report to stakeholders, discuss the findings from the Initial Report, and receive feedback from stakeholders. We will validate the analysis and recommendations in the Initial Report in two workshops with water utilities, regulators, and development financiers in the region. The Water and Sanitation Division will be responsible for organizing the workshops. Tentatively, one workshop will take place in Trinidad and Tobago during the CWWA Annual Conference, and the other will take place in Jamaica during the Regional Water Sewerage Conference. During the Project Inception, we will confirm the conferences where the workshops will take place. We will be available to conduct the workshops after submitting the Initial Report, approximately 13 weeks after contract signing.

#### **2.4.6 Task 6: Revise the Interim Report**

The objective of this task is to incorporate stakeholders' comments into the Report. Based on comments received on the Initial Report during the workshops conducted in Task 5, we'll prepare the Revised Report. This report will present a revised version of the baseline and action plan. We will submit the Revised Report and Action Plan, approximately 2 weeks after conducting the workshops in Task 5.

#### **2.4.7 Task 7: Prepare final report**

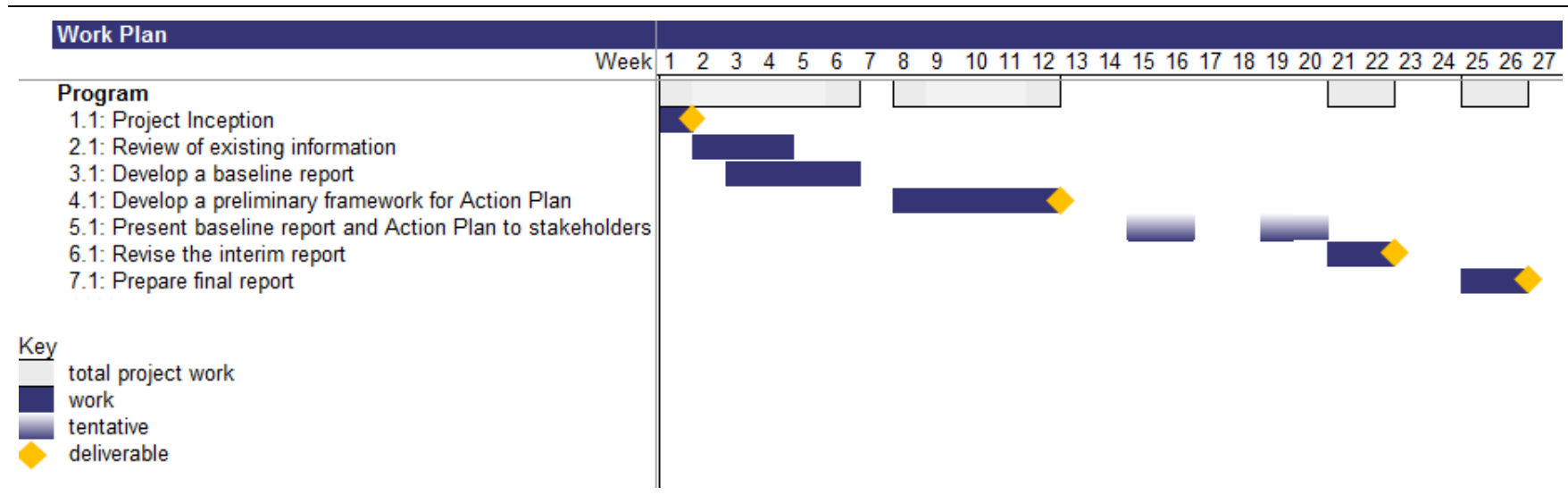
The objective of this task is to incorporate Water and Sanitation Division's comments into the Report. Based on comments received on the Revised Report from the IDB, we'll prepare the Final Report. This report will present a final version of the baseline and action plan. It will detail all of the elements required to provide an adequate set of incentives to achieve sustainable universal access to water and sanitation services. It will be general enough that it could be implemented on a regional scale. We will submit the Final Report, approximately 4 weeks after submitting the Revised Report in Task 6.

### 3 Work Plan

The schedule in Table 3.1 shows the 7 tasks in this assignment, and the duration and phasing of each. The work plan is built around the following key deliverables identified in the Terms of Reference for this assignment:

- Work Plan
- Initial Report
- Revised Report and Action Plan
- Revised Report.

**Table 3.1: Work Schedule**



## 4 Organization and Staffing

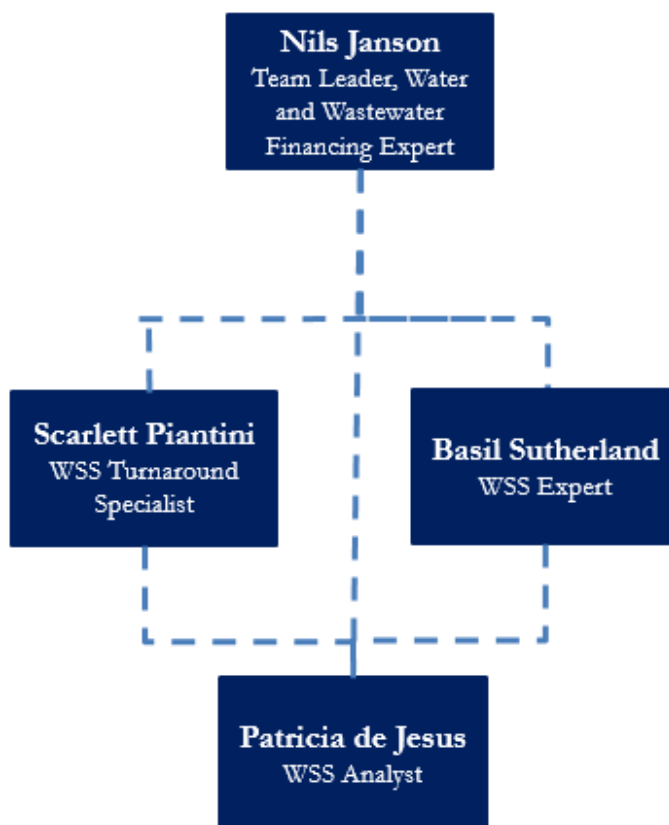
In this section of our Technical Proposal we present our team composition and disciplines of expertise (Section 4.1). Castalia has assembled a world class team of specialists with expertise in analysis and knowledge of institutional, policy, and financing to improve water supply and sanitation (WSS) services, and with both global and regional knowledge of the water sector.

### 4.1 Team Composition and Disciplines of Expertise

Figure 4.1 presents our organizational chart for this project. Below we describe in more detail the responsibilities of each team member and how the team will work together. Full curricula vitae for each proposed team member, and a short description of their profile are enclosed in Appendix A.

**Figure 4.1: Organizational Chart**

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Mr. Nils Janson, as the Team Leader, will lead and coordinate the work of the team in close collaboration with IDB TTLs. To complete this assignment, we will draw on a team of institutional and technical experts that will work, under the lead of Mr. Janson. Mr. Janson will draw on the specific areas of expertise of each of the proposed team of experts to build a coherent and comprehensive baseline report and an Action Plan to improve the governance of the region's water and sanitation sector.

In addition to his role as the Team Leader, Mr. Janson will contribute and work closely with other team members as the Water and Wastewater Financing Expert in the preparation of the Final Report. Based in St. Lucia, Mr. Sutherland will contribute his expertise of the Caribbean water and sanitation sector, and assist in the analysis and identification of relevant literature in the water and sanitation in the English-speaking Caribbean. Furthermore, Ms. Piantini will contribute her experience designing financing mechanisms and regulatory reforms that seek to turnaround water and sanitation utilities. Finally, Ms. Patricia de Jesus is the water and wastewater sector analyst. She will provide analyst support based on her experience analyzing strategies for developing and managing infrastructure and service provision in the water and sanitation sector. She will review and support the preparation of all the reports. Table 4.1 below summarizes the qualifications and experience of our team members.

**Table 4.1: Staff Experience Table**

Person	Position	Highest academic qualification	Years of experience related to the project	Areas of Expertise			
				Analysis of policies and reforms to improve the water and sanitation sector	Reviewing and reforming institutional structures in the water and sanitation sector	Analyzing and creating financing mechanisms for water sectors and utilities	Experience working in the English-speaking Caribbean
Nils Janson	Water and Wastewater Financing Expert	M.S. International Trade and Finance	>20	✓	✓	✓	✓
Basil Sutherland	Water and Wastewater Sector Expert	B.Sc. in Electrical Engineering	36	✓	✓	✓	✓
Scarlett Piantini	Water and Wastewater Turnaround Specialist	M.S. in International Development	3	✓	✓	✓	✓
Patricia de Jesus	Water and Wastewater Analyst	M.A. in Law and Diplomacy	1	✓	✓		✓

## 5 Our Financial Proposal

Our financial proposal for completing the assignment totals US\$145,580. Table 4.1 presents the detail of this total.

**Table 5.1: Our Financial Proposal**

	Castalia	Castalia	Castalia	Ind	
	Janson, N.	Piantini, S.	de Jesus, P.	Sutherland, B.	
	Team Leader and Water and Wastewater Financing Expert	Water and Wastewater Sector Turnaround Specialist	Water and Wastewater Sector Analyst	Water and Wastewater Sector Expert	TOTAL
	USA	USA	USA	St. Lucia	
<b>Tasks</b>					
1: Project Inception	1.00	1.00	1.00	1.00	4.00
2: Review of existing information	2.00	3.00	3.00	2.00	10.00
3: Develop a baseline report	5.00	10.00	10.00	5.00	30.00
4: Develop a preliminary framework for Action Plan	5.00	7.50	7.50	5.00	25.00
5: Present baseline report and Action Plan to stakeholders	4.00	3.00	3.00	0.00	10.00
6: Revise the interim report	2.00	4.00	4.00	1.00	11.00
7: Prepare final report	2.00	4.00	2.00	1.00	9.00
<b>Total Days</b>	<b>21.00</b>	<b>32.50</b>	<b>30.50</b>	<b>15.00</b>	<b>99.00</b>
Consulting days	21.00	32.50	30.50	15.00	99.00
Daily rates	<u>2400</u>	<u>1200</u>	<u>1000</u>	<u>1200</u>	
Total consulting fees	<b>50,400</b>	<b>39,000</b>	<b>30,500</b>	<b>18,000</b>	<b>137,900</b>
<b>OTHER COSTS</b>					
Trips					
Trips	1.0	1.0	1.0	0.0	3.0
Cost per trip (US\$)	<u>900</u>	<u>900</u>	<u>900</u>	<u>0</u>	
Total trips	<b>900</b>	<b>900</b>	<b>900</b>	<b>0</b>	<b>2,700</b>
Per diem					
Number of days	4.0	4.0	4.0	0.0	12.0
Per diem per day	<u>350</u>	<u>350</u>	<u>350</u>	<u>350</u>	
Total per diem (US\$)	<b>1,400</b>	<b>1,400</b>	<b>1,400</b>	<b>0</b>	<b>4,200</b>
Local transportation costs (@ US\$25 per day)	100	100	100	-	300
Miscellaneous travel expenses (@ US\$100 per trip)	100	100	100	-	300
Communication costs (@ US\$15 per day)	<u>60</u>	<u>60</u>	<u>60</u>	<u>0</u>	180
Other ODCs	<b>260</b>	<b>260</b>	<b>260</b>	<b>0</b>	<b>480</b>
<b>Total Direct Costs</b>	<b>2,560</b>	<b>2,560</b>	<b>2,560</b>	<b>0</b>	<b>7,680</b>
<b>TOTAL</b>					<b>145,580</b>

Our proposed payment schedule is:

- Contract signing and submission of the Work Plan: 10% of contract value
- Inter-American Development Bank's approval of the Initial Report: 40% of the contract value
- Inter-American Development Bank's approval of the Revised Report and Action Plan: 40% of the contract value

- Inter-American Development Bank's approval of the Final Report: 10% of the contract value.

## **Appendix A: Curriculum Vitae**

This Appendix provides the curriculum vitae for:

- Nils Janson, Team Leader and Water and Wastewater Financing Expert
- Basil Sutherland, Water and Wastewater Sector Expert
- Scarlett Piantini, Water and Wastewater Sector Turnaround Specialist
- Patricia de Jesus, Water and Wastewater Sector Analyst

## A.1 Nils Janson

**Name of Firm:** Castalia  
**Proposed Position:** Team Leader and Water and Wastewater Financing Expert  
**Nationality:** United States, Panama

### Key Qualifications

Mr. Nils Janson, an Executive Vice President at Castalia, is an economist and financial specialist with more than 20 years of experience advising governments, utilities, and donor agencies on strategies for developing, financing, and reforming infrastructure sectors and utilities. He has worked in over 30 developing countries in Africa, Latin America and the Caribbean, Eastern Europe, and the Middle East. His clients have included the World Bank, the African Development Bank, the Inter-American Development Bank, the governments of Malawi, Tanzania, and the Republic of South Africa, and one of the largest water utilities in Latin America (SACMEX).

Mr. Janson has considerable experience in the design of financing mechanisms for water utilities. Currently, Mr. Janson is advising the public utility responsible for providing water supply and sanitation services in Mexico City (*Sistema de Aguas de la Ciudad de México*—SACMEX) on the process of designing performance-based PPP contracts to replace the existing commercial outsourcing contracts. In Colombia, Mr. Janson is structuring a PPP for the Water Supply and Sewerage Systems of Santa Marta. Currently the rate of coverage and level of quality of water and sanitation services in Santa Marta is below the average for the country. Mr. Janson is designing the arrangement to introduce private participation for water service provision based on the provisions of the National PPP Law and water sector regulations. This includes the study of service levels and tariffs.

Mr. Janson is an expert advising on institutional design, management, and monitoring of Caribbean water utilities. Throughout more than 15 years of experience in the water sector, he has conducted extensive assessment of the operating and financial performance of water utilities. In conducting these performance assessments, he has developed and used detailed financial models and benchmarking databases with key performance indicators. He is also the co-author of an article on the potential for improving the performance of water utilities controlled by governments through regulation (*Can regulation improve the performance of government-controlled water utilities?*).

Mr. Janson also has significant experience developing and implementing plans for improving utility performance. He recently completed Castalia's work to develop recommendations to transform the Barbados Water Authority (BWA) into one of the top-performing water utilities in the region. This work involves reviewing BWA's performance, developing a plan for improving BWA's performance, and providing assistance to BWA during its initial efforts to implement the plan. In 2011, Mr. Janson led the team that developed a strategy for reorganizing the Water and Sewerage Corporation (WSC) in The Bahamas. In 2009, Mr. Janson managed a Castalia assignment to assist the Podgorica Water and Sewer Company in Montenegro to improve service delivery by enhancing operational and financial performance. He is currently an advisor to both the General Manager of WSC in The Bahamas and the Executive Director of the national water company in Panama (IDAAN).

Mr. Janson earned a graduate degree in International Finance and an undergraduate degree in International Economic Theory and Policy, both from Georgetown University in Washington, DC. Born and raised in Panama, he speaks English and Spanish natively, and also understands Portuguese and French.

## Education

1998	Stern School of Business, New York University (United States), Frontiers in Corporate Valuation
1992	Georgetown University's School of Foreign Service (United States), M.S., International Trade and Finance
1992	Georgetown University's School of Foreign Service (United States), B.S. ( <i>cum laude</i> ) International Economic Theory and Policy

## Countries of Work Experience

Antigua and Barbuda, Argentina, **The Bahamas, Barbados, Belize**, Brazil, Burundi, The Cayman Islands, Chile, Colombia, Dominica, Ecuador, El Salvador, Grenada, Guatemala, Haiti, Honduras, Jordan, Kenya, Malawi, Mauritius, Mexico, Montenegro, Nicaragua, Panama, Paraguay, Rwanda, Saint Lucia, Saint Vincent and the Grenadines, Sao Tome and Principe, Sierra Leone, South Africa, Suriname, Tanzania, **Trinidad and Tobago**, The Turks and Caicos Islands, Uganda, The United States of America, and Venezuela

## Languages

	<i>Speaking</i>	<i>Reading</i>	<i>Writing</i>
English	Excellent	Excellent	Excellent
Spanish	Excellent	Excellent	Excellent
French	Basic	Good	Basic

## Employment Record

### **Castalia**, 2006 to Present

Executive Vice President, 2014 to Present (Washington, DC, USA)

Senior Vice President, 2009 to 2013 (Washington, DC, USA)

Vice President for Latin America and Africa, 2006 to 2008 (Washington, DC, USA)

### **TRC Global Management Solutions**, 2005

Executive Consultant and Office Manager (Washington, DC, USA)

### **Stone & Webster Management Consultants Inc.**, 2001 to 2005

Assistant Vice President, 2004 to 2005 (Washington, DC, USA),

Executive Consultant, 2001 to 2003 (Washington, DC, USA)

### **Booz Allen Hamilton**, 2000 to 2001

Senior Associate (Washington, DC, USA)

**PricewaterhouseCoopers LLP**, 1997 to 2000

Principal Consultant (Washington, DC, USA)

**The World Bank**, 1992 to 1997

Operations Officer, 1997 (Washington, DC, USA)

Local Representative in Paraguay, 1994 to 1996 (Asunción, Paraguay)

Research Analyst, 1992 to 1993 (Washington, DC, USA)

### **Relevant Experience**

- **Bahamas WSC Tariff Study** January 2015-Ongoing (Project Director)—The Water and Sewerage Corporation (WSC) of The Bahamas hired Castalia to complete a tariff study. The Government of The Bahamas is working to establish an economic regulator that will regulate the WSC. The WSC has hired Castalia to complete a tariff study so that it can submit a tariff application as soon as it becomes regulated and so that it can take a proactive role in shaping the new regulatory framework. To complete the tariff study, Castalia is recommending a tariff-setting mechanism for the WSC, and then determining the appropriate tariff levels and tariff structure for the WSC. To determine the appropriate water and sewerage tariffs for the WSC, Castalia is updating and completing the WSC's financial model, estimating the WSC's efficient cost of service, and estimating the marginal cost of providing service to different geographic areas and types of customers. In addition, Castalia will prepare a social impact analysis and recommend targets for the WSC's financial and operational performance. As Project Director, Mr. Janson is directing all of the tasks in this project. In particular, Mr. Janson is leading the conceptualization of the project, providing guidance on the updating and further development of the financial model, and advising WSC on the potential impacts of different approaches for tariff setting.
- **Implementing the Water and Sewerage Company's Organizational Restructuring Strategy, The Bahamas** April 2012—Ongoing (Team Leader)—The Water and Sewerage Corporation of the Bahamas (WSC) has hired Castalia to assist with implementing the WSC's Organizational Restructuring Strategy. "The Strategy", which was developed by Castalia in an earlier project, is designed to improve the efficiency and effectiveness of the WSC as well as prepare the WSC for the new regulatory environment. As part of this project, Castalia will help the WSC develop separation packages, improve its business processes, and outsource several activities. In addition, Castalia is providing the staff of the WSC with training. As the Team Leader, Mr. Janson is directly managing all of the project's activities
- **Developing a Strategy for Reorganizing the Water and Sewerage Corporation, The Bahamas** May 2011 to November 2012 (Team Leader)—The Water and Sewerage Corporation (WSC) hired Castalia to develop and help implement a strategy for reorganizing the WSC. In order to develop a strategy, Castalia analyzed the WSC's organizational structure and created organizational charts for each division. Castalia then developed performance indicators for each division, and created a job matrix to track performance. This allowed Castalia to identify activities that the WSC could outsource. This reorganization should reduce bureaucracy, increase worker motivation, increase worker participation, remove

organizational boundaries, and set appropriate performance targets and rewards. As Team Leader, Mr. Janson was in charge of overseeing all tasks and responsibilities for this project

- **Valuation of the Fixed Assets of the Water and Sewerage Corporation, The Bahamas** February 2011 to July 2011 (Project Director)—Castalia was hired by the Bahamas Water and Sewerage Company (WSC) to develop an asset register that describes the fixed assets owned by the WSC and the value of these assets. Castalia worked with the WSC to gather the necessary information, carry out spot checks of the data, and conduct on-site inspections of assets. Castalia developed a memorandum that defines the policies and procedures for determining the value of fixed assets and created an Asset Inspection Checklist for evaluating the condition of the assets. Lastly, Castalia wrote a memorandum that lists the current costs of different assets and that presents an index of historical construction costs. As the Project Director, Mr. Janson advised on and oversaw all tasks *C11011*
- **Preparing a Comprehensive Policies and Procedures Manual for the Water and Sewerage Corporation, The Bahamas** November 2010 to March 2011 (Project Director)—Castalia was engaged by the Bahamas Water and Sewerage Corporation (WSC) to prepare a comprehensive policies and procedures manual. For this assignment, Castalia evaluated WSC's control environment and governance structure. Castalia also assessed risks related to each primary financial system, and evaluated how well the existing policies and procedures controlled risks. In addition to drafting the policies and procedures manual, Castalia developed a work plan for WSC's Internal Compliance and Control Division. As the Project Director for this assignment, Mr. Janson advised on and oversaw all tasks *C10072*
- **Updating the Water and Sewerage Corporation's Financial Model, Bahamas** September 2010 to March 2011 (Project Director)—Castalia was engaged by the Bahamas Water and Sewerage Corporation (WSC) to update its financial model. Castalia had originally developed this model in 2009 during an assignment to build a ten-year water and sanitation plan for the Bahamas. Mr. Janson led the team that made this update, which contributed to both WSC's 2011 budget preparation process and to a key presentation on WSC's Action Plan that WSC made to Cabinet *C10062*
- **Update of the Regulatory Framework of the Water and Sanitation Sector, The Bahamas** September 2009 to June 2010 (Project Director; Institutional Specialist)—The Inter-American Development Bank hired a consortium, led by Castalia, to update and improve the economic and environmental regulatory framework for the water and sanitation sector in The Bahamas. Mr. Janson led the team that performed the work and was responsible for recommending the principles that guided the economic regulation and institutional arrangements *C09055*
- **Developing a Water and Sanitation Sector Plan, The Bahamas** August 2008 to October 2009 (Team Leader; Water Sector Financial Specialist)—The Inter-American Development Bank hired Castalia to help the Government of the Bahamas (GOB) design a ten-year Water and Sanitation Sector Plan and to update the Corporate Business Plan for the Water and Sewerage Company (WSC). As the

Team Leader, Mr. Janson was responsible for leading all of the tasks related to this assignment. In order to develop these plans, Mr. Janson led the analysis of sector performance and the identification of key challenges faced by the sector. Mr. Janson also proposed actions, timelines, and financing strategies to address the challenges identified. He presented these recommendations at workshops with Government authorities and other key stakeholders. The Government has been implementing this plan since 2009 *C08096*

- **Development of Sector Strategic Plan for Water and Sanitation Services, Belize** November 2007 to September 2008 (Project Director; Water Sector Specialist)—The Inter-American Development Bank (IDB) asked Castalia to develop a Water and Sanitation Strategic Plan (SSP) for Belize. The IDB contracted Mr. Janson to help design and prepare a Water and Sanitation Strategic Plan (SSP) for Belize. This plan set out a long-term vision for the sector, and defined a five-year portfolio of IDB activities. Mr. Janson conducted a diagnosis of the sector, including defining the sector, identifying sector challenges, and proposing alternative solutions to the challenges, and developed a feasible set of alternatives for sector development, which the IDB could support. Mr. Janson presented these recommendations to the IDB and key sector stakeholders in Belize *C07083*
- **Due Diligence of the Water and Sewerage Authority's Five Year Strategy, Trinidad and Tobago** 2011 (Team Leader, Economic and Financial Expert)—The Water and Sewerage Authority (WASA) of Trinidad and Tobago was beginning a five-year capital investment program to improve its efficiency and effectiveness, and would complement these investments with other reforms such as the restructuring of the water utility and tariff increases. The Inter-American Development Bank (IDB) planned to provide funding for investments in wastewater assets and cover a portion of costs of WASA's Reorganization Initiative. The IDB hired Castalia to evaluate WASA's proposed approach for organizational restructuring, reduce the number of its employees (the "Reorganization Initiative"), and develop a funding proposal. As the Team Leader and Financial Expert of this project, Mr. Janson was in charge of managing and overseeing all parts of this project. He also provided the financing strategies for WASA that would be used by the IDB for funding the reform *C11064*
- **Haiti Water Technical Operational Assistance** June 2010–February 2011 (Financial Expert)—Following the 2010 earthquake in Haiti, water services in Port au Prince were largely destroyed. In parallel with initial emergency measures, the Government of Haiti (supported by the Inter-American Development Bank (IDB) and the Spanish cooperation (AECID) engaged Castalia to procure a specialist international firm to assist in rebuilding and managing the utility. Castalia drafted the contract, an innovative hybrid between a technical assistance and a management contract, and acted as the transaction advisor to select the international operator. Leading international operator Suez Environment was successfully procured in record time; it took just nine months from when the Castalia team was engaged to when the contract with Suez Environment was signed. The contract design was innovative, delegating management responsibilities to the contractor in certain key areas—in particular, management of the rebuilding program—while requiring the contractor to provide plans and advice in other areas. Capacity building indicators

were spelled out in the contract, with the operator's performance pay dependent on building the utility's capacity. The contract has been successful in rapidly restoring service to large parts of the city, and massively increasing the reliability of water supply provided

- **Reviewing Contracts for Managing Water Services in Les Cayes and Jacmel, Haiti** January 2011 to February 2011 (Private Sector Participation Specialist)—Castalia was hired by the Inter-American Development Bank to review the draft contracts for managing water services in the cities of Les Cayes and Jacmel in Haiti. For this assignment, Mr. Janson evaluated tender documents and technical proposals submitted by three bidders. He also evaluated the potential financial viability of the proposed contract, and recommended changes to the procurement process and the proposed Private Sector Participation scheme in order to improve the likelihood of successful outcomes *C11009*
- **TCI Provo Water Company Valuation, Turks and Caicos Islands** January 2012 to April 2012 (Team Leader)—The Client of the Turks and Caicos Islands hired Castalia to value the shareholding of the Government of the Turks and Caicos Islands (the "Government") in Provo Water Company Limited. Castalia carried out this valuation using the discounted cash flow method and also carried out the associated due diligence. The objective of this assignment was to determine a fair value at which the Government could sell its 46 percent shareholding in Provo Water Company. As part of this assignment, Castalia team reviewed Provo Water Company's financial statements and all other relevant information on the company and on the regulatory framework. Lastly, Castalia conducted an open book examination of TCWC's operations to determine if the price at which Provo Water Company buys water from its supplier meets the conditions of the regulation framework. As the Team Leader, Mr. Janson directed all tasks required to complete the valuation. In particular, Mr. Janson led the team's communications with the client, provided guidance on the approach for valuing the Provo Water Company, and reviewed the report submitted to the client *C12001*
- **Training Commissioners of the National Water and Sewerage Commission, Saint Lucia** 2009 (Project Director and Regulatory Expert)—The National Water and Sewerage Commission (NWSC) was created to regulate the Water and Sewerage Company's (WASCO) activities under the new ownership arrangements. The Ministry of Public Utilities engaged Castalia to define the scope of the responsibilities of new commissioners in the NWSC and provide them with the necessary training. Castalia analyzed the rules and regulations which defined the NWSC's regulatory powers and responsibilities. Training materials were developed that outlined responsibilities and, where relevant, incorporated examples from international best practice. Castalia presented the training materials to NWSC commissioners during a collaborative one-day workshop in St. Lucia. As the Project Director and Regulatory Expert, Mr. Janson was responsible for developing the training materials and presented the training to the NWSC commissioners *C09019*
- **An Investment Feasibility and Financial Strategy for Private Sector Participation in the Water and Sewerage Company, Saint Lucia** October 2004 to April 2005 (Senior Financial Specialist)—The Government of Saint Lucia contracted Stone & Webster to determine a Private Sector Participation (PSP)

option for Water and Sewerage Company (WASCO) that would meet both the Government's objectives and the interests of the private sector. As the project team's Senior Financial Specialist, Mr. Janson was responsible for the financial analysis of WASCO. His work included developing a financial model for evaluating alternative PSP options, determining appropriate tariff structures and levels, providing strategic financial recommendations on capital structure, and contributing to recommendations on the PSP option to be selected. He worked closely with the team's technical advisors to ensure that the financial model was consistent with the capital investment program, the demand forecast, and the company's level of production and non-revenue water.

- **Global Environment Facility-funded Caribbean Regional Fund for Wastewater Management, Caribbean** July 2013 to January 2014—(Project Director) The Global Environment Facility-funded Caribbean Regional Fund for Wastewater Management (GEF CRW) Project is a four-year project aimed at addressing some of the critical issues that face Caribbean countries in the management of wastewater treatment systems. One of the Project's objectives is to promote successful regional and national financial mechanisms to facilitate sustainable financing of future wastewater investments. Mr. Janson was hired to review the availability of funding and provide recommendations to support the development of these mechanisms. Specifically, he reviewed the availability of funding for wastewater improvements, the extent of uptake of funding by selected countries (Antigua & Barbuda, Barbados, Belize, Jamaica, Guyana, Saint Lucia, Saint Vincent & the Grenadines, Suriname and Trinidad & Tobago), and provided recommendations as to how countries might better prepare, apply for, and make effective use of funding available to improve the delivery of wastewater treatment services. Mr. Janson led a workshop in St. Lucia to present the findings of the report *C13061*
- **Enhancing Effective Regulation of Water and Energy Infrastructure and Utility Services, Pacific and Caribbean** December 2008 to November 2011 (Financial Management Expert)—The Asian Development Bank contracted Castalia to do a study on energy and water regulation of small island countries. This work included identifying current regulatory options for small island countries and carrying out case studies to assess the experience, capacity and effectiveness of energy and water regulation in the Caribbean. Mr. Janson was the team's Financial Management Expert *C08105*
- **Structuring a PPP for the Water Supply and Sewerage Systems of Santa Marta, Colombia**, 2015-Present—The National Planning Department of Colombia is interested in implementing a PPP structure for the design, construction, operation, and maintenance of a water and sewage system, for the city of Santa Marta. Currently the rate of coverage and level of quality of water and sanitation services in Santa Marta is below the average for the country. Also, the contract with the private firm that currently operates the system and the infrastructure expires in April 2017. Castalia is leading all the economic, financial, transactional and institutional aspects of the development of the PPP contract. Castalia will design the arrangement to introduce private participation for water service provision based on the provisions of the National PPP Law and water sector

regulations. For this, Castalia will set service levels and tariffs, as well as the payment formulas to the private party that will maximize value for money for the public sector. Also, Castalia will support the DNP and the municipal Government of Santa Marta in planning the process for introducing private participation. Mr. Janson is the leader of the project

- **Designing Multivariate Prioritization System for the National Water Commission, Mexico** July 2015-Present (Analyst)—Castalia is part of the team hired by 2030 Water Resource Group to help the National Water Commission (*Comisión Nacional del Agua*—CONAGUA) design a multivariate prioritization system to prioritize investments in the water sector. Castalia analyzed various multivariate investment systems, evaluated best practices, and recommended the system best suited for CONAGUA. Castalia conducted stakeholder consultations to define the prioritization criteria, and led a stakeholder workshop to validate criteria and garner support for the recommended system. Based on the analysis and consultations conducted, Castalia will design the multivariate system for CONAGUA, and will test the system with two pilot models to prioritize projects funded with subsidies and with CONAGUA funds. Castalia will then train CONAGUA on using the system built to institutionalize its implementation. Mr. Janson is the leader of the project
- **Designing a PPP Scheme for the Mexico City Water Utility, Mexico** November 2013-ongoing (Project Director)—The public utility responsible for providing water supply and sanitation services in Mexico City (*Sistema de Aguas de la Ciudad de México*—SACMEX) is in the process of designing performance-based PPP contracts to replace the existing commercial outsourcing contracts. Castalia is advising SACMEX on institutional and financial aspects of the process, including the type of PPP contracts that will be used, the performance indicators used to monitor the contracts, and the compensation formulas. Castalia is also reviewing the terms and conditions that will be included in the tender documents and identifying private firms that could be potential bidders. As Project Director, Mr. Janson is leading all aspects of Castalia's work
- **Reform of the Water and Sanitation Sector Phase II, Panama** July 2012-March 2014 (Project Director)—Castalia was hired by the national water company in Panama (*Instituto de Acueductos y Alcantarillados Nacionales*—IDAAN) to provide ongoing support to the Transformation Committee created to implement the water sector reform. Mr. Janson led the development of a model that evaluated the operating and financial performance of IDAAN. The model served as a basis for a five-year business plan that provided clear guidelines and goals for IDAAN to improve its performance. Mr. Janson also developed and proposed a new structure for IDAAN that would allow it to operate more efficiently and effectively. He developed a long-term Communications Strategy that would guide IDAAN's public relations office in communicating organizational changes to its employees. Finally, he reviewed resolutions approved by IDAAN's Board of Directors, recommended changes to them, and identified resolutions that should be developed to help the Board govern IDAAN more effectively
- **Policy Note for the Water and Sanitation Sector of Panama** November 2013—(Project Leader) The Inter-American Development Bank (IDB) contracted Mr.

Janson to develop the Policy Note for the Water and Sanitation Sector of Panama (Policy Note for the Sector). The main objective of the note was to update the IDB's Strategic Plan for the Water and Sanitation Sector. Additionally, the note is meant to serve as a basis to guide the dialogue of the new Government of Panama when it develops the Strategy for the Country for 2015-2019. For this reason, the note presents strategic guidelines for improving the sector's performance, and recommends specific actions that the IDB can take to support the implementation of these strategic guidelines

- **Intermediate Evaluation of the National Water Company's Water and Sanitation Investment Program, Panama** June 2013 to July 2013—(Project Director) The Inter-American Development Bank hired Castalia to carry out an intermediate evaluation of Phase I of the Water and Sanitation Investment Program of the national water company (*Instituto Nacional de Acueductos y Alcantarillados Nacionales*—IDAAN). The objective of the contract was to evaluate the performance of the Executing Agency, IDAAN, in the implementation of the loan for phase I. Under the management of Mr. Janson, the Castalia team found that IDAAN had positive performance in implementing the loan, and that it had advanced significantly on physical and financial terms. IDAAN had also been meeting many of the goals established in the operation plans for the loan. However, Mr. Janson still provided recommendations on how IDAAN could improve its performance further. His evaluation fulfilled the first milestone necessary for the approval of phase II of the program, which was for US\$54 million
- **Designing an Emergency Technical Assistance Program for the National Water Company, Panama** March 2012 to May 2012 (Project Director)—The Inter-American Development Bank hired Castalia to advise the Government of Panama on the reform of the country's potable water and sanitation sector. This reform included the transformation of the national water company (*Instituto de Acueductos y Alcantarillados Nacionales*—IDAAN). Mr. Janson was hired by the Inter-American Development Bank to design the Terms of Reference and the contract for an emergency technical assistance. These intend to support IDAAN in the transformation of the company by providing solutions to short term changes inside the company
- **Support for the Implementation of the Water and Sanitation Sector Reform, Panama** October 2011 to March 2012 (Project Director)—After developing a "Strategy for the Reform of the Water and Wastewater Sector", Castalia was engaged to help implement the strategy. Castalia was responsible for drafting new laws for the sector and developing a fund to distribute subsidies more efficiently. Castalia also developed financial models, a business plan, and performance contracts for the national water company (*Instituto de Acueductos y Alcantarillados Nacionales*—IDAAN). We also proposed a new organization structure for the company
- **Reform of the Water and Sanitation Sector Phase I, Panama** May 2011 to July 2011 (Project Director)—The Government of Panama, with the assistance of the Inter-American Development Bank, was implementing a new legal framework and restructuring the sector for water and wastewater. Castalia was hired to write a policy paper which would entail the contents of the sector reform; to review the

situation of the subsidies that the sector receives; to prepare a financial model for the water sector; and to prepare a 3 year business plan. Castalia also prepared a draft of the agreement between the government and the national water company, and proposed a design of the subsidies fund. As the Project Director, Mr. Janson directed all tasks related to this assignment. In particular, he led the drafting of the policy paper, the analysis of the subsidies, directed the development of the financial model, led the preparation of the business plan, and managed the communications and meetings with the IDB, the Government, and the water company

- **Sectoral Diagnosis and Prioritization of Investments in the Water and Sanitation Sector and Proposal for Strengthening the Commercial and Operating Performance of the Urban and Rural Systems in the Provinces of Bocas del Toro and Chiriquí, Panama** 2010-2011 (Economic Specialist)—The National Council on Sustainable Development (*Consejo Nacional para el Desarrollo Sostenible*—CONADES) hired a consortium, which included Castalia, to advise on the policies and institutional changes that should take place to improve the supply of water and sanitation services in the provinces of Bocas del Toro and Chiriquí. Mr. Janson was the Team's Economic Specialist, and was responsible for carrying out a comprehensive financial and economic analysis of water and sanitation services in urban areas of these provinces by the national water utility (*Instituto de Acueductos y Alcantarillados Nacionales*)
- **Strengthening of the National Water and Sewerage Corporation, Uganda** May 2007 to July 2008 (Project Director and Water Sector Restructuring Expert)—The Government of Uganda embarked on a comprehensive reform program aimed at extending water and sewerage coverage and improving the performance of the water utilities. Castalia was hired to help transform the Head Office of the National Water and Sewerage Corporation (NWSC) into an asset-holding authority, and to help strengthen the regulatory framework governing the urban water and sewerage sector. Mr. Janson was the Project Director and Water Sector Restructuring Expert on this assignment
- **Manual for Private-Sector Participation in Water, Mexico** September 2009-August 2010 (Project Director)—Mexico's National Water Commission (*Comisión Nacional del Agua*—CONAGUA) hired Castalia to update its manual for Private Sector Participation (PSP) in the water sector so that it could better address users' needs. Sub-national governments and other units of the national government use the manual as their primary resource when considering PSP in the water sector. Castalia developed a succinct and practical manual that helps policy-makers make informed decisions about PSP in the sector. As Project Director, Mr. Janson led all aspects of this project
- **Preparing an Operations Manual for the Water and Sewerage Corporation, The Bahamas** August 2011 to October 2011 (Project Director)—The Water and Sewerage Corporation (WSC) of the Bahamas hired Castalia to create an operations manual for an US\$81 million loan that was provided by the Inter-American Development Bank. The Operations Manual establishes the rules and procedures for implementing each of the components of the loan. The loan is being used to finance a non-revenue water reduction contract, a program for the institutional strengthening of the WSC, and an upgrade of wastewater treatment plants. The

loan is also being used to prepare a wastewater treatment action plan, and an economic and environmental regulation reform. As the Project Director for this assignment, Mr. Janson oversaw all tasks related to its completion

- **Paper on Financing Water Resource Management, Mexico** 2010 (Water Financing Specialist)—The National Water Commission (CONAGUA) hired Castalia to help prepare a paper on financing water resource management for the Organization for Economic Co-operation and Development. Castalia conducted a review of existing literature on Mexico's WRM Financing CONAGUA and other documents, and conducted a set of interviews with CONAGUA and IMTA staff. Mr. Janson was responsible for the preparation of this paper
- **Improving Energy Efficiency of Water Utilities, Mexico** November 2013-March 2014—(Project Director) The Inter-American Development Bank hired Castalia to work with the National Water Commission (Comisión Nacional de Agua—CONAGUA) in developing a financing mechanism for energy efficiency projects in the water sector in Mexico. Mr. Janson directed the team that analyzed the current financing instruments and programs available for financing energy efficiency in Mexico, proposed changes to those programs and recommended a mechanism that water operators can use to finance energy efficiency programs, and prepared an implementation plan to ensure for the financing mechanism
- **Developing a Long-Term Investment Program for the Water and Sanitation Sector, Malawi** March 2011-March 2012 (Team Leader)—The World Bank contracted Castalia to help develop an investment program until the year 2030 for the water and sanitation sector in Malawi. The Investment Plan provides a methodology for selecting and prioritizing water projects. The activities related to the project involved reviewing the public expenditures made in the water sector, developing performance indicators and establishing performance targets, and creating a database of ongoing and potential projects in the sector. This information was used to determine the capital expenditure required to achieve performance targets. Lastly, Castalia developed a system for that the Government could use for monitoring and evaluating the progress of the sector towards meeting its national development goals. The final product was a Water Sector Investment Program. As the Team Leader, Mr. Janson was responsible for overseeing the tasks in this assignment. He also reviewed public expenditure in the sector, established sector performance indicators, and analyzed the feasibility of financing future water projects with debt instruments
- **Advice on Reforming the Water and Sewerage Sector, South Africa** May 2011 to July 2011 (Water Sector Reform Specialist)—Castalia was a member of a consortium, led by Deloitte Consulting (Pty) Ltd., that advised the Department of Water Affairs of South Africa on a strategy for reforming the water and sewerage sector. The objective of the reform was to realign the institutional framework of the water sector to ensure its effectiveness. Responsibilities involved the development of an institutional framework that clearly defined the roles and responsibilities within the water value chain, while guiding water institutions so they could achieve economies of scale and raise funds to invest in water infrastructure. Lastly, a realignment of current institutions was necessary so that they would report to the Ministry, which would in turn allow the Ministry to effectively control and

manage water institutions. Mr. Janson was in charge of coordinating project activities and managing the project scope and resources

- **Improving the Water Company in the City of Podgorica, Montenegro** July 2009 to March 2010 (Project Manager and Financial Specialist)—Castalia was engaged by the World Bank to assist the Podgorica Water and Sewer Company and its owner, the Capital City of Podgorica, to develop plans for upgrading and expanding the water and wastewater services. As the team's Financial Specialist, Mr. Janson developed a financial model to assess the various options for tariffs, capital investments, financing of capital investments, and reforms, which would lead to operating efficiencies. Based on the results of this model, he developed recommendations for improving the governance framework for the sector and the best way to finance the capital investments needed. Mr. Janson presented the recommendations to the water company and the authorities of the city at a stakeholder workshop in Podgorica. In addition, Mr. Janson was responsible for managing all aspects of the project
- **Strategy for Promoting Private Sector Participation in the Water and Sanitation Sector, Mexico** 2008-2009 (Project Director; Private Sector Participation Specialist)—The Government of Mexico wants to promote Private Sector Participation (PSP) in the water and sanitation sector. Castalia was hired to support the National Water Commission (CONAGUA) by developing a strategy for promoting PSP in the water sector, and by establishing a common understanding among all stakeholders of the role assigned to the private sector within the National Infrastructure Program. Castalia's main tasks in this assignment were to develop an internal review process to discuss and reconcile the objectives of the National Development Program, the National Infrastructure Program, and the National Water Program, with the vision of federal programs in the sector and PSP. Other responsibilities included proposing the best way for CONAGUA to participate in the National Infrastructure Fund (FONADIN). Mr. Janson was the Project Director and the PSP Specialist for this assignment
- **Financial Modeling of the Water Utility in Buenos Aires, Argentina (AYSA)** August 2008 to September 2008 (Project Director and Lead Financial Specialist)—The World Bank was preparing a loan to finance water and sewerage assets to be managed by the water utility responsible for providing service in Buenos Aires, Argentina (*Agua y Saneamientos Argentinos S.A.*—AYSA). The World Bank wanted to minimize the risk that the investments it had financed would not be carried out efficiently, and that the objectives of the investments would not be met. After having performed corporate and regulatory due diligence of AYSA, Mr. Janson was retained again by the World Bank to conduct due diligence of a financial model that AYSA used to develop its investment plan for this US\$1 billion project. Mr. Janson discussed the financial model in detail with AYSA and identified items in the financial model that needed to be improved to produce an investment plan consistent with the company's legal framework. Finally, Mr. Janson prepared a report describing what the financial model indicated about AYSA's financial condition and investment plan.
- **Development of Financial Framework for Water Sector Reform, Malawi** November 2006 to February 2007 (Project Director; Financial Specialist)—The

Ministry of Irrigation and Water Development (MOIWD) in Malawi wanted to develop a financial framework as part of an overall reform of the urban water sector. The MOIWD contracted Mr. Janson to recommend ways to disburse subsidies from the Government to the Asset Holding Company and to develop debt service payments by the Asset Holding Company. He was also responsible for reviewing business plans, and carrying out financial analyses of the Water Boards in Blantyre and Lilongwe. Mr. Janson would propose ways for restructuring debt and settling arrears. Lastly, Mr. Janson developed financial models to simulate the different scenarios with regard to investments, operational efficiencies, and tariff levels and structures. This work was used to justify the World Bank's US\$50 million loan for the Second National Water Development Program (NWDP II).

- **Study for the Development of Strategies for the Universalization of Basic Sanitation Services in the State of Sao Paulo, Brazil** April 2005 to April 2007 (Project Director; Lead Financial Specialist)—Castalia was a member of a consortium contracted by the Secretariat of Energy, Water Resources, and Sanitation (SERHS) of the State of Sao Paulo to advise on strategies for financing, regulation, and private sector participation that SERHS could adopt in order to attain universal coverage in water and sewerage. As Castalia's Project Director and the team's Financial Specialist, Mr. Janson led the completion of all project outputs related to sector financing, private sector participation, and tariff and subsidy recommendations. As part of this assignment, he developed a comprehensive financial model that was used to determine the potential impact of the proposed strategies on each of the 645 municipalities
- **Preparation of Business Development Plan for the National Water Company in Paraguay (ESSAP), Paraguay** February 2005 to May 2006 (Project Director; Lead Financial Specialist)—Castalia was contracted to assist the World Bank and the Government of Paraguay in developing a business development plan for ESSAP. The scope of work included developing options for horizontal or vertical segmentation (or both) of the company, advising on the legal and financial strategies required to stabilize the company, providing recommendations on potential options for private sector participation, developing a base-case capital investment plan, and advising on required changes to tariff levels and structures. As the team's Project Manager and Lead Financial Specialist, Mr. Janson was responsible for conducting the analysis and recommendations related to the capital structure of the company, tariff levels and structures, private sector participation, and financing of the proposed capital investment plan

## Publications

- Gischler, Christiaan; Gonzalez, Camila; Janson, Nils; Valencia, Adriana, *Energy Sector in Barbados*, Publication of the Inter-American Development Bank, 2014
- Balza, Lenin; Gischler, Christiaan; Janson, Nils; Miller, Sebastián J.; Servetti, Gianmarco, *Potential for Energy Storage in Combination with Renewable Energy in Latin America and the Caribbean*, Publication of the Inter-American Development Bank, 2014, <http://publications.iadb.org/handle/11319/6042?locale-attribute=en>
- Bailey, Jed; Janson, Nils; Espinasa, Ramón, *Pre-Feasibility Study of the Potential Market for Natural Gas as a Fuel for Power Generation in the Caribbean*, Publication of the Inter-

American Development Bank, 2013,  
<http://publications.iadb.org/handle/11319/6015?locale-attribute=en>

- Gischler, Christiaan and Janson, Nils, *Perspectives for Distributed Generation with Renewable Energy in Latin America and the Caribbean*, Publication of the Inter-American Development Bank, 2011,  
<http://publications.iadb.org/handle/11319/6042?locale-attribute=en>
- Janson, Nils, *Sustainable Energy in the Eastern Caribbean: Achieving an Unrealized Potential*, Report to the Inter-American Development Bank, 2012
- David Ehrhardt and Nils Janson, *Can regulation improve the performance of government-controlled water utilities?* in “Infrastructure Regulation: What Works, Why and How do We Know? Lessons from Asia and Beyond” edited by Darryl S L Jarvis, M Ramesh, Xun Wu, and Eduardo Araral, Jr., 391-418. Singapore: World Scientific Publishing, 2011.
- Janson, Nils and Segura, Jorge. *Colombia: Telecoms and Power Opportunities* in Privatisation International Yearbook 2000, London, England, 1999
- Janson, Nils and Segura, Jorge. *Mexico: Potential in the Power Sector* in Privatisation International Yearbook 2000, London, England, 1999
- Janson, Nils. *Tema de Interés: Observaciones de Política Económica (Topic of Interest: Observations on Economic Policies)* in Coyuntura Económica, Vol. No. 118, Asunción, Paraguay, 1998

## **A.2 Basil Sutherland**

**Proposed Position:** Water and Wastewater Sector Expert

**Name of Firm:** Castalia Associate

**Nationality:** Jamaica, St Lucia

### **1. Key Qualifications**

Mr. Sutherland is a Chartered Engineer with over 30 years of experience in the power sector. During his career he has been responsible for financing, planning, and managing assets and companies in the power sector. He has worked on the various aspects of costs of service studies for power utilities in Antigua and Barbuda, Barbados, Dominica, Grenada, Jamaica, Montserrat, Nevis, Saint Lucia, and Saint Vincent and the Grenadines.

Mr. Sutherland has extensive experience in all aspects of utility management, strategy, finance and regulation throughout the Caribbean. As former President of the National Water Commission (Jamaica) he achieved a financial turnaround of the utility, making it profitable for the first time in more than a decade. He led preparation of tariff submissions to Office of Utility Regulation (OUR), and negotiated the first set of quality of service standards and initiated a benchmarking program to compare NWC's performance with that of other water and sanitation utilities in the Caribbean region and elsewhere. He recently served as the Castalia's technical expert in the Management and Operations Audit of the Barbados Water Authority. Among other things, his work included review the BWA's non-revenue water reduction efforts and operation performance, and developing standard operating procedures.

Basil has held senior positions with the National Investment Bank of Jamaica, the Caribbean Development Bank, the Jamaica Public Service Company and the Commonwealth Development Corporation. He played a key role in the development of the country's Water Sector Policy and Strategy. Currently resident in St Lucia, Basil's wider Caribbean experience includes estimation of demand, marginal costs and social impact for utilities in Jamaica and elsewhere.

## 2. Education

1963 – 1967	University of the West Indies, B.Sc Electrical Engineering Honors
1962 – 1963	University of Technology, ULCI 2nd Certificate – Mechanical and Electrical Engineering

## 3. Membership of Professional Associations

- Council of Engineering Institutions, United Kingdom – Chartered Engineer, C Eng)
- Institution of Electrical Engineers, United Kingdom – MIET
- Institute of Electrical and Electronics Engineers, United States – MIEEE

## 4. Other Training

N/A

## 5. Countries of Work Experience

Jamaica

Belize

Barbados

Trinidad

Guyana

Eastern Caribbean States

Mauritius

Tonga

## 6. Languages

	<i>Speaking</i>	<i>Reading</i>	<i>Writing</i>
English	Excellent	Excellent	Excellent

## 7. Employment Record

<b>From 2002</b>	<b>To Current</b>
<b>Employer</b>	Castalia
<b>Position Held</b>	Senior Advisor
<b>From 2000</b>	<b>To 2002</b>
<b>Employer</b>	Caribbean Electric Utility Services Corporation (CARILEC)
<b>Position Held</b>	Executive Director
<b>From 1997</b>	<b>To 2000</b>
<b>Employer</b>	National Water Commission, Jamaica
<b>Position Held</b>	President and Chief Executive Officer
<b>From 1992</b>	<b>To 1997</b>
<b>Employer</b>	National Investment Bank of Jamaica Limited
<b>Position Held</b>	Vice-President and Technical Director
<b>From 1990</b>	<b>To 1992</b>
<b>Employer</b>	Jamaica Public Service Company Limited
<b>Position Held</b>	Planning Director
<b>From 1980</b>	<b>To 1990</b>
<b>Employer</b>	Caribbean Development Bank
<b>Position Held</b>	Project Officer and Power Engineer
<b>From 1976</b>	<b>To 1980</b>
<b>Employer</b>	Commonwealth Development Corporation
<b>Position Held</b>	Power Engineer
<b>From 1967</b>	<b>To 1976</b>
<b>Employer</b>	Various companies in the consulting, construction and sugar industries
<b>Position Held</b>	Various engineering and management positions

## 8. Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned

- **Jamaica, MIGA Guarantee to the National Water Commission** – March, 2010. Member of the Castalia team advising the Multilateral Insurance Guarantee Agency (MIGA) with respect to its intention to consider guaranteeing a loan of USD115,000,000 million from The Bank of Nova Scotia Jamaica Limited to the National Water Commission for the implementation of the Jamaica Water Sector Improvement Project (JWSIP). On Behalf of MIGA, Castalia evaluated the JWSIP and encompassed an assessment of the economic and financial soundness, and rationale for the JWSIP, in addition to the managerial and technical capacity of the NWC to successfully execute the project and secure the forecasted economic and developmental benefits for the country.
  - **St. Lucia Water Sector Privatisation**, September to November, 2009 – In an assignment funded by the Caribbean Development Bank, Mr. Sutherland advised a Water Sector Review Committee appointed by the Government of Saint Lucia in relation to the development of potential options and strategies for improving the management and operation of water and sanitation sectors in St. Lucia.
  - **Saint Lucia, Regulatory Training** – March, 2009. Member of Castalia team advising the Government of Saint Lucia on the training of the regulators of the newly established the National Water & Sewerage Commission (NWSC) to regulate the provision of water and sanitation services. Assisted in preparing training material to introduce the newly appointed regulators to the principles of utility regulation and assisted in conducting an inaugural one-day orientation workshop for the NWSC and other stakeholders covering key topics related to the regulation of public services and utilities.
  - **Guyana, Developing Proposals for Reorganisation of Water and Wastewater Tariffs** – February, 2009
- Utilities Management Expert on Castalia team hired to examine the options and recommend a harmonized and restructured tariff for potable water in the national water utility which was formed from two separate utility operations having different tariffs.
- **Jamaica – Development of a Regulatory and Monitoring Framework for Small Private and Community Based Water and Sewerage Service Providers** – March 2008.

Project Coordinator and Utility Operations Expert on Castalia's Team which has been engaged by the Office of Utilities Regulation (OUR) to assist it with the development of the regulatory framework that will encourage a mix of private and non-governmental providers to supplement the service currently offered by the public owned National Water Commission so as to satisfy Government's objective of providing universal access to potable water and proper waste water disposal throughout Jamaica by 2010.

The outputs of the assignment are intended to enhance the regulatory environment to encourage small private providers to offer potable and waste water disposal services. Accordingly, the assignment will develop and recommend the promulgation of rules to regulate and monitor small private providers; and establish the contractual guidelines and terms of engagement for the sharing/leasing of infrastructure and other resources between two or more service providers.

- **Guyana Water Sector Programme (GUYWASP) Review and Redesign (Annual Review 2007 and Redesign for remainder of programme)** – September 2007 and November, 2008.

Utility management expert on the Castalia team which has been engaged by the UK Government Department for International Development (DFID) to undertake a comprehensive review of the GUYWASP in 2006 – 2007 to record how well the programme has met its targets and lessons learned. In addition, recommendations will be made for the redesign of the remainder of the programme.

- **Developing a Turnaround Strategy for Guyana Water Incorporated (GWI)** – January 2007.

Utility management expert on the Castalia team which has been engaged by the Government of Guyana to advise it on managing the utility following Government's decision to terminate the management contract with a private international firm. Castalia has been appointed to develop a new strategy for managing the utility that will command the confidence of Government and the donors/lenders.

This study is being financed by the UK Department for International Development (DFID) and the scope of Castalia's work includes:

- Helping Government to develop the new strategy
- Assisting in building consensus between the donors and the Government for the strategy
- Documenting the consensus strategy

The elements of the strategy will at least include transition arrangements that ensure that the utility is well managed during the transition to local management; and an indicative turn-around plan to move the utility to operational profitability by 2010.

- **Design of Implementing Rules and Regulations for Water Utility Regulation, St. Lucia, 2005-2006** – Assisting the Government of St. Lucia with the design of the implementing rules and regulations for tariffs, service standards and organization of a regulatory commission, in preparation for private investment in St Lucia's water utility
- **Utility Management Contract Assistance, Guyana, 2004-05** – Developed and implemented a strategy to create an effective working relationship between the Government of Guyana and the private firm it had engaged to manage its water utility. Prepared a Board Governance Operating Manual for the company to facilitate improved governance of the organisation.
- **Strengthening Public Utilities, Guyana 2004-05** – Assisting the Government of Guyana and the Public Utilities Commission (PUC) to develop procedures for regulating the water and sanitation utility. This includes a review of tariffs and an analysis of service standards, and international benchmarking of performance indicators to assess the areas for improvement.
- **Support to Water Management Contract Regulation, Guyana 2003** – (Castalia Utility Expert). Assisted the Government of Guyana and the Public Utilities

Commission to regulate the performance of the national water and sanitation utility, under its contract with Severn Trent International. This includes a review of tariffs and analysis of service standards and investment needs

- **Infrastructure Survey, Jamaica 2003** – (Utility and Infrastructure Expert). Reviewed the ability of Jamaica's infrastructure to contribute to the country's social and economic development goals. This included benchmarking of water, energy and other sectors against regional and international comparators on service, coverage, efficiency and financial indicators, analysis of institutional arrangements and recommendations on directions for reform.

***1998 – 2000 National Water Commission, Jamaica – President and Chief Executive***

***Officer***

- Engineered and managed financial turnaround of National Water Commission (NWC), improving profitability by J\$180 million in first year. Supervised computer upgrade to achieve Y2K compliance
- Lead NWC's efforts to prepare tariff increase submissions to the Ministry of Water and the utility regulator, the Office of Utility Regulation (OUR)
- Established special department within NWC to pursue ongoing discussions with OUR which included negotiation, agreeing and the subsequent monitoring of quality of service standards
- Instituted least cost investment planning approach, and improved demand forecasting and project analysis. Developed and implemented framework for project evaluation and analysis to ensure financial sustainability of system extensions to serve new customers
- Established procedures for enhancing NWC's response to customer complaints including arranging for improved staff selection standards, staff training, quality assurance checking of staff responses to customer complaints and exploring the feasibility of outsourcing call centre operations.

***1992 – 1998 National Investment Bank of Jamaica Limited – Vice-President and***

***Technical Director***

- Member of Jamaican Government's Steering Committee on Privatization of the Energy Sector
- Key member of the Enterprise Teams which advised Government on:
  - Privatization of Jamaica Public Service Company Limited
  - Divestment options for Petrojam oil refinery and its subsidiaries
  - Water Sector Strategy and Options for Private Participation

This work included development of tariffs and regulatory frameworks to apply following privatization

- Prepared terms of reference and coordinated in-house technical teams, teams of privatization consultants, lawyers and financial analysts carrying out legal reviews and technical and financial analysis to advise the Enterprise Teams on all aspects of privatization, including least cost investment planning, demand forecasts, tariffs and regulation
- Part-time consultant to Inter-American Development Bank on water sector privatization and policy issues
- Developed terms of reference and supervised implementation of sector studies to revise water and wastewater sector policy and strategy
- Key member of Government's Evaluation Team and Negotiation teams which evaluated proposals from private sector sponsors arising from separate international competitive bids for three independent power projects to provide power for the national grid system totaling 170MW. This included demand forecasting, marginal cost analysis and least cost investment planning
- Outlined parameters for the establishment, and subsequently managed multi-million dollar Private Sector Energy Fund to provide limited-recourse financing for private sector developers to develop projects in the power sector in Jamaica.

**1990 – 1992**

***Jamaica Public Service Company Limited – Director, Planning***

- Responsible for establishing and integrating corporate planning and demand-side management (DSM) capability with existing system planning capability, overseeing and guiding the Planning Division which carried out medium and long range demand forecasting, capacity expansion planning, economic and financial planning, including tariff design and implementation and interfacing with regulatory authorities and international financial institutions
- Key member of team which worked on special assignment with Government officials and personnel from the World Bank and IDB to prepare documentation for the solicitation of private sector participation in a 60MW low speed diesel power station project and to outline the parameters for the establishment of the multi-million Private Sector Energy Fund which was intended to provide limited-recourse financing for private sector developers to develop projects in the power sector.

### A.3 Scarlett Piantini

**Name of Firm:** Castalia  
**Proposed Position:** Water and Wastewater Sector Turnaround Specialist  
**Nationality:** Dominican

#### Key Qualifications

Scarlett is an economic and policy analyst specializing in the water sectors. Her work has focused on evaluating the performance of utilities and analyzing the legal and institutional frameworks of water sectors in Latin America and the Caribbean. She focuses on recommending institutional reforms to improve service provision and turnaround utilities, designing public-private partnership schemes to improve operational and financial efficiency in utilities, and designing systems to prioritize cost-effective investments.

Ms. Piantini has worked to reform the institutional and regulatory frameworks of water sectors and turnaround utilities. In Panama, Ms. Piantini is working with the national water company (*Instituto de Acueductos y Alcantarillados Nacionales*—IDAAN) to define performance targets and draft the company's first Action Plan. This work entailed garnering stakeholder support and creating a functional model to provide IDAAN with the resources, capabilities, and monitoring required to successfully implement the Action Plan. She also updated the company's financial model, built by Castalia in a previous assignment, and is creating a prioritization model to prioritize the company's investments based on the Action Plan. For the World Bank, Ms. Piantini recently started working on a project to develop a utility turnaround framework for public water utilities. Ms. Piantini is leading the analysis of previously attempted turnarounds to identify the dimensions needed for an efficient turnaround framework. She will lead the development of the models for financing public water utilities and provide inputs for the overall turnaround framework.

Ms. Piantini has also helped design public-private schemes to improve operational and financial efficiency in the region. In Mexico, Ms. Piantini worked with the water and sanitation utility in Mexico City (*Sistema de Aguas de la Ciudad de México*—SACMEX) to define performance indicators for the compensation schemes in upcoming performance contracts. She analysed the utility's operational and commercial efficiency, and helped design a compensation scheme for the upcoming PPP contracts.

Also in Mexico, Ms. Piantini helped the National Water Commission (*Comisión Nacional del Agua*—CONAGUA) design a multivariate prioritization system to select investments in the water sector. For this project, Ms. Piantini analyzed the theory and study cases of prioritization systems around the world and chose the Analytical Hierarchical Process (AHP) as the most relevant one. She built 5 models for CONAGUA's sub-sectors that rank projects in terms of six criteria (economic, environmental, institutional capacity, political, technical, and social). The models were complemented with 3 stages to oversee the entire project cycle of water sector investments in Mexico.

Scarlett holds a Master of Science in Foreign Service focusing on International Development from Georgetown University. She graduated magna cum laude with a Bachelor of Arts in Global Institutions and Development from the College of the Holy Cross. She is fluent in Spanish and English, and proficient in French.

## Education

2014	Georgetown University, MS in Foreign Service, Concentration in International Development
2011	College of the Holy Cross, BA in Global Institutions and Development, Minor in French (Magna Cum Laude)

## Countries of Work Experience

Anguilla, Antigua and Barbuda, The Bahamas, Barbados, British Virgin Islands, Colombia, Costa Rica, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Mexico, Montserrat, Panama, Saint Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines, Suriname

## Languages

	<i>Speaking</i>	<i>Reading</i>	<i>Writing</i>
English	Excellent	Excellent	Excellent
Spanish	Excellent	Excellent	Excellent
French	Good	Good	Good

## Employment Record

<b>From 2014</b>	<b>To Present</b>
<b>Employer</b>	Castalia Strategic Advisors
<b>Position Held and Description of Duties</b>	Senior Analyst Ms. Piantini focuses on infrastructure development projects, public-private partnership projects, performance evaluation of utilities, and analysis of legal and institutional frameworks. She has worked primarily on the energy and water sectors in Latin America and the Caribbean.
<b>From 2013</b>	<b>To 2014</b>
<b>Employer</b>	Castalia Strategic Advisors
<b>Position Held and Description of Duties</b>	Graduate Intern Ms. Piantini conducted research and analysis for various energy projects in the Caribbean, and drafted sections for reports related to the energy and water sectors in the Caribbean. Ms. Piantini supported business development work.
<b>From 2013</b>	<b>To 2013</b>
<b>Employer</b>	Dominican Tourism Competitiveness Consortium
<b>Position Held and Description of Duties</b>	Business Unit Short Term Consultant Ms. Piantini conducted the Business Unit's first field studies in different rural areas of the Dominican Republic hosting ecotourism SMEs, to evaluate and report on the levels of vulnerability and existing forms of capital in each community.

She also, designed participatory waste management programs in several studied communities, and drafted and submitted proposals for funding to the Canada Fund for Local Initiatives and the UNDP.

<b>From 2011</b>	<b>To 2012</b>
<b>Employer</b>	Fundación Global Democracia y Desarrollo
<b>Position Held and Description of Duties</b>	Executive Program Coordinator Ms. Piantini led the coordination and management of Executive Programs in the Foundation.
<b>From 2011</b>	<b>To 2011</b>
<b>Employer</b>	Ministry of Economics, Planning and Development
<b>Position Held and Description of Duties</b>	Short Term Consultant for the Caribbean Unit Ms. Piantini researched historical, social, and political aspects of Caribbean countries to analyze the lack of intra-regional trade, in order to complete a Diagnosis Report that served as the initial input in the design a new Dominican trade policy towards the region.

#### Relevant Experience

- **Prioritization of Water Resources Initiative, Mexico 2015-2016 (Manager)**—Castalia is part of a consortium hired by 2030 WRG to assist in developing CONAGUA's strategic capacity to effectively plan and program capital investments in the Mexican water sector. As part of the work, we are designing, implementing and supporting a multi-variate capital investment prioritization system. For this project, Ms. Piantini analyzed the theory and study cases of prioritization systems around the world and chose the Analytical Hierarchical Process (AHP) as the most relevant one. Mr. Piantini led multiple roundtables to define and weight the system's criteria, and built 5 models for CONAGUA's sub-sectors. The models use the Analytical Hierarchical Process (AHP) to rank projects in terms of six criteria (economic, environmental, institutional capacity, political, technical, and social). Ms. Piantini then ran the models with project data and presented them to sub-sector directors for their approval. To fine-tune the AHP, we have designed a system that prioritizes projects in four phases. The first phase ensures that a project need has been adequately identified, and that alternatives have been properly articulated. The second phase is a screening process that ensures that all projects that move to phase two have the minimum requirements in terms of pre-feasibility studies. The third phase consists of a prioritization of the projects of each sector in CONAGUA. The last phase is a multisector dialog table to decide the projects that CONAGUA will finance. Ms. Piantini articulated all phases to be consistent with the Ministry of Finance's investment requirements. Then, she created system manuals and led capacity building workshops to ensure that CONAGUA knows how to implement the system.
- **IDAAN Action Plan 2016-2019 Implementation, Panama, 2016-Ongoing (Manager)**—The water utility responsible for providing water and sewerage services in all urban areas in Panama (*Instituto de Acueductos y Alcantarillados Nacionales*)—

IDAAN) hired Castalia to draft and assist in the implementation of its Action Plan for 2016-2019. The Action Plan is IDAAN's business plan for the period from 2016 to 2019, and sets out targets to improve performance and service quality. To design the Plan, Ms. Piantini conducted quantitative and qualitative surveys to define the broad goals, specific objectives, and indicators by which the progress of the plan will be evaluated. She then updated IDAAN's financial model, based on a previously built version, and defined the activities and projects to achieve the objectives of the Plan. To implement the Plan, a detailed schedule was prepared, and the Plan was presented to the relevant actors. As part of the work, Ms. Piantini is designing, implementing and supporting a multi-variate capital investment prioritization system. The system is based on the Analytical Hierarchical Process (AHP), whereby the criteria and subcriteria are defined and weighted by consensus of all relevant actors. The criteria and subcriteria were defined in line with the Action Plan, whose objectives were defined based on surveys to all relevant actors. Ms. Piantini then held work meetings with IDAAN's directors to validate and weigh the system's criteria and subcriteria. Currently, Ms. Piantini is working with IDAAN to mine the data required to evaluate projects in the system, and will run a pilot of the system to present it before all relevant actors

- **Water Utility Turnaround Framework, Global 2016-Ongoing** (Utility Management Specialist)—The World Bank hired Castalia to develop a utility turnaround framework for public water utilities. This will be an analytic framework that practitioners will be able to use to guide efforts to turn under-performing public water utilities into highly successful companies—utilities that deliver good services to customers, efficiently and sustainably. After developing the utility turnaround framework, Castalia will customize it for two water utilities. Castalia researched and is analyzing success in previously attempted turnarounds of public water utilities, using data on performance and a framework for evaluating success. Castalia will then conduct six in-depth case studies, and develop models for financing public water utilities, and evaluate advantages and disadvantages to these models. With these inputs, Castalia will develop the utility turnaround framework. The framework will be customized for two cities chosen by the World Bank. As the utility management specialist, Ms. Piantini is leading the analysis of previously attempted turnarounds to identify the dimensions needed for an efficient turnaround framework. She will lead the development of the models for financing public water utilities and provide inputs for the overall turnaround framework
- **Designing a PPP Scheme for the Mexico City Water Utility, Mexico 2013-2015** (Economic and Financial Analyst)—The public utility responsible for providing water supply and sanitation services in Mexico City (*Sistema de Aguas de la Ciudad de México*—SACMEX) is in the process of designing performance-based PPP contracts to replace the existing commercial outsourcing contracts. Castalia is advising SACMEX on institutional and financial aspects of the process, including the type of PPP contracts that will be used, the performance indicators used to monitor the contracts, and the compensation formulas. Castalia is also reviewing the terms and conditions that will be included in the tender documents and identifying private firms that could be potential bidders. Ms. Piantini analyzed of the operational and commercial efficiency of Mexico City's water system, in order to define the performance indicators that will be included in the new PPP contracts.

She also supported the design of the compensation scheme and researched various mechanisms to supervise the PPP contracts

- **Reform of the Water and Sanitation Sector Phase II, Panama 2012-2014** (Analyst)—Castalia was hired by the national water company in Panama (*Instituto de Acueductos y Alcantarillados Nacionales*—IDAAN) to provide ongoing support to the Transformation Committee created to implement the water sector reform. Castalia developed a model that evaluated the operating and financial performance of IDAAN. The model served as a basis for a five-year business plan that provided clear guidelines and goals for IDAAN to improve its performance. Castalia also developed and proposed a new structure for IDAAN that would allow it to operate more efficiently and effectively. Finally, Castalia reviewed resolutions approved by IDAAN's Board of Directors, recommended changes to them, and identified resolutions that should be developed to help the Board govern IDAAN more effectively. Ms. Piantini analyzed all existing institutional rules of operation and made recommendations for reform in the context of the newly proposed organizational structure
- **Management and Operations Audit of the Barbados Water Authority, Barbados 2013-2014** (Analyst)—Castalia was hired by the Barbados Water Authority (BWA) to develop recommendations for transforming BWA into one of the top performing water utilities in the region. Castalia was responsible for reviewing BWA's performance, developing a plan for improving BWA's performance, and providing assistance to BWA during its initial efforts to implement the plan. To develop its recommendations, Castalia carried out audits, completed detailed reviews, and measured the performance of BWA's operations, management, and organizational structure. As part of this assignment, Castalia reviewed BWA's non-revenue water management efforts, developed a long-term customer service plan, and developed a training plan for BWA. Mr. Piantini was responsible for helping propose the customer service plan to institutionalize accountability mechanisms between customers and the BWA.

#### A.4 Patricia de Jesus

**Name of Firm:** Castalia  
**Profession:** Water and Wastewater Sector Analyst  
**Nationality:** United States of America

##### Key Qualifications

Ms. Patricia de Jesus is an economist and policy analyst who advises governments, financial institutions, and utilities on how to carry out water-sector reform. She is experienced developing strategies to improve the governance and performance of utilities, which include improving the legal and institutional framework of the sector, the regulation of the sector, and the performance and structure of utilities. She has worked extensively with water utilities in the Caribbean. She has excellent research and communication skills, as she has developed training materials and given trainings on several topics related to water utility reform.

Ms. de Jesus holds a Master of Arts degree focusing on Development Economics and Law & Development from The Fletcher School of Law and Diplomacy in Tufts University. She graduated magna cum laude with a Bachelor of Science in International Politics from Georgetown University's School of Foreign Service. She is fluent in Spanish and English, and proficient in French.

##### Education

2013-2015	Tufts University, The Fletcher School of Law and Diplomacy, Master of Arts in Law and Diplomacy (Development Economics, Law and Development)
2005-2009	Georgetown University, Edmund A. Walsh School of Foreign Service, Bachelor of Science in Foreign Service (International Politics) <i>magna cum laude</i>

##### Employment Record

<b>From 2015</b>	<b>To Present</b>
<b>Employer</b>	Castalia
<b>Position Held and Description of Duties</b>	Analyst Ms. de Jesus provides economic analysis, research and policy advisory work in the water and electricity sectors.
<b>From 2010</b>	<b>To 2013</b>
<b>Employer</b>	U.S. Department of Justice, Office of International Affairs
<b>Position Held and Description of Duties</b>	International Paralegal Specialist, Mexico, Central America, and Caribbean Team (2012-2013); South America Team (2010-2012)

	Ms. de Jesus reviewed extradition requests and mutual legal assistance requests to and from several LAC countries and analysed whether they complied with the relevant established treaties. She corresponded with U.S. prosecutors, officials from the and foreign governments interested in seeking the extradition of a fugitive or evidence.
<b>From 2009</b>	<b>To 2010</b>
<b>Employer</b>	Drinker, Biddle & Reath, LLP
<b>Position Held and Description of Duties</b>	Government Relations Project Assistant Ms. de Jesus prepared minutes for meetings between multinational companies to discuss information-sharing initiatives
<b>From 2008</b>	<b>To 2008</b>
<b>Employer</b>	Government Development Bank for Puerto Rico
<b>Position Held and Description of Duties</b>	Honors Program Intern Ms. de Jesus provided economic and policy analysis in the tourism development division.

## Relevant Experience

### 2015–Present Analyst, Castalia, Washington, DC

- **Implementing the Water and Sewerage Company’s Organizational Restructuring Strategy, The Bahamas**, April 2012-Ongoing (Water Utility Analyst)—The Water and Sewerage Corporation of the Bahamas has hired Castalia to assist the WSC with implementing the WSC’s Organizational Restructuring Strategy. The Strategy, which was developed by Castalia in an earlier project, is designed to improve the efficiency and effectiveness of the WSC and to prepare the WSC for the new regulatory environment. As part of this project, Castalia will help the WSC develop separation packages, help the WSC improve business processes, and assist the WSC with outsourcing several activities. In addition, Castalia will provide the staff of the WSC with training and will draft Terms of Reference (TORs) for key consultants that the WSC plans to hire. For this project, Ms. de Jesus led the development of training materials on economic and environmental regulation, the new program for employee evaluations, and technical skills. She also co-led the trainings of these materials to a select group of WSC employees in Nassau *C12025*
- **WSC Tariff Study, The Bahamas** January 2015-Ongoing—(Analyst) The Water and Sewerage Corporation (WSC) of The Bahamas hired Castalia to complete a tariff study. The Government of The Bahamas is working to establish an economic regulator that will regulate the WSC. The WSC has hired Castalia to complete a tariff study so that it can submit a tariff application as soon as it becomes regulated and so that it can take a proactive role in shaping the new regulatory framework. To complete the tariff study, Castalia is recommending a tariff-setting mechanism for the WSC, and then determining the appropriate tariff levels and tariff structure for the WSC. To determine the appropriate water and sewerage tariffs for the WSC,

Castalia will update and complete the WSC's financial model, estimate the WSC's efficient cost of, and estimate the marginal cost of providing service to different geographic areas and types of customers. In addition, Castalia will prepare a social impact analysis and recommend targets for the WSC's financial and operational performance. For this project, Ms. de Jesus played a key role in developing the recommended tariff structure for the WSC and also completed the social impact analysis of the proposed tariffs *C15002*

- **WSC Pension Evaluation, The Bahamas** August 2015 to November 2015—(Analyst) The Water and Sewerage Corporation of The Bahamas (the WSC) implemented a defined contribution pension plan for all new employees and needed to hire a firm to manage this plan. The WSC hired Castalia to assist it with selecting a firm. Castalia reviewed the Terms of Reference for selecting a firm to manage the defined contribution plan. Then, once the received proposals, Castalia developed a methodology for assessing the proposals and assessed the proposals submitted. Ms. de Jesus was responsible for reviewing the proposals submitted and, in particular, assessing the qualifications of the firms *C15068*
- **NRW Technical Secretariat** 2016-ongoing—(Analyst) The World Bank aims to improve practices for performance-based contracts for non-revenue water (NRW) management in developing countries. Castalia was engaged as the technical secretariat for this Program. The technical secretariat is responsible for compiling the necessary materials for Partnership Group discussion, as well as reflecting lessons learned in knowledge products. Castalia will draft discussion papers and develop a set of tools each designed to help with a different state of development of NRW programs and projects. The work also involves creating a mechanism for monitoring and reporting progress of the Program. This will allow us to gather data and context specific narratives, while ultimately generating case studies to discuss findings at the annual meetings. We will help develop clear plans to move the Program forward and adapt the plans when necessary. Ms. de Jesus was responsible for co-authoring discussion papers, and coordinating the monitoring and reporting progress of the Program *C16037*
- **World Bank Water Utility Finance Training** January 2016-Ongoing—(Analyst) The Water Global Practice of the World Bank is working to foster private sector investment in the water sector to provide needed financing for the Sustainable Development Goals. As part of this effort, it hired Castalia to develop and provide a three-day training on water utility finance and financial management for World Bank staff. Specifically, the training will adapt materials from the course on “Designing and Implementing Successful Utility Reform” and will be tailored to non-finance professionals in the Water Global Practice. Among other topics, the training session will include training on: measuring the performance of water and sanitation utilities, tariff setting, economic analysis of water projects, accessing capital and creditworthiness, and designing plans for reforming water and sanitation utilities. It will also include training basic accounting, corporate finance, and financial modeling. This training will be presented three times in both Washington, DC and also in a location outside of the United States. Ms. de Jesus led the development of the course's outline, marketing materials, and training materials. Specifically, she developed PowerPoint slides on corporate finance, financial

statements, tariff-setting for water utilities in developing countries, measuring performance of water utilizes, among other topics *C16001*

- **Market and Regulatory Due Diligence for Project Milky Way, Mexico 2016—**  
(Analyst) An investment bank was evaluating a potential business transaction regarding serving as the acquirer, investor, a provider of sources of finance, including direct funding by way of debt or equity, or other arrangements in a water system in Mexico, referred to generally as “Project Milky Way.” For this purpose, this investment bank hired Castalia to prepare a report with regulatory and market due diligence. The report covered: an evaluation of the risks presented to owners of wastewater treatment plants in Mexico; how demand in Mexico for services in wastewater treatment and other segments of water market is expected to increase; international comparisons of investment opportunities in the water sector; and three case studies of private participation in the water sector in Mexico. Ms. de Jesus evaluated the risks presented to owners of wastewater treatment plants in Mexico *C16010*

## **Publications**

- n/a

## **Languages**

	<i>Speaking</i>	<i>Reading</i>	<i>Writing</i>
English	Excellent (Native)	Excellent (Native)	Excellent (Native)
Spanish	Excellent (Native)	Excellent (Native)	Excellent (Native)
French	Intermediate	Excellent	Intermediate
Portuguese	Basic	Basic	Basic



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