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Attracting private investment to the Caribbean water and sanitation sector

by
Norline Martin

A Doctoral Thesis
Submitted in partial fulfilment of the requirements
for the award of
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To my family
Wrenford, Pearlina and Ava

The volume of investment required for us to satisfactorily finance water and sanitation facilities to meet present and projected requirements will impose testing new obligations on the State if we continue in the traditional way to regard these as areas of exclusive involvement and investment by the State and its agencies only. Having regard to the sheer scale and potential effect of what is involved, the provision of water and sanitation services must be opened up to new institutional alliances and approaches in the pursuit of optimum, workable and sustainable solutions.

The Right Honourable Owen Arthur, Prime Minister of Barbados
Inaugural address at the Inter-American Development Bank seminar
Financing water and sanitation services in the Caribbean
Barbados, April 26, 2004

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ABSTRACT

The investment needs of the water and sanitation sector and the financing constraints facing many developing countries were important catalysts for the promotion of private investment during the 1990s. Towards the end of the decade however, the flow of private capital began to decline primarily due to the poor performance of some investments and difficulties encountered during these transactions. Regardless, private investment is still considered an important financial resource for the sector which has resulted in considerable attention in addressing governance, economic and socio-political factors which can discourage investment.

The aim of the research is to develop a strategic framework for attracting private investment to the Caribbean water and sanitation sector. Using a multiple-case study approach, the research examines the phenomenon of private investment in the water and sanitation sectors in Jamaica, Barbados and Trinidad and Tobago by assessing the environment for private investment and determining the specific drivers and deterrents to this type of investment. The implications of small size in the Caribbean context for institutional requirements to support private investment in the sector are also examined. Primary data for the research are obtained from public officials involved in the management, operation and regulation of the sector, local and international private service providers and local financial institutions through interviews and survey questionnaires. Documents are used to contextualise, corroborate and augment the research.

The research found that in addition to traditional strategic and financial criteria in terms of provisions of the operating environment and investment performance, behaviour-related factors such as interest in job security, recognition and comfort were also important to the investment decision in the sector. Investors' perceptions of the utility were also found to be a statistically significant determinant of investment. Besides emphasising the importance of creating a conducive environment for investment, the research highlighted a need to simultaneously focus on generating specific investment opportunities to build investor confidence. The most important consequence of small size to negatively impact on creating conducive conditions for investment was the effect of limited professional capacity on institutional arrangements in the sector. Accordingly, sharing professional expertise to address capacity constraints emerged as the most feasible opportunity for regional cooperation to improve the environment for private investment in the sector.

Key words: private investment; water and sanitation; Caribbean; regional cooperation

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LIST OF ACRONYMS AND ABBREVIATIONS

ARV	Annual rateable value
BOJ	Bank of Jamaica
BOT	Build-operate-transfer
BWA	Barbados Water Authority
CARICOM	Caribbean Community and Common Market
CBB	Central Bank of Barbados
CBTT	Central Bank of Trinidad and Tobago
CBWMP	Caribbean Basin Water Management Programme
CCEL	Can-Cara Environments Ltd.
CDB	Caribbean Development Bank
CECL	Carib Engineering Corporation Ltd.
CEHI	Caribbean Environmental Health Institute
CII	Cowater International Inc.
CSO	Central Statistical Office
CWO	Community water organisation
CWWA	Caribbean Water and Wastewater Association
DESALCOTT	Desalination Company of Trinidad and Tobago
DSL	Dairy Spring Ltd.
EED	Environmental Engineering Division
EMA	Environmental Management Authority
EPD	Environmental Protection Department
FDI	Foreign direct investment
FRDC	Four Rivers Development Company
FSE	Full service equivalent
FTC	Fair Trading Commission
GDP	Gross domestic product
GOB	Government of Barbados
GOJ	Government of Jamaica
GORTT	Government of the Republic of Trinidad and Tobago
GWPC	Global Water Partnership Caribbean
HCL	Hydrology Consultants Ltd.
IDB	Inter-American Development Bank
IFL	Ionics Freshwater Ltd.
IMF	International Monetary Fund
IOA	Interim operating arrangement
IWRM	Integrated Water Resources Management
JSIF	Jamaica Social Investment Fund
KMA	Kingston Metropolitan Area
LAC	Latin America and the Caribbean
MGSCPU	Multisectoral Group Sub-committee on Public Utilities
MLGCDS	Ministry of Local Government, Community Development and Sports
MOEPU	Ministry of Energy and Public Utilities
MOF	Ministry of Finance
MOFP	Ministry of Finance and Planning
MOH	Ministry of Health
MOPIE	Ministry of Public Utilities and the Environment
MOWH	Ministry of Water and Housing
NHT	National Housing Trust
NEPA	National Environment and Planning Agency
NRCA	National Resources Conservation Authority
NWC	National Water Commission
NWI	New Water Inc. (Barbados)
OOCUR	Organisation of Caribbean Utility Regulators

OUR	Office of Utilities Regulation
PAM	Price adjustment mechanism
PIOJ	Planning Institute of Jamaica
PPP	Public-private partnership
PSP	Private sector participation
PUC	Public Utilities Commission
RBWC	Runaway Bay Water Company
RHUC	Rose Hall Utility Company
RIC	Regulated Industries Commission
SIDS	Small island developing states
SPSS	Statistical Package for the Social Sciences
SSA	Sub-Saharan Africa
STATIN	Statistical Institute of Jamaica
STWI	Severn Trent Water International
TTWS	Trinidad and Tobago Water Services Ltd.
UDC	Urban Development Corporation
UFW	Unaccounted-for-water
UK	United Kingdom
UN	United Nations
UPS	Utility perception scale
US	United States
WASA	Water and Sewerage Authority
WHO	World Health Organisation
WRA	Water Resources Authority
WRMA	Water Resources Management Agency
WRMU	Water Resources Management Unit
WSSS	Water Supply and Sewerage Services

CHAPTER 1 INTRODUCTION

1.1 Research background

Despite the gains made during the International Water Supply and Sanitation decade (1981-90) and subsequent international commitments to address the worst deficits, at the beginning of 2000, one-sixth (1.1 billion) of the world's population was without access to improved water supply and two-fifths (2.4 billion) lacked access to improved sanitation (WHO and UNICEF, 2000). In its Millennium Declaration, the United Nations set a target for 2015 of reducing by half the proportion of people without sustainable access to adequate quantities of safe water and improved sanitation. Developing countries spend in the region of US\$25 billion per annum on water and sanitation (Briscoe, 1999b). To attain the 2015 goals however, developing countries would have to invest an extra US\$10 billion annually for basic coverage and about US\$50 billion more per annum for universal coverage (World Bank, 2002b). Although there has been some debate about the accuracy of these investment estimates due to the scarcity of reliable data in many countries, there is general agreement that the levels of investment required in water and sanitation are substantial.

The sector's monopoly status, need for long-term finance, low rates of return and public good characteristics have resulted in the historic dominance of public sector funding in most developing countries. During the 1990s however, the financing mix changed with private investment emerging as an important supplement to public funding contributing up to 15% of total financing (Winpenny, 2003). International private investment in particular, dominated this surge in private capital accounting for up to 80% of all private investments (Sader, 1999). The private investment bubble did not last long however as towards the end of the 1990s, the flow of private capital into the sector began to decline by 25% per year between 1997 and 1999 (Ramamurti and Doh, 2004). By 2004, 37% of water and sewerage projects with private investments were either cancelled or in distress (World Bank, 2005). Most noticeable was the retreat of large international investors from projects in developing countries and the emergence of local private investors as increasingly important sources for new investments (Izaguirre and Hunt, 2005).

Despite the fall-off of private investment in water and sanitation, the private sector is still considered critical for financial resources given the significant investment needs of the sector. This has resulted in considerable attention being paid to investors' criteria for investment and the conditions necessary to attract this type of investment. Most prolific

is the enabling environment paradigm which seeks to create an environment conducive to investment by tackling problem issues such as unclear policy guidelines, inadequate regulatory frameworks, inappropriate pricing policies, excessive government involvement and outdated institutional arrangements – features that have been found to discourage private investment in the sector (Seppälä, 2002).

In addition to the abovementioned obstacles to private investment, small size in terms of small country size and small project size is often considered a constraint to attracting private capital to the sector. In terms of small project size, most water projects are not considered 'bankable' as they tend to be too small to bear the overhead costs of project finance (Winpenny, 2003). In terms of small country size, features such as limited institutional capacity and limited ability to exploit economies of scale have important implications for regulatory and related institutional requirements to support private investment and the cost of doing business. In addition, small states are often limited in their access to commercial borrowing due to high levels of indebtedness, high borrowing costs and a perception by private markets of being inherently more risky than larger states (Collier and Dollar, 1999). Approaches to address these size constraints in the sector generally include aggregation (bundling of utilities and/or projects) and the formation of multi-utilities. Less commonly used is regional cooperation due to its limited scope and application to water and sanitation issues.

1.2 Research study area

The general research setting is the English-speaking Caribbean consisting of a group of islands located southeast of North America, east of Central America and to the north and west of South America. For classification purposes, the Caribbean is included in the larger Latin America and the Caribbean (LAC) geographical region. They are also classified as small island developing states due to shared development challenges such as small population, lack of resources, lack of economies of scale and costly public administration and infrastructure (ComSec and World Bank, 2000).

Although perceived to be well advanced compared to other regions in terms of access to improved water and sanitation services, investment needs in the sector are still significant due to prolonged underinvestment which has resulted in deteriorating levels of service and constrained economic growth. MDG investment requirement estimates for example are US\$193 million for water and US\$254 million for sanitation (Clayton, 2004), not to mention investment requirements to replace and rehabilitate aged assets. Most Caribbean countries rely on public funds and official development assistance to fund

capital investments in the sector with private investment only recently gaining cautious acceptance as a source of financing (Jha, 2005). For countries where data are available to estimate historic investment flows, a significant increase in their rate of investment to meet the most basic requirements is essential (Ibid.). With public sector contributions on the decline as Caribbean governments make clear their intention to ‘wean’ water utilities off the public purse, other sources of financing including private investment need to emerge to fill the investment gap.

1.3 Justification for the research

A regional breakdown of water and sewerage projects with private participation shows a concentration of projects in LAC. Between 1990 and 2004, the LAC region accounted for 45% of these projects and 51% of investments (World Bank, 2005). Upon closer examination however, four Latin American countries – Argentina, Brazil, Chile and Mexico were the recipients of 85% of private investments to the region. Given that these countries make up 66% of the LAC urban population, the scale of private investment is understandable as investors are partial to countries with large economies and populations and high levels of urbanisation (Budds and McGranahan, 2003).

As previously mentioned, the Caribbean is included in the larger LAC geographic region. The Caribbean is however consistently neglected in the privatisation literature as the scale and scope for private investment is nowhere comparable to her Latin American neighbours. Studies on private investment in the LAC region invariably concentrate on Latin America with token reference to the Caribbean if at all. To quote Fay and Morrison (2005) as they apologise for omitting the Caribbean in their report on infrastructure in LAC:

“It is difficult in a report of this kind to do justice to the tremendous diversity of the region [LAC] – countries vary from Caribbean islands with less than 100,000 inhabitants to Brazil with close to 180 million people. It is our belief, however, that the key messages of this report apply to all countries, regardless of size and income, although the best ways to implement the recommendations may vary.”

In light of the relative neglect of private investment issues in the Caribbean water and sanitation sector by previous authors and Caribbean governments’ inclination to have the private sector play a more prominent role in water and sanitation infrastructure financing, a focused investigation is required to determine issues important and possibly unique to the Caribbean.

1.4 Research questions and hypothesis

This research has been developed to investigate the phenomenon of private investment in the Caribbean water and sanitation sector. In so doing, the research was designed to assess the environment for investment in the sector, determine investors' criteria for investment in the sector and identify strategies to attract private investment to the sector given the local context and conditions. The research also examined the implications of small size in the Caribbean context for institutional requirements to support private investment in the sector. To guide the various lines of enquiry, a primary research question and four secondary research questions were formulated as follows:

Primary research question

- How can private investment be attracted to the Caribbean water and sanitation sector?

Secondary research questions:

- What is the current state of the operating environment and how conducive is it to private investment?
- What are the main determinants or criteria for private investment in the water and sanitation sector?
- What is the scope for and strategy to attract private investment to the water and sanitation sector?
- To what extent is size an issue and what is the scope for addressing small size as a constraint to attracting private investment?

The guiding hypothesis for the research was:

- Factors that determine private investment in water and sanitation vary in importance and relevance from location to location; hence a context-specific approach is needed to attract private investment to the Caribbean water and sanitation sector.

A brief description of the approaches used to answer the research questions and investigate the research hypothesis is provided in Section 1.5.

1.5 Methodology

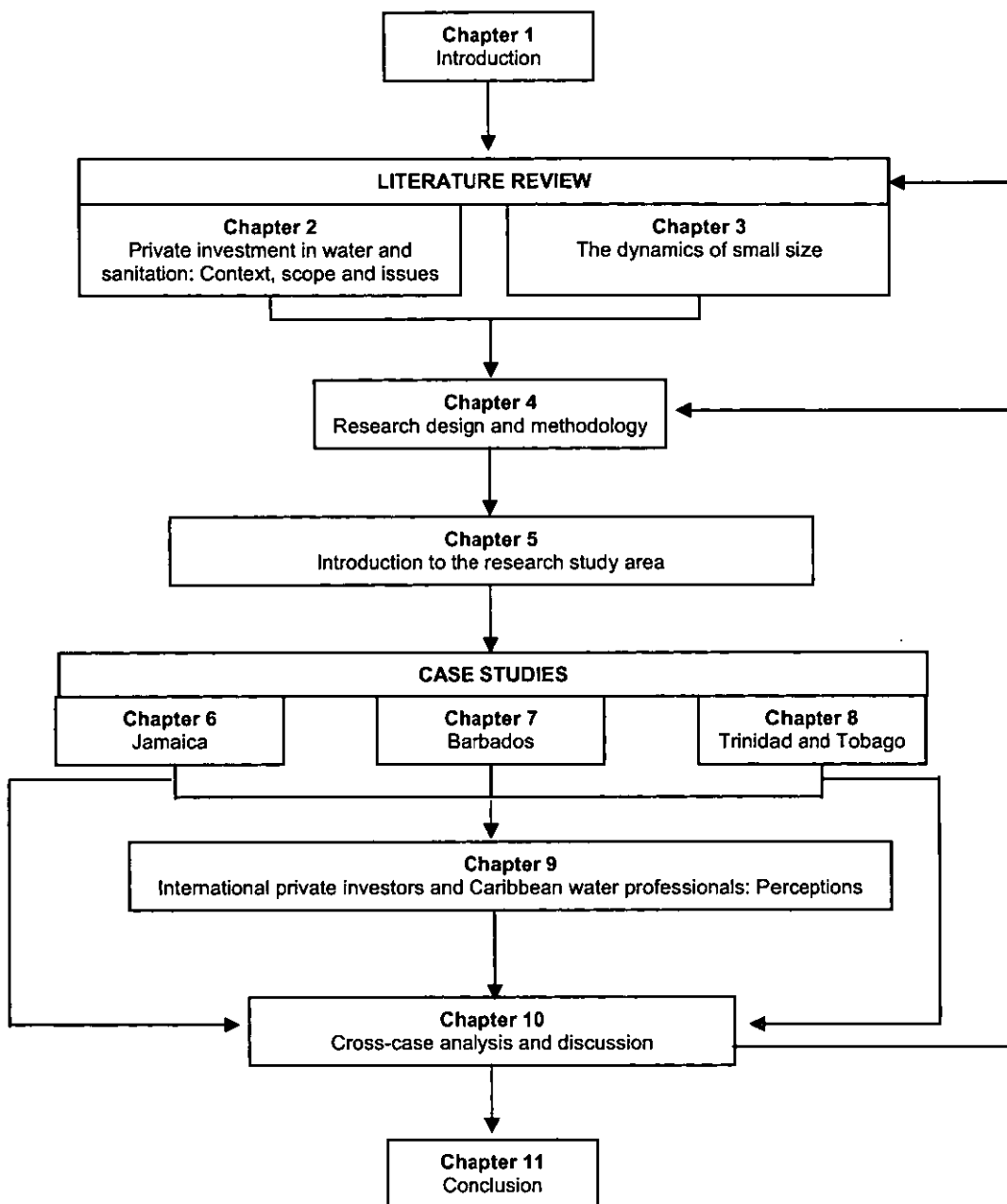
A multiple-case study approach was used to examine the private investment phenomenon in the water and sanitation sectors in Jamaica, Barbados and Trinidad and

Tobago. Three main sources of evidence were used within the case study framework to answer the research questions – surveys, interviews and documents. Self-administered questionnaires were used to obtain an overview of the attitudes and perceptions of local financial institutions. Semi-structured interviews provided a more detailed examination of the perceptions and experiences of private service providers, water sector officials and local financiers. Documents were used to contextualise, corroborate and augment evidence from these data sources. The attitudes and perceptions of international private investors in the utilities sector and Caribbean water utility managers were obtained outside the case study framework using survey questionnaires. Quantitative data generated by the survey questionnaires were subject to various statistical analyses using the Statistical Package for the Social Sciences (SPSS). Qualitative data were organised and thematically analysed using a code and retrieve method. A more detailed description of the research methodology is provided in chapter four.

1.6 Outline of the thesis

The thesis is organised into eleven chapters as shown in Figure 1.1. Chapters 2 and 3 are review chapters. In chapter 2, the core concepts of investment decision-making and investment promotion are explored to develop an analogous framework for the private investment decision in water and sanitation. In chapter 3, the issue of small size as a constraint to private investment is investigated. The chapter concludes with a review of response strategies to address size-related constraints in the sector. Chapter 4 presents the research questions and hypothesis and outlines the research design and methodology for data collection necessary to answer these questions. The chapter concludes with some preliminary data analysis. Chapter 5 provides a brief introduction to the research study area to contextualise the research. The case studies and their research findings are presented in chapters 6, 7 and 8 while chapter 9 presents additional research data outside of the case study framework. Chapter 10 provides a cross-case analysis and discussion of the data. Finally, chapter 11 concludes the thesis with a summary of the research findings, conclusions about the research problem and implications for future research.

Figure 1.1 Schematic outline of the thesis



1.7 Definitions

This section provides a list of key terms which are defined to establish their meaning within the context of the research. The list is by no means exhaustive as other terms are defined as necessary in the relevant sections of the thesis. The definitions provided are for reference only and therefore should not be considered complete discussions of any of the terms.

Capital markets – broad term to include tradable debt, securities and equity, as distinct from private markets or banks. Means by which money, stocks or bonds are directed to productive uses.

Debt financing – the provision of funds for capital or operating expenses in exchange for a promise to repay the principal and interest on the debt.

Equity financing – the provision of funds for capital or operating expenses in exchange for capital stock, stock purchase warrants and options in the business financed without any guaranteed return but with the opportunity to share in the company's profits.

Foreign direct investment – category of international private investment that reflects the objective of the investor in one economy to obtain a long-term interest in an enterprise in another economy.

Investment decision-making – process by which investment decisions are made following the screening, evaluation and negotiation of investment proposals.

Investment promotion – activities that attempt to create a favourable image of a country as an investment location.

Operating environment – the environment (policy, legal and regulatory framework) that defines, determines and influences how the water and sanitation sector operates.

Private investment – used interchangeably with 'private sector participation', 'privatisation' and 'private involvement' to cover a wide range of arrangements in which the private sector partakes in the management and/or financing of water and sanitation services.

Project financing – loan structure that relies on the project's cash flow for repayment, with the project's assets, rights and interests held as collateral, rather than the general credit of the borrower (project sponsor).

Regional cooperation – collaboration among neighbouring countries from the same geographical area to gain collective advantage in areas such as trade, production and international bargaining and to address issues of common interest especially where there is some resource constraint at the national level.

Regulation – discussed in terms of the economic regulation of water and sanitation covering issues such as pricing, investment, cost of services, quality (including service standards and service obligations) and the rate of return on assets.

Water and sanitation – water (supply) refers to the system of delivery of potable water while sanitation refers to the management of excreta and wastewater but not the disposal of solid wastes. The terms 'sewerage' and 'wastewater' are also used interchangeably with 'sanitation'.

1.8 Chapter summary

This chapter laid the foundations for the thesis. It introduced the research problem, research issues, questions and hypothesis. The methodology was then briefly described, the thesis structure outlined and key terms defined.

CHAPTER 2 PRIVATE INVESTMENT IN WATER AND SANITATION: CONTEXT, SCOPE AND ISSUES

2.1 Chapter introduction

Chapter one provided a brief background to the research and introduced the research problem and research issues. This chapter is the first of two literature review chapters focusing on the parent and immediate disciplines of the research problem with the aim of showing where the research problem fits into that body of knowledge. The chapter is organised into four main sections. The first section introduces basic definitions and provides a taxonomic classification of private investment in water and sanitation. Sections two and three explore the core concepts of investment decision-making and investment promotion to develop a framework for application to similar constructs in the private investment decision in water and sanitation. Section four focuses on the enabling environment paradigm to attract private investment to the water and sanitation sector. The chapter concludes by identifying key research issues and areas of interest for further exploration.

2.2 Private investment in water and sanitation: A typology

The terms 'private investment', 'private sector participation' (PSP), 'privatisation' and 'private financing' are used interchangeably in the literature to cover a wide range of arrangements in which the private sector partakes in the management and/or financing of water and sanitation services. Although small-scale and/or informal operators such as water vendors are increasingly being recognised and described as private enterprises (Solo, 1999), 'private investment' for the purposes of this thesis refers to the use of both equity and debt capital by formal private entities to partially or totally finance water and sanitation services/projects.

2.2.1 Operational models for private investment

The main options for private investment in water and sanitation services can be categorised according to how they allocate responsibility for issues such as asset ownership and capital investment between the public and private sectors. PSP forms in

which private entities provide equity and/or debt capital¹ are briefly described below (Idelovitch and Ringskog, 1995; Lee and Jouravlev, 1997; World Bank, 1997; Haarmeyer and Mody, 1998a), ordered in terms of the extent of private sector responsibility and financial commitment as summarised in Table 2.1.

Table 2.1 Allocation of key responsibilities for private investment options

	Management contract	Lease/affermage	Concession	BOT-type	Divestiture
Asset ownership	Public	Public	Public	Private/public	Private
Capital investment	Public	Public	Private	Private	Private
Commercial risk	Public	Shared	Private	Private	Private
Operations/maintenance	Private	Private	Private	Private	Private
Contract duration	3-5 years	8-15 years	20-30 years	20-30 years	Indefinite

Source: World Bank (1997)

Management contracts transfer responsibility for the operation and maintenance of the public utility to a private company. At its simplest, the public utility retains responsibility for investment and expansion while the management contractor is paid a fee proportional to agreed performance targets such as improved collection rates or reduction of unaccounted-for-water. More 'sophisticated' management contracts may require the private company to take an equity position in the utility. By 'purchasing' technical and managerial skills from the private company, management contracts are often used when the main objective is to rapidly enhance a utility's technical capacity and its efficiency in performing specific tasks, or to prepare for greater private investment.

Lease contracts also known as *affermage*, are arrangements whereby a private operator rents the facilities from the utility for a certain period and is responsible for operation, maintenance and management of the system. Under a lease arrangement, the private operator is not responsible for capital expenditures for major new investments, but normally has to finance working capital, maintain and repair the assets in use and finance the replacement of capital components with a short economic life. The responsibility for fixed investment such as system expansion and debt service remains with the public utility owner. In many cases however, the leaseholder pays the utility a rental fee sufficient to service debt and finance part of its investment programme. The risks involved in a lease arrangement tend to be limited, making it a low-risk option

¹ This strict definition excludes service contracts, the simplest form of PSP whereby a private contractor is paid a fixed fee to perform specific tasks while the utility retains overall responsibility for financing working capital and fixed assets. Under a service contract arrangement, little or no fixed investment is required from the private contractor.

for private investment which allows a private firm to become acquainted with the system and possibly pave the way for more extensive investment in the future. Lease contracts can be medium or long-term in duration but as a general rule, contract length corresponds to the amortisation period of the assets under the responsibility of the private operator.

In a **concession**, the private contractor or concessionaire has overall responsibility for service provision including operation, maintenance and management, as well as capital investments for service expansion. Asset ownership remains with the government or public utility but is entrusted to the concessionaire for the duration of the concession contract. Concession contracts usually run for 20-30 years depending on the level of investment and the payback period needed for the concessionaire to recover investment costs. Under concession contracts, the contractor is paid for its services directly by the consumer based on a contractually set price.

Build-operate-transfer (BOT) contracts² are similar to concession contracts for providing bulk services but are normally used for greenfield projects³ that require large amounts of financing such as a desalination plant or a wastewater treatment plant. Under a BOT contract, a private firm or a consortium of private firms⁴ usually headed by a major construction or engineering company, forms a special project company to finance, build and operate a specific new facility or system. Services are then sold in bulk to the utility on a take-or-pay basis at a price calculated over the life of the contract to cover its construction and operating costs and provide a reasonable return. At the end of the contract the facility is transferred to the utility, usually at no cost. Most BOTs involve a combination of equity investment and debt financing raised by the project company from commercial sources and from bilateral and multilateral lenders.

Finally, under the **divestiture** model, government transfers the water and sanitation assets to a private company on a permanent basis through the sale of some or all of the shares in the utility. Under this arrangement the private sector has full responsibility for operations, maintenance and investment.

Between 1990 and 2004, 54 low and middle-income countries had private activity in their water and sanitation sectors in 307 projects involving investment commitments for about

² Variations of the BOT contract model include build-own-operate (BOO), build-own-operate-transfer (BOOT) and design-build-finance-operate (DBFO). BOT is however the generic form of this type of arrangement.

³ Investment in the construction of new facilities or the expansion of existing facilities.

⁴ A typical consortium includes major construction and engineering companies and suppliers of heavy equipment, but may also include a separate management company, portfolio investors such as financial institutions and the host government.

US\$41 billion⁵ (World Bank, 2005). Concessions dominated private investment activity accounting for up to 64% of total investment. Divestitures and BOTs accounted for 18% and 17% of private investment respectively, followed by management/lease contracts which accounted for only 1% of private investment in developing countries (Ibid.). A regional breakdown over the same period shows a concentration of projects in LAC (51% of total investment) and East Asia and Pacific (38% of total investment). Despite this concentration of projects in the LAC region, private investment in the Caribbean water and sanitation sector which is of interest to this research, accounted for less than 0.2% of private activity in the LAC region. The majority of private investments (85%) were attributed to the larger countries in the region namely Argentina, Brazil, Chile and Mexico.

2.2.2 Private financing mechanisms and sources

Delmon (2001) identifies three main means of financing water and sanitation projects – government, project and corporate financing. Government or public financing has traditionally been the most prevalent means of financing the sector providing up to 75% of total investments (Winpenny, 2003). A government may choose to fully or partially finance a project either through its own treasury or by borrowing against its own balance sheet. In the case of partial financing or co-financing with the private sector⁶, government while incurring some of the cost of the project (e.g. by investing equity funds in the project company or subsidising tariffs), also benefits from attracting private investment to supplement the financing requirements of the project. Financing options available to governments include providing subsidies, tax breaks, grants, direct financing for capital works and guarantees of repayment of commercial debt to the project company. Project and corporate financing on the other hand are the domain of the private sector and are the focus of this discussion.

2.2.2.1 *Project financing*

Project financing refers to the financing of the construction or development of a project in which the lender looks principally to the revenues expected to be generated from the operation of the project for repayment of its loan, rather than to the general credit of the project sponsor (Beidleman *et al.*, 1991; Wenner and Feo, 1995; Delmon, 2001). Unlike traditional asset-based financing methods, project finance lenders have limited or zero

⁵ Investment figure does not refer to private investments alone but reflects the total investment for projects with PSP.

⁶ Commonly referred to as a joint venture or public-private partnership (PPP) whereby a private company or group of private companies and the public authority enter into business as equal or near equal equity partners.

recourse⁷ to, or right to attach claims against the assets of the project sponsors. Project finance is a highly leveraged transaction with debt-equity ratios⁸ approaching 75% in some cases, underscoring the importance of debt capital to the financing package. The remaining investment (often 5-25%) of the capital invested in the project is supplied as equity investment by the project sponsors. In the final analysis, the balance between debt and equity in project financing depends on the project structure, the quality of the revenue stream and the risk profile of the project.

Project finance techniques have been the preferred method of attracting equity investors and lenders to BOT-type water and sanitation projects (Wenner and Feo, 1995; Haarmeyer and Mody, 1997; 1998a; Wolfs and Woodroffe, 2002). A typical BOT usually involves two sets of private sector stakeholders involved in project financing, namely:

- (a) private operators and contractors who participate in the equity of the project company⁹ commonly referred to as project sponsors; and
- (b) external financiers such as international financial institutions, commercial banks, leasing companies, export credit agencies, insurance companies and pension funds who provide equity and debt finance to the project company to effect the desired investment.

The appeal of project financing lies in the provision of off-balance sheet financing for the project which does not affect the credit of the shareholders of the project company or government authority. In absolute terms however, project financing is considered expensive and time-consuming as the transfer of commercial risk to lenders translates into higher rates of interest for debt financing and the need for detailed and complex contracts contributes to long lead times and high transaction costs (Haarmeyer and Mody, 1998a; Delmon, 2001). For these reasons, the use of project financing in general and BOTs in particular has been severely criticised for adding to the long-term financial burden of many developing countries instead of reducing or eliminating the need for public financing (Hall and Lobina, 2004).

⁷ Recourse is the right of lenders on default of payment to claim assets for repayment of debt. This recourse will normally be assets belonging to the project company, shareholders or possibly through government or parent company guarantees (Delmon, 2001).

⁸ The debt-equity (financial leverage) ratio indicates the extent to which a firm relies on debt financing and is the proportion of debt to equity often expressed as a percentage. The higher this ratio, the greater the financial leverage of the firm.

⁹ Project company or special purpose vehicle formed by private investors involved in the early stages of the project such as the project developer who obtained the exclusive right to establish the project (usually through the award of a competitive tender or direct negotiations with government) and other private entities who specialise in one or several of the tasks to be performed under the project such as contractors, equipment suppliers and operators.

2.2.2.2 *Corporate financing*

Corporate financing refers to the situation where lenders provide debt financing to the project company or sponsors against proven credit risk and ongoing business (Delmon, 2001). Otherwise known as full-recourse financing or balance sheet financing, corporate financing provides lenders with full recourse to the assets of the shareholders and any other assets provided as security for repayment of the loan in case of default on the financing terms of the project company. Corporate financing is rarely used for BOT-type projects because project companies with their limited liability status rule out lenders' recourse to the assets of said companies for repayment of debt.

Despite its appeal over project financing in terms of lower transaction costs and less complex financing structures (Haarmeyer and Mody, 1998a), the use of corporate financing is considered to be a key constraint for water and sanitation projects both in terms of volume and maturity for the following reasons (Bond and Carter, 1994; Wenner and Feo, 1995; Vinter, 1998):

- (a) it exposes a company to significant risk and therefore requires a strong and large balance sheet (i.e. mainly accessible to large investors);
- (b) it usually involves a syndication of lenders since very few commercial banks are prepared to underwrite debt financing alone;
- (c) commercial banks are constrained by the time profile of their deposits which prevents them prudently lending large volumes of long-term debt;
- (d) limited incentives for lenders who can only look forward to the repayment of their loans plus accrued interest with no 'upside' to project success such as a share in the profits; and
- (e) the nature of risks in the sector such as the fragmented industry structure, the lack of creditworthiness of local governments and uncertainty over asset valuation discourage its use.

2.2.2.3 *Capital markets*

Capital markets are considered to be the funding source most suited to the conditions of water and sanitation infrastructure financing both in terms of longer maturities and increased flexibility for accommodating different maturity structures as they provide project sponsors access to fixed-term debt (bond and equity issues) over a longer term than banks can offer, thus increasing sponsors' return on equity (Haarmeyer and Mody, 1998a; Ramírez and Parra, 1999; PADCO, 2003). Predominantly done through bond

issues¹⁰, capital market financing requires access to accumulated long-term savings such as pension and insurance funds to be invested for extended periods in the capital markets and managed by institutional investors such as unit/investment trusts, brokerages, pension funds and insurance companies. Major investors in capital market instruments are rarely individual retail investors¹¹ but are rather professional institutional investors who invest pools of funds gathered from retail sources for specific purposes.

Domestic/local capital markets in particular, are considered to be more suitable to financing water and sanitation infrastructure than international capital markets because of (Kumar *et al.*, 1997; Ramírez and Parra, 1999):

- (a) the availability of local currency debt (same currency as the project's revenue) which reduces foreign currency risk thereby reducing the cost of capital;
- (b) the increased involvement of domestic investors believed to have a lower risk perception because they are familiar with local conditions and able to finance local projects more efficiently; and
- (c) the possibility of financing smaller projects.

2.2.2.4 Specialised investment funds

The limitations faced by banks in lending to projects in developing countries have stimulated the development of alternative financing arrangements to meet the large demand for water and sanitation infrastructure financing (Bond and Carter, 1994; Haarmeyer and Mody, 1998a). Specialised financial instruments such as equity funds provide a means by which developers can mobilise funds from investors in the world's major financial centres for on-lending and equity investment in developing country water and sanitation infrastructure projects. By offering a mix of sectoral/regional expertise, pooling of project risks, higher liquidity and reduced transaction costs, infrastructure funds enable risk-averse financial institutions such as pension funds and insurance companies to invest in long-term capital on a project-by-project basis (Bond and Carter, 1994). Examples include the Tamil Nadu water and sanitation pooled fund which is a pure debt fund raised by bond issues which is later disbursed as sub-loans to participating municipalities in India (PADCO, 2003); the Asian Infrastructure Fund which was established as a US\$500 million closed-end fund to invest primarily as an equity

¹⁰ A bond is a legal promise by the issuer to pay the investor the principal that is being borrowed plus a specified interest rate by the maturity date. Bonds are usually negotiable and long-term, e.g. 5-25 years.

¹¹ Investors who buy and sell securities (shares) for their own behalf, i.e. not for an organisation.

participant in private infrastructure projects in developing Asian countries (Bond and Carter, 1994); the Darby Latin American Mezzanine Fund which is a markets fund designed to address shortfalls in the availability of long-term subordinated debt financing for infrastructure projects in LAC (IDB, 1998); and the Emerging Africa Infrastructure Fund which provides long-term debt finance to private infrastructure projects in 44 sub-Saharan African (SSA) countries (PPIAF, 2002).

2.2.3 International versus domestic private investment

Discussions of private investment in water and sanitation often take for granted that the issue is the involvement of large multinational companies. This assumption although understandable given the dominance of multinationals such as Suez Lyonnaise des Eaux and Vivendi during the 1990s (Finger and Allouche, 2002) and widespread recognition of foreign direct investment (FDI)¹² as the driving force behind the surge in private capital flows to the sector (Sader, 1999), has the potential to overlook the involvement of local investors in the sector.

In the mid-1990s, the breakdown of private financial sources as a proportion of total investment to the sector was estimated at international private companies (10-15%) and domestic private sector (5%) (Winpenny, 2003). Reported levels of international private investment in the 1990s as a proportion of total private transactions vary from a high of 80% (Sader, 1999) to lower estimates of 47% (Ramamurti and Doh, 2004) with discrepancies in the local-foreign split explained by unreliable data, undifferentiated data into local and foreign private investments and different reporting practices (Ramamurti and Doh, 2004). Despite these inconsistencies, analyses of the financial structure of water and sanitation projects reveal that foreign private financing exceeds local private financing particularly during the early stages of a shift towards increased private investment in the sector and for BOT-type projects (Bond and Carter, 1994). Local private financing was found to be significant either in countries where domestic financial markets were already well developed such as India and the Philippines, or in countries where domestic financial markets developed rapidly with the entry of foreign institutional investors and liberalisation of domestic interest rates such as Chile and Argentina (Bond and Carter, 1994; Dailami and Leipziger, 1998).

¹² FDI is defined as that category of international private investment that reflects the objective of the investor in one economy to obtain a long-term interest in an enterprise in another economy.

The dominance of international private investment in water and sanitation is primarily a result of the need for significant up-front financing, a lack of long-term local currency financing and technical and managerial expertise requirements for large-scale projects (Dailami and Leipziger, 1998; Sader, 1999). Given the underdeveloped state of local capital markets in many developing economies due to narrow equity markets, small saving pools, inexperience with commercial contracts and inadequate legal and regulatory frameworks (Ramírez and Parra, 1999; Beato and Vives, 2003), water and sanitation projects have had to tap international financial markets for long-term finance. As a result, the private investment literature is replete with the experiences, requirements and preferences of international private investors.

Local private investors in water and sanitation include large and small operators and financial institutions such as commercial and development banks, many of which establish business relations with the public utility in terms of providing working and project capital or participate in joint ventures with large multinationals (Sader, 1999; Winpenny, 2003). In many low-income cities of Africa, Asia and Latin America where less than half of the population is served by the public utility, basic services are provided by small-scale private water providers¹³ commonly referred to as the 'other private sector' because of their general exclusion from national water supply strategies and service development plans (Solo, 1999). Although this category of local private investor is significant in terms of providing services to the unserved and poor, they are not included in this research's definition of private investment and so will not be considered further.

2.2.3.1 *Differences between foreign and domestic private investors*

The FDI literature identifies several differences between foreign and domestic firms, some of which may be of relevance to international and domestic private operators and/or investments in the water and sanitation sector, namely (Boddewyn, 1983; Luo and Tan, 1998; Bellak, 2004):

- (a) underlying motivation for firm establishment is different;

¹³ Range of forms include: (a) individual families with water and/or sanitation connections who provide services to their neighbours; (b) water points and/or latrines managed or owned by individuals; (c) bulk water supply systems using holding tanks; (d) privately owned and managed public toilets and bath houses; (e) private competitive water networks which provide house connections to water and sanitation; (f) closed water systems with treatment plants and piping networks owned by residents such as service cooperatives; (g) truckers with private wells; (h) sewage removal services/septic tank emptiers/night soil carriers; and (i) private wastewater treatment plants that charge septic tank emptier trucks to receive and treat sewage (Solo, 1999).

- (b) different strategic choices as international and local firms are heterogeneous in organisational capabilities, market orientations, strategic objectives and institutional support;
- (c) the need for more in-depth consideration of certain variables when making the international private investment decision due to unfamiliar country-specific risks such as government instability, macroeconomic planning failures, exchange controls, contract viability and inflation shifts which can impact on a project's prospects for profitability. For some authors, the presence of country risk is the key factor that distinguishes a foreign loan from a domestic one (Dailami and Leipziger, 1998);
- (d) substantial differences in profitability reflected by a gap in the rates of return. A common presumption is that international firms are more productive than their local counterparts, thus explaining the higher profit margins of foreign firms. If foreign investments are focused on more viable investments in the first place however, Bellak (2004) posits that profitability gaps may merely be due to selection bias as international firms are generally good at 'picking the winner' or 'cherry-picking'; and
- (e) international companies are at a greater disadvantage in terms of the lack of government and public support for private investment due to their 'foreignness' (greater biases against foreign private investors).

Differences between international and domestic private investment are potentially important for policy intervention as they can inform government of the 'preventing negative effects and stimulating positive effects' strategy required to encourage this type of investment (Bellak, 2004). Although no further distinction between international and domestic private investment will be made in subsequent sections due to the international private investment bias in the extant literature and the general assumption by some authors that private investors regardless of origin are affected by similar factors but to varying degrees (Feeney *et al.*, 1999), the fact that these differences can impact on the private investment decision in water and sanitation requires further examination.

2.3 Investment decision-making: What do investors look for?

Investment decisions are generally long-term decisions where expenditure and investment alternatives are balanced over time in the hope that investment now will generate extra returns in the future (Lucey, 1992). The decision to invest is based on many factors including:

- (a) the investor's belief in the future based on forecasts of internal and external factors such as costs, revenues, inflation and interest rates;
- (b) the alternatives available in which to invest; and
- (c) the investor's attitude to risk.

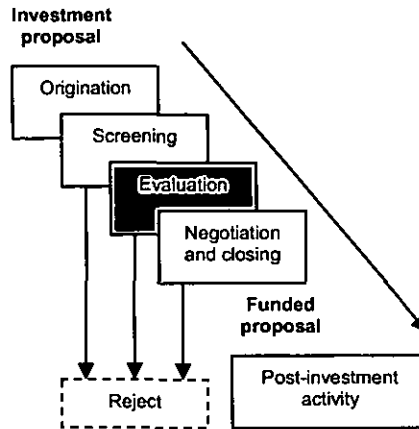
The literature on investment decision-making spans a number of theoretical perspectives including financial theory, strategic theory and organisational decision-making theory. Financial theory focuses on how the requirements of capital markets shape investment decision-making and internal financial analysis (Grundy and Johnson, 1993; Pike and Neale, 2003). Strategic theories deal with the external environment and choices of positioning, matching the organisation to that environment and the internal allocation of resources to meet those choices (Mintzberg *et al.*, 1976; Davidson, 1985; Papadakis *et al.*, 1998; Johnson *et al.*, 2004). Finally, organisational decision-making theory focuses on the wider organisational context within which investment decisions are made (Butler *et al.*, 1991; Cyert and March, 1992). These theories inform the following review of investment decision-making and provide a framework for private investment decision-making in the water and sanitation sector.

2.3.1 The investment decision-making process

Investment decision-making is generally viewed as an incremental activity involving many people throughout the organisational hierarchy over an extended period of time. The investment decision-making process can be modelled in five stages as shown in Figure 2.1 and discussed below (Feeney *et al.*, 1999):

- (a) **origination** during which investment proposals are generated;
- (b) **screening** during which it is decided whether or not to further investigate the investment opportunity;
- (c) **evaluation** during which detailed analyses of the investment proposal are conducted;
- (d) **negotiation and closing** during which the framework for investment is ironed out and the deal is closed if acceptable to the parties involved; and
- (e) **post-investment activity** in which the investment is monitored.

Figure 2.1 Investment decision-making process



Source: Feeney *et al.* (1999)

Firms either wait for proposals to come to them with most proposals coming by referrals (Aharoni, 1966; Fried and Hisrich, 1994), or are constantly in search of investment opportunities (Wahab, 1978; Larimo, 1987). Many organisations have firm-specific criteria on investment size, industries in which they invest, geographic location of investment and stage of financing. Proposals are further screened based on 'substance' following a general review of the business plan coupled with existing knowledge within the organisation (Feeney *et al.*, 1999). Evaluation may go through several phases but generally involves assessment of the likelihood of success and potential of the product or service, assessment of other stakeholders and assessment of returns. Evaluation may also include formal market studies, reference checks and consultation with third parties in an attempt to identify and resolve any barriers to the investment (Fried and Hisrich, 1994). Negotiations occur over the structure and terms of the investment with the final agreed to details specified in a contract. Organisations are free to reject investment proposals during any of these stages. Finally, post-auditing of the investment compares actual performance with forecasts made at the time of approval to improve the quality of future decisions through learning from the investment experience and to ensure managerial accountability for decisions made (Pike and Neale, 2003).

The investment decision-making process used by different types of investors is expected to share many similarities with differences prompted mainly by scale and stage of investment and by the nature of the relationships between investor and business owner (Feeney *et al.*, 1999). New businesses for example are the most vulnerable to failure (Hall and Tu, 2003). As such, evaluation may be more rigorous requiring more time and resources than appraisal of more familiar investment opportunities. Similarly, international investments may introduce more environmental and behavioural uncertainties than domestic investments thereby necessitating more detailed investment appraisals.

2.3.1.1 *Investment evaluation and appraisal*

One of the main tasks of investment decision-making is to select an investment that maximises the objectives of an organisation. Investment appraisal is that part of the evaluation phase of the investment decision-making process during which investment opportunities are assessed by comparing benefits against costs to determine acceptability and to set a ranking order among competing investments. Traditional investment appraisal methods rely heavily on financial theory and include accounting techniques such as payback and accounting rate of return and discounted cash flow techniques such as net present value and internal rate of return (Lucey, 1992). Strategic management appraisal techniques developed to facilitate a more holistic understanding of the business environment include matrix approaches such as the SWOT matrix¹⁴ (Wehrich, 1982), value-based techniques such as 'economic value added' and 'shareholder value added' (Grundy, 1993; Francis and Minchington, 2002) and performance-based techniques such as the 'balanced scorecard' (Kaplan and Norton, 1996; Lipe and Salterio, 2000).

Companies use a combination of financial and strategic management appraisal methods when assessing investment decisions (Akalu, 2003). Grundy and Johnson (1993) find however that managers generally find it difficult to link strategic and financial appraisal of major investment decisions due to a lack of reliable information on the external environment (more crucial for longer-term and more complex investments) and difficulty in balancing the often subjective nature of strategic appraisal techniques with more quantifiable financial appraisal techniques. Organisations generally display biases towards certainty and tangible assets, implicit in the analytical tools used to assess investments (Coff and Laverty, 2001). As a result, the use of financial appraisal techniques predominates (Lefley and Morgan, 1998) despite criticisms of their narrow-minded focus on profits, exclusion of non-financial benefits and over-emphasis on the short-term (Adler, 2000; Vining and Meredith, 2000). The implications of the popularity of financial appraisal techniques are evident in investors' emphasis on investment performance in terms of profit or earnings per share and conservatism when projecting benefits that are particularly uncertain. Investment in areas not typically perceived as profitable, where there is a high degree of uncertainty or in situations where a significant time lag between cost and benefit exists are therefore at risk of not being considered viable.

¹⁴ A SWOT analysis is a scan of the business situation to identify internal strengths and weaknesses and external opportunities and threats. The findings are then grouped into a SWOT matrix which identifies strategies that are either suitable or unsuitable depending on whether and how they address SWOT combinations.

2.3.1.2 Rating and assessment systems

To facilitate like-for-like comparison between investment locations, several rating systems are used by investors to evaluate a range of factors. Investment magazines such as the *Institutional Investor* and *Euromoney* for example, produce country risk ratings based on a weighted average method to score variables such as economic performance, political risk, debt indicators and access to bank finance and capital markets (Pike and Neale, 2003). AT Kearney's annual FDI Confidence Index¹⁵ gauges the likelihood of foreign investment in specific markets using survey data obtained from senior executives of the world's 1,000 largest corporations (AT Kearney, 2005). Investment Climate Assessments conducted by the World Bank provide a standardised way of measuring and comparing investment climate conditions in a country from an international perspective (World Bank, 2003). Sovereign credit ratings by rating agencies such as Standard & Poor's and Moody's provide a forward-looking estimate of the relative likelihood that a borrower (usually government) will default on its obligations (Cantor and Packer, 1995; Bissoondoyal-Bheenick, 2005). Despite criticisms with respect to rating coverage bias in more developed economies (Ferri *et al.*, 2001), relevance bias towards the foreign private sector (Tannenbaum, 2002) and the potential for distortion when linking actual ratings to rating criteria due to the unquantifiable nature of some criteria (Cantor and Packer, 1995), rating and assessment systems are generally considered valuable appraisal tools as they (Ferri *et al.*, 2001; Nordal, 2001):

- (a) reduce investor uncertainty by providing information;
- (b) facilitate cross-country comparisons on a homogeneous basis;
- (c) are often good indicators/predictors of the investment climate;
- (d) communicate concepts that are difficult to quantify; and
- (e) provide a transparent benchmark.

2.3.2 Investment criteria

Research on investment decision-making either focus on the decision-making process to understand how organisations go about making investment decisions, or concentrate on the criteria used to evaluate and ultimately determine the investment decision. Understanding what investors consider important when evaluating and selecting investments is of particular interest to this research as these criteria inform the strategy to

¹⁵ Weighted average of the number of high, medium, low and 'no interest' responses to a question about the likelihood of FDI in a market over the next one to three years. Index values are calculated on a scale of zero to three, with three representing highly attractive and zero not attractive (AT Kearney, 2005).

attract investment. Researchers have adopted different approaches to examine investment criteria such as:

- (a) **questionnaires** administered to a large number of investors who are asked to rate on a scale the importance of predetermined potential criteria or to rate various case profiles of investment proposals in terms of their attractiveness from which their preferences can be determined (Butler *et al.*, 1993; Lamech and Saeed, 2003; IDB, 2003a);
- (b) **interviews** of investors based on key investment decisions to identify factors that discouraged or prompted them to decide to invest (Feeney *et al.*, 1999);
- (c) **case studies** at the firm or industry level of investment decisions (Butler *et al.*, 1991; Larimo, 1995);
- (d) **protocol analysis** which involves investors verbalising their decision thought processes which are later transcribed and analysed to identify their decision criteria (Hall and Hofer, 1993); and
- (e) **statistical studies** of firm, industry or country level data to identify determinants that explain investment trends (Billington, 1999; Asiedu, 2002; Chakrabarti, 2003).

Using a combination of these methodologies, researchers have highlighted various investment criteria for different types of investors. Criteria important to venture capitalists¹⁶ for example include fit with the firm's lending guidelines (e.g. geographic location, size of investment, stage of development, rate of return, risk, investor control, equity share, familiarity with technology/product/market and cash out potential); long-term growth and profitability of the industry in which the proposed business will operate (e.g. market attractiveness, potential size and technology); nature of the proposed business (product/market considerations); characteristics of the entrepreneur (e.g. ability to evaluate risk, background/experience, managerial capabilities and management commitment); and characteristics of the proposal and strategy of the proposed business (Tyebjee and Bruno, 1984; MacMillan *et al.*, 1985; MacMillan *et al.*, 1987; Hall and Hofer, 1993). In a survey of 194 business angels¹⁷, Feeney *et al.* (1999) find that attributes of the owner(s) such as management track record, realism and integrity, and attributes of the business including potential for high profit, a reasonable exit plan, security and the opportunity to get involved in the investment are desirable.

¹⁶ Venture capitalists invest other people's money in businesses with high growth potential that have not yet gone public or are in an early development phase, usually in return for an equity stake in the business.

¹⁷ Individuals who invest their own money in projects and/or small- to medium-sized enterprises.

The investment criteria of international investors have received considerable attention in the FDI strategy literature due to the revival of FDI in the mid 1980s as an important source of private external finance for developing countries. Market size proxied by real GDP¹⁸ or GDP per capita is the most robust and significant FDI determinant in most studies (Lim, 2001). Other important variables include political risk, macroeconomic stability, labour costs, infrastructure quality, host government policies, degree of industrialisation and the business/investment climate (Wheeler and Mody, 1992; Singh and Jun, 1995; Billington, 1999; Asiedu, 2002; Chakrabarti, 2003).

In assessing borrowers' creditworthiness, commercial banks generally rate the economic situation (e.g. cash flow, profitability, capital structure, liquidity), the business situation (e.g. industry assessment, market position, special risks, product mix/range, forecasts/sales revenue and corporate/legal structure), the quality of management (e.g. experience, succession and quality of accounting/controlling) and customer relationship/account management¹⁹ (Brunner *et al.*, 2000; Krahen and Weber, 2001).

2.3.2.1 *Relative importance of investment criteria*

The above review suggests that different types of investors have different investment criteria. There is however a tendency in the literature to presume that irrespective of the type of investor, there is little difference in investors' range of investment criteria as investors generally rely on a similar set of explanatory variables. The reasoning behind this is the commonality of investors' objectives – project/investment success, which Butler *et al.* (1993) consider to be the defining measure of decision-making effectiveness. In addition, Feeney *et al.* (1999) suggest that there is wide applicability of investors' criteria because of the generic nature of the investment decision-making process. Even if one accepts this generalisation of investment criteria, there is no mistaking that the relative importance of these determinants varies. Feeney *et al.* (1999) for example find that business angels value owner attributes more highly than business attributes, while for venture capitalists, business attributes are more important (Hall and Hofer, 1993; Fried and Hisrich, 1994). Feeney *et al.* (1999) suggest that this difference in criteria between both sets of investors is a result of the nature of their relationships with their investments. Business angels tend to act as principals²⁰ in the governance of the firms in which they invest and so face the full consequence of decisions at the personal level.

¹⁸ Gross domestic product (GDP) is the total market value of goods and services produced within a given period after deducting the costs of good utilised in the process of production. Real GDP is expressed in constant prices i.e. in the dollar values of a particular year which is known as the base period.

¹⁹ Particularly relevant in cases of long-term customer relationships.

²⁰ In business, the principal is the main person who can make important business decisions and is legally responsible for them.

Venture capitalists on the other hand are usually paid employees acting as agents of the fund owner(s) and have to meet prescribed and relatively short-term targets for rate of return and investment management. As such, venture capitalists place greater importance on business characteristics/environment.

The FDI literature also highlights the relative importance of FDI determinants which are found to depend on factors such as geographical location, motive for investment, type of investment, sector of investment, size of investor and the prevailing investment climate. Asiedu (2002) speaks of the “Africa effect” whereby determinants such as infrastructure development and a higher return on capital promote FDI to non-SSA countries but have no significant impact on FDI flows to SSA. As a result, countries in SSA on average receive less FDI than countries in other regions by virtue of their geographic location. Based on the uneven distribution of FDI and the relative difference in importance of FDI determinants among developing countries, Shatz and Venables (2000) conclude that each geographical region has its own set of determinants important to attracting FDI.

With regard to type of investment, Ferret (2003) finds that acquisition-FDI arises in medium-sized markets and that the necessary conditions for greenfield-FDI are a large market and small sunk cost of additional investments²¹. The sector of investment is also strongly linked to the type of FDI and impacts on the relative importance of FDI determinants (UNCTAD, 1998). Resource-seeking industrial-FDI for example requires an abundance of natural resources, infrastructure and labour resources. The relevant determinants for attracting market-seeking manufacturing-FDI include market size, market growth and market access. Technology and the capacity for continued innovation are key assets for services-FDI in areas such as telecommunications (Ibid.).

Locational determinants of FDI also differ depending on the size of the investor (UNCTAD, 1998). Kinoshita (1998) for example finds that different size-groups of firms react to different factors in the host country in making their FDI decisions. Investment decisions of large firms were dominated by strategic considerations (e.g. whether or not competitors invested in the country), market size and policy environments while small firms were more likely to undertake investments where there was abundant low-cost labour and sufficient infrastructure.

The main point highlighted by this review is that investors' criteria for investment although similar in a general sense in that they share common explanatory variables, can vary in

²¹ FDI normally takes the form of greenfield investments (investments under a contractual build-operate type arrangement for the construction of new facilities or the expansion of existing facilities) or the merger and acquisition of existing local enterprises.

importance for different sets of investors and under different circumstances. As such, it is essential that the criteria applicable to a specific location, sector and/or investor are determined so that an appropriate strategy can be effected to attract this investment.

2.3.3 The dynamics of investment decision-making

2.3.3.1 *Who makes the investment decision?*

Investment decision-making is invariably a top management exercise because of the scale and long-term nature of the consequences of investment decisions (Finkelstein and Hambrick, 1996; Papadakis *et al.*, 1998). Within the organisational context, persons who 'influence' investment decision-making have authority over the investment decision, generally using information provided by others 'involved' in the decision-making process (Gore *et al.*, 1992; Yukl, 1998). Top management is usually more concerned with the exercise of broad authority in making long-term plans, formulating policy, planning strategies to obtain objectives and allocating resources. Lower level managers on the other hand are primarily concerned with structuring, coordinating and facilitating day-to-day work activities. As such, their role in the investment decision-making process is limited to providing information to support the process. The implication of this relationship between management hierarchy and influence on investment decision-making is the source of information on investment decisions. Consequently, studies investigating investment decision-making consistently rely on the accounts of top-level managers (Hoskisson *et al.*, 1994; Larimo, 1995; Lien *et al.*, 2005).

2.3.3.2 *Models of investment decision-making*

Investment decision-making is generally considered as both a formal rational process of trying to optimise financial returns to the organisation and as an organisational behavioural process in which local interests, perceptions and other aspects of human behaviour play a vital part. The decision-making literature generally recognises four models of decision-making, namely (Butler *et al.*, 1993):

- (a) ***the rational model*** which requires decision-makers to search for all possible options, to compare and evaluate them and choose the optimal;
- (b) ***the bounded rational model*** which emphasises the need for decision-makers to make decisions with incomplete information, under time pressures, when there may be disagreement over goals, and to accept

that an optimal solution cannot always be achieved within these constraints;

- (c) ***the political model*** which is based upon the idea that an organisation consists of a number of interests who are potentially competing for resources and attention; and
- (d) ***the garbage can model*** in which ambiguity characterises the decision process, cause and effect relationships are difficult to identify and decision-makers have only limited time to allocate to any one decision.

The idealised concept of rationality assumes maximisation of a fixed or relatively stable objective, a known set of alternatives and their outcomes and computational skill to determine the optimal solution with respect to the objective (Northcott, 1998). In reality however, objectives are dynamic rather than static, information is seldom perfect and alternatives are limited. These constraints and limitations have led theorists such as Cooper (1975) and Cyert and March (1992) to consider a bounded rational model of decision-making in which decision-makers seek to 'satisfice'²² rather than 'maximise' wealth generation of each investment decision. Traditional approaches to investment decision-making clearly fall into the rational/bounded rational model with appraisal techniques (especially financial methods) designed to assist rational decision-making. Individual decision-makers however will have their own goals which may range from maximising personal remuneration to enhancing job security, or seeking status and power (Northcott, 1998). In extreme cases, the pursuit of these goals by an individual decision-maker may not contribute to the maximising/satisficing of organisational wealth. The general assumption however is that the decision-maker will choose to act first and foremost in the interests of organisational wealth maximisation/satisfaction (Ibid.).

2.3.3.3 *Behavioural aspects of investment decision-making*

Regardless of the type of investor, Pettinger (2000) asserts that no effective investment decision is taken purely on the basis of mutual, professional and operational compatibility. Behaviour-related factors important to investment decision-making as highlighted by Pettinger (2000) are:

- (a) ***confidence*** in the investment proposal based on an understanding and acceptance of the needs and wants of the parties involved;

²² Word coined to describe the idea that decision-makers will suffice with satisfactory solutions rather than continuously search for the ideal one.

- (b) **motivation** to see the investment proposal through to a successful conclusion which depends on the relationship between what is expected, the rewards and returns that are to accrue and the commitment necessary to ensure that the rewards are achieved and expectations met;
- (c) **perception** in terms of the way in which the investment proposal is regarded which is affected by the organisation's/decision-maker's experiences and knowledge of the external environment;
- (d) **culture** which refers to the way in which things are done (i.e. the attitudes, behaviour, values and beliefs in a particular sector of society);
- (e) **sources of power and influence** which are important when assessing the specific drivers behind particular ventures; and
- (f) **leadership** to provide direction and overall control of the process.

2.3.3.4 *Relevance of perception to investment decision-making*

In psychology and the cognitive sciences, perception is the process of acquiring, interpreting, selecting and organising sensory information. Many cognitive psychologists hold the view that as we move about the world, we create a 'model' of how the world works, that is we sense the objective world but our sensations map to percepts²³ (Anderson, 2004). These percepts are provisional however as they change as we acquire new information. According to behaviourist Myers (2000), a person's decision-making process depends to a significant degree on their cognitive style which is based on how they score on a set of four bi-polar dimensions – thinking and feeling; extroversion and introversion; sensing and intuition; and judgement and perception. Persons who score near the thinking, extroversion, sensing and judgement ends of the dimensions for example, tend to have a logical, analytical, objective, critical and empirical decision-making style. Conversely, persons who score near the feeling, introversion, intuition and perception ends of the dimensions tend to have a more subjective decision-making style that evaluates things based on experiences and preferences (sees things in terms of like and dislike or good and bad).

Similarly, investment decision-making as a cognitive psychological construct can be affected by investors' perception of uncertainties and the attendant risks. Antonides and van der Sar (1990) for example, relate investors' expected returns and perceived risks to various economic-psychological variables concerning the future development of financial and macroeconomic factors by separating the 'expectation' and 'preference' components

²³ A percept is the representation of an external event that affected the senses and which by perceptual processing, caused the activation of a certain category in the mind.

of the investment decision-making process and operationalising the major influences on each component which relate to perception instead of actual events. By multiplying the factors by their corresponding perceived importance and incorporating investors' subjective weightings, they found that subjective variables such as expected rate of return had a positive effect on investors' expectations and thereby on the expected profitability of their investments.

Perceptions can have a significant impact on investment choices. In the case of SSA for example, investors' perception of the continent as inherently risky has resulted in relatively low FDI flows compared to other regions even with other determinants of FDI in place (Asiedu, 2002). Similarly, Collier and Dollar (1999) posit that small countries are at a disadvantage in attracting FDI even with good policies and other positive characteristics as they are generally perceived to be significantly more risky than larger countries. The infrastructure FDI boom of the 1990s as explained by Ramamurti and Doh (2004) was partly a result of investors' belief that the risks of infrastructure FDI were declining, there was a new climate for FDI in developing countries and that developing countries would not expropriate foreign investments as they had in the past. The fall-off of private investment by the late 1990s was accompanied by a change in investors' perception of the investment climate in many developing countries which was mainly informed by their investment experiences. Water and sanitation in particular, consistently attracted the least amount of investment as it was perceived to be more risky than other infrastructure services (Briscoe, 1996; Haarmeyer and Mody, 1998b).

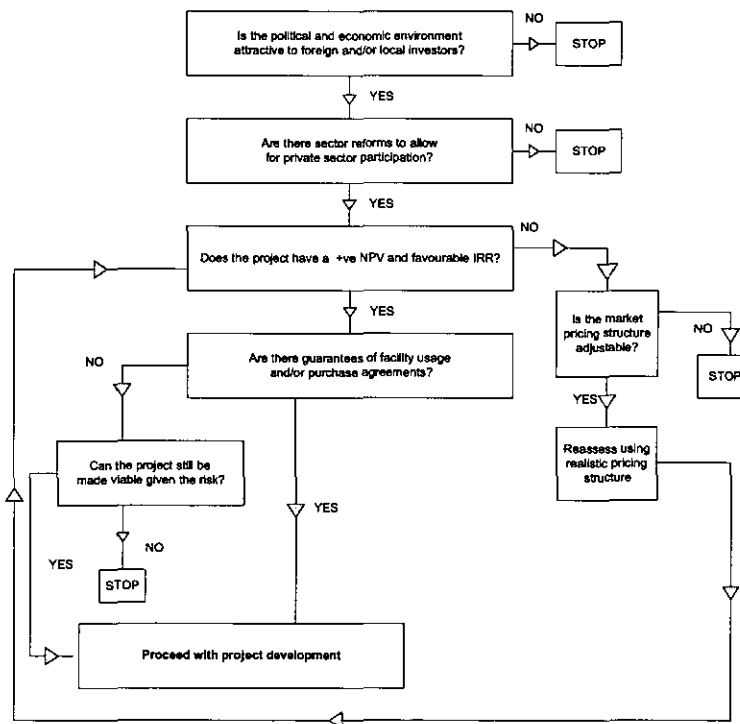
The main point highlighted by this review is the importance of investors' perception(s) of the investment climate and by extension, the importance of changing negative perceptions to more positive perceptions and/or maintaining positive perceptions in order to attract investment. This underlies the importance of understanding investors' perceptions so that one is in a position to appreciate issues important to them.

2.3.4 Investment decision-making in water and sanitation

The characteristics of water-industry assets (e.g. sunk costs and long payback periods) and the nature of the sector (e.g. need for regulation and government involvement) generally influence investors' appraisal of the sector. Although financial techniques dominate reflected in investors' preference for methods such as net present value and internal rate of return to analyse project viability (Tung, 1988; Ranasinghe, 1999), strategic analyses of the business environment are also significant in informing

investment decisions in the sector (Tebbutt *et al.*, 2002). A typical BOT project for example as shown in Figure 2.2, appraises the political and economic environment to determine how conducive it is to private investment, the risks involved and how these are likely to impact on project viability and the provision of support mechanisms such as guarantees to mitigate against these risks (Quartey, 1996). Water projects face many risks – some specific to the sector, others to the project location (e.g. regulatory, political and market risks) and others more general in nature (e.g. construction, operation and revenue risks). The successful identification, evaluation, allocation and mitigation of these risks are central features of investment decision-making in the sector (Bond and Carter, 1994; Grout, 1997; Grimsey and Lewis, 2002; Froud, 2003).

Figure 2.2 Selection flow chart for a typical BOT water project



Source: Quartey (1996)

Investment decisions in the water and sanitation sector share many similarities with traditional investment decisions (especially FDI decisions). The specific characteristics of the sector however, its political economy, the type of investors and the nature of private investments also impose additional economic and institutional determinants that are more sector-specific and/or project-specific (Jensen and Blanc-Brude, 2006). Commonly reported determinants for private investment in the sector include (Jensen and Blanc-Brude, 2005):

- (a) macroeconomic and political stability to safeguard the investment;

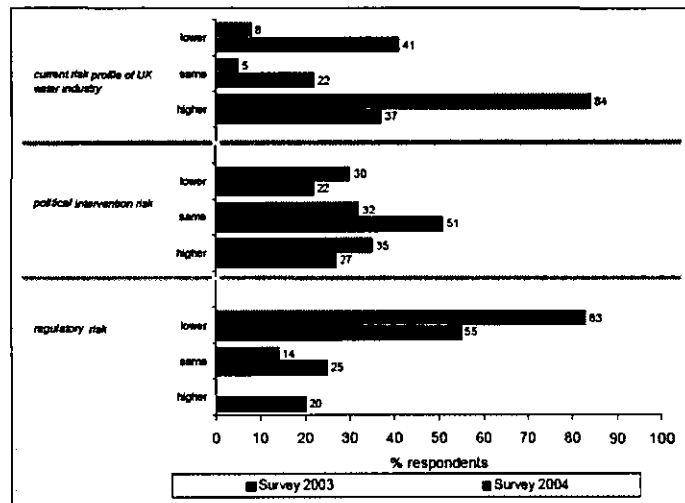
- (b) legislative and regulatory frameworks that clearly define the processes and institutional environment for investment and offer protection from political intervention;
- (c) adequate tariffs and pricing policies to realise a reasonable return on investment;
- (d) consumers' ability and willingness to pay;
- (e) government effectiveness;
- (f) utility/sector performance;
- (g) market size to generate sufficient revenues;
- (h) availability of financing;
- (i) availability of financial support mechanisms (e.g. government guarantees);
- (j) previous investment performance; and
- (k) government's commitment to the 'contract' and conditions for investment.

One of the most important criteria for investors in the sector is the potential profit or rate of return (Budds and McGranahan, 2003). Another key consideration is scale which explains investors' general bias towards large-scale projects with large contract values in middle to higher-income cities with large urban populations. BOTs and concession contracts dominate as these provide the highest returns (Ibid.). In assessing the sector, water utilities (particularly those in developing countries) generally come under strong criticism due to the numerous technical/operational, commercial/financial and human/institutional problems that can render them inefficient and uneconomical (Idelovitch and Ringskog, 1995). However, compared to other investment criteria that essentially speak to what Feeney *et al.* (1999) refer to as 'attributes of the business', the extent to which the 'attributes of the owner/utility' affect the private investment decision is not adequately documented. Besides financial and operational indicators, other factors that affect utility performance such as the quality of management and the level of independence from political intervention are difficult to quantify. These attributes of the utility and the extent to which they affect investors' decisions and reflect their perception of the sector are of interest to this research.

Like FDI decisions, investors' criteria in the sector vary depending on the type of investor and their perception of the prevailing business climate. In the UK water sector for example, a 2004 survey of over 40 debt and equity investors revealed that the main attractions for equity investors included a high relatively safe dividend yield (return on investment), predictable earnings and stable businesses (Whelan, 2004). Debt investors on the other hand, were attracted by strong cash flow generation, regulatory

transparency and long-term assets. The results of the 2004 survey when compared to a similar one conducted in 2003 indicated that investors' perception of the regulatory process, political situation and overall risk profile of the sector²⁴ had changed (Figure 2.3). Attitudes towards the regulator and the regulatory process for example, were more positive in 2004 as investors believed that periodic reviews were being carried out in a transparent manner. Conversely, investors believed that the overall risk profile of the water companies had increased in 2004 due to less scope for cost-cutting and lower credit ratings (Ibid.). Among other factors, this change in perception was reflected in a shift in the minimum credit rating investors were prepared to provide debt financing to water companies. Such examples highlight the relative nature of investors' criteria in the sector.

Figure 2.3 Comparison of the 2003 and 2004 risk profile of the UK water sector



Source: Whelan (2004)

2.4 Investment promotion: How to attract investment

As highlighted in the previous section, investors are likely to base investment decisions on various criteria such as the business/investment climate, the quality of the investment opportunity, anticipated returns and the ease with which the investment can take place. Image and perceptions are also important factors that influence investment decisions. Accordingly, activities that encourage or promote investment, that is increase the likelihood that an investor will have a positive response to an investment opportunity, must be based on an understanding of what influences the investment decision. This is the basis for investment promotion. In its purest form, investment promotion is the collective term used to describe a range of activities aimed at attracting foreign capital

²⁴ Overall risk profile included the operational and financial risk profile of the water companies.

and has come to occupy a prominent place in the development strategies of many developing countries evidenced by the growing number of countries undertaking proactive approaches to attract FDI (UNCTAD, 2001). As such, the investment promotion literature is replete with strategies specific to attracting FDI. For the purposes of this research however, investment promotion is used to denote a more broad-based process of considering investors' decision-making criteria towards developing a strategy to attract private investment to water and sanitation. Constructs based on investment promotion with respect to attracting FDI are however used to develop this framework.

2.4.1 Investment promotion activities

The main activities of investment promotion as summarised in Table 2.2 are (Wells and Wint, 2000; Loewendahl, 2001; Morisset, 2003):

- (a) **image-building** which is usually general in nature and includes activities that enhance a country's image as a favourable place for investment (includes policies, laws and regulations that comprise the basic framework for creating a business environment conducive to investment);
- (b) **investment generation** which involves more specific investor targeting by region, industry, type or size of investment (includes incentives that offer advantages or concessions to promote investment); and
- (c) **investment servicing** which involves developing a one-on-one relationship with potential and existing investors to facilitate their investment experience (converts investors' interests into actual investments and ensures investor satisfaction with the business climate).

Table 2.2 Main activities of investment promotion

Function		Objective
Image-building		To create the perception of a country as an attractive site for international investment
Investment generation/targeting		To create investment leads that target investment into specific sectors, development areas or companies
Provision of investment services	Pre-investment services	To facilitate a foreign investor's entry into the economy. To assist in analysing investment decisions
	Post-investment or aftercare services	To assist a foreign investor in maintaining his business in good standing, facilitating reinvestment decisions in the future

Source: Wells and Wint (2000)

Empirical research on various promotional techniques finds that although governments tend to engage in all three types of investment promotion activities to varying degrees, image-building predominates (Wells and Wint, 2000). Wells and Wint (2000) find for example that when government policy changes to encourage investment, promotional activities tend to focus on image-building so as to advise investors about government's new attitude towards investment and interest in attracting investors. Changing economic conditions within a country or in the external environment also require continued use of image-building activities.

2.4.2 Investment promotion strategy

A strategy is a long-term plan of action designed to achieve a particular goal commonly associated with business activities and government. In business, strategy provides overall direction to a company or gives specific direction in areas such as investment decision-making and organisational development. Within government, strategy provides guidance for organisational management and the evolution or modification of public policy and laws in areas such as infrastructure funding. An effective strategy will:

- (a) obtain the desired objective;
- (b) fit well with the external environment and an organisation's resources and core competencies;
- (c) provide an organisation with a sustainable competitive advantage; and
- (d) prove dynamic, flexible and able to adapt to changing situations.

More specifically, an investment promotion strategy provides a frame of reference and a programme of work to guide the investment promotion process (Loewendahl, 2001). The development of an investment promotion strategy can be broken down into three main steps as summarised in Table 2.3 (MIGA, 2000):

- (a) develop a complete picture of a country's environment in terms of its investment needs and investment potential (i.e. assess the internal strengths and weaknesses and external opportunities and threats of the environment for private investment);
- (b) identify and target sectors that are likely to be attracted to a country's investment environment (i.e. determine investors' priorities, investment trends, etc.); and

- (c) develop a strategic mix of investment promotion activities taking into account the quality of the business environment, a country's development goals, investors' perceptions and available resources.

Table 2.3 Creating an investment promotion strategy

Step	Activity
Assess investment needs and potential	<ul style="list-style-type: none"> • Identify country's development goals • Assess current global and regional investment trends • Analyse country's strengths and weaknesses • Assess the strengths and weaknesses of competitors
Target industries and geographic sources of investment	<ul style="list-style-type: none"> • Develop a list of potential industries • Analyse the characteristics of each industry sector • Assess each sector's compatibility with country location and development goals • Develop a short list of industries
Develop a marketing strategy	<ul style="list-style-type: none"> • Adjust the intermediary's promotional approach • Evaluate organisational functions and responsibilities • Evaluate the intermediary's partnerships • Assess the budget implications of the new focus • Develop a strategy document

Source: MIGA (2000)

Important to the process of assessing a country's investment needs and investment potential is a clear understanding of a country's development goals from which investment-related goals are derived and clearly set out in government policy. This may involve a survey of existing and potential investors to get their views on the investment environment so that issues important to investors are identified and accounted for in the promotion strategy (Khalidi-Beyhum, 2002). Also recommended is a systematic examination of a country's strengths, weaknesses, opportunities and threats (SWOT analysis) from an investor's perspective to enable an understanding of the positive and negative aspects of a country as an investment site (MIGA, 2000; Loewendahl, 2001). A final methodological note on developing an investment promotion strategy concerns the dynamism of the process. Because a location's attributes relative to other locations are constantly changing as a result of both domestic developments and changes in the external environment, to be effective, appropriate adjustments to promotional activities may be necessary throughout the lifespan of an investment promotion strategy.

2.4.3 Investment promotion in water and sanitation

2.4.3.1 *Rationale for promoting private investment*

Investment in the water and sanitation sector has traditionally been a public sector undertaking because of its public good characteristics²⁵, monopoly status²⁶, need for long-term finance, long payback period, low rates of return and importance to public health and national economic development²⁷ (Haarmeyer and Mody, 1997; World Bank, 1997a; Winpenny, 2003). During the 1990s however, private investment in the sector gained momentum fuelled by a number of related developments such as declining public sector budgets, decreasing flows of official development assistance, increasing disenchantment with the inefficiency of public sector provision, encouragement from development agencies, economic liberalisation, loosening of the rules governing foreign investment and increasing international flows of private capital. Significant investment needs in the sector highlighted by international agreements such as the United Nations' Millennium Development Goals also contributed to the promotion of private investment as an important financing solution to fill the investment gap caused by prolonged underinvestment and public sector neglect (Annamraju *et al.*, 2001; Budds and McGranahan, 2003).

Despite the support and encouragement of development agencies like the World Bank, international water companies keen to diversify into other markets and developing country governments keen to access the finance needed to expand service coverage, the expectations of strong prospects for private investment in water and sanitation have not been realised. Even during the peak of private activity in infrastructure, water and sanitation consistently attracted the lowest levels of private investment. Data from the World Bank's private participation in infrastructure database indicate for example that between 1990 and 2004, water and sanitation attracted only 5% of total private investment compared to 48% for telecommunications and 32% for energy (World Bank, 2005). Water and sewerage projects also had the highest failure rates with 37% of private investments either cancelled or in distress by 2004 compared to 4% for telecommunications and 11% for energy (*ibid.*). The private sector's lukewarm response is commonly attributed to characteristics of the sector that affect the financial leverage of

²⁵ A public good is defined as something that is non-rivalrous (one person's use does not deprive others from using it), non-excludable (if one person consumes it, it is impossible to restrict others from consuming) and non-rejectable (individuals cannot abstain from consumption even if they wish to).

²⁶ More feasible for one supplier to serve the market due to high fixed costs (sunk assets) and increasing returns to scale.

²⁷ Water and sanitation projects are considered to have high forward linkages in the economy in that the product is a critical intermediate input for other sectors and service levels and prices are of major importance for industrial costs and international competitiveness (Stern and Holder, 1999; Ramamurti and Doh, 2004).

investments and which have as previously mentioned, historically 'favoured' public sector financing (Briscoe, 1999b). The poor performance of some private investments and difficulties encountered during these transactions are generally attributed to (Idelovitch and Ringskog, 1995; Sader, 1999; ADB, 2000a; Winpenny, 2003; IDB, 2003a; Ramamurti and Doh, 2004; Braadbaart, 2005; Noel and Brzeski, 2005):

- (a) political, administrative and legal impediments that delayed or resulted in the cancellation of individual projects;
- (b) inadequate regulatory frameworks which resulted in the inadequate specification of risks, performance targets, penalty and reward structures;
- (c) inappropriate pricing policies and resistance to cost-recovering tariffs which affected investors' rate of returns;
- (d) political interference and lack of commitment;
- (e) political and social protests against individual projects;
- (f) lack of local financing which increased the cost of financing; and
- (g) macroeconomic and asset-related uncertainties which affected the predictability of investments.

The general consensus in the academic and grey literature is that private investment in the 1990s did not live up to expectations and that the experience has caused many investors to lose confidence in the sector. Most noticeable is the retreat of large international investors from water and sanitation projects in developing countries²⁸. Although international investors still account for a large share of investment flows, their investments are limited to select developing countries in Europe and Asia, with regional and local investors responsible for much of the new investment in many developing countries (Izaguirre and Hunt, 2005). Does the fall-off in private activity mean that private investment should not be pursued as an investment option for water and sanitation? Not necessarily so. What it does highlight are the conditions likely to deter private investment from the sector and the type of investor possibly best suited to investments in developing countries. In this context, a strategy that promotes conditions conducive to private investment and provides investors with the necessary signals to assure them of the viability of their investments and the investment climate is essential to regain investor confidence and stimulate interest in the sector. In particular, it is important to incorporate the factors of interest to domestic investors who may potentially become the most important sources of future private capital in the sector.

²⁸ RWE Thames for example announced that it would withdraw from most regions to focus on Central and Eastern Europe; Veolia Environnement that it would concentrate on select Asian countries; and Suez that it would pull out of Asia and Latin America (Izaguirre and Hunt, 2005).

2.4.3.2 Strategy to promote private investment

The strategy recommended by development organisations like the World Bank and various sector analysts to attract private investment to the water and sanitation sector is three-fold, namely (ADB, 2000b; World Bank, 2003):

- (a) **create an enabling environment** which includes establishing the right conditions for business and a policy environment conducive to private investment;
- (b) **generate business opportunities** which includes deliberately formulating projects/investments in such a way that they provide specific opportunities for private investment; and
- (c) **facilitate private investment** which includes providing direct assistance to projects/investments to encourage and catalyse private investment.

Creating an enabling environment for private investment usually forms part of a sector reform agenda to tackle issues such as unclear policy guidelines, inadequate regulatory frameworks, unsupportive legislation, inappropriate water pricing, inadequate cost recovery, non-viable utility performance, excessive government involvement, outdated institutional arrangements and poorly coordinated water administration – all of which have the potential to deter private investors (Abrams, 2000b; Seppälä, 2002). Macroeconomic and political stability are also crucial elements of the enabling environment paradigm (Pargal, 2003). To generate business opportunities for private investment in the sector, governments are encouraged to ‘champion’ model projects that highlight the investment potential of the sector (ADB, 2000b), package ‘bankable’ projects following rigorous project feasibility analysis²⁹ (Howe and Dixon, 1993; Rogers *et al.*, 1993; Sader, 1999; Mehta, 2003; PADCO, 2003) and select private investment options that address local needs and suit the local context³⁰ (Sader, 1999; ADB, 2000a). Finally, to facilitate private investment, governments are encouraged to provide support mechanisms such as guarantees to mitigate against risks associated with investments in the sector (Dailami and Klein, 1998; Dailami and Leipziger, 1998), participate in joint ventures with the private sector to show commitment to private investment, leverage

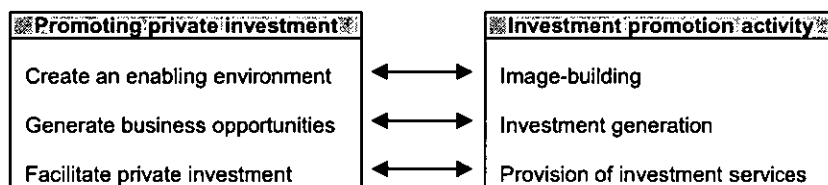
²⁹ A project feasibility analysis calculates the rate of return on the investment by analysing the costs and revenues of the project, looks at pricing and cost recovery issues and may recommend water tariff, tax or subsidy revisions that would yield revenues necessary to sustain the planned investments and targets user subsidies if required; assesses institutional arrangements; and presents options for mitigation of related risks and adverse factors.

³⁰ The choice of an appropriate private investment option for a particular country at a particular point in time depends on a number of factors including the support for commercially viable tariffs; the predictability of the regulatory regime governing project income; the level of government and community support for private investment; the desired level of PSP; the nature of the problem at hand; existing public sector administrative capacities; the speed with which the problem needs to be resolved; and investors' perception of the risks associated with individual projects (Sader, 1999; ADB, 2000a).

international financing to on-lend to domestic investors at reasonable terms (ADB, 2000b; PADCO, 2003) and promote local capital markets to increase the proportion of cheaper local currency debt (Bond and Carter, 1994; Kumar *et al.*, 1997; Ramírez and Parra, 1999; PADCO, 2003).

The proposed strategy to attract private investment to the water and sanitation sector bears a close resemblance to the main activities of investment promotion with creating an enabling environment analogous to image-building, generating business opportunities analogous to investment generation and facilitating private investment analogous to the provision of investment services (Figure 2.4). Creating an enabling environment, like image-building, dominates the promoting private investment strategy agenda with the onus mainly on government to develop conditions conducive to private investment. Creating an enabling environment is also an all-inclusive promotional concept as elements of generating business opportunities and facilitating private investment require and coincide with what constitutes an environment conducive to private investment. On this basis, the research focuses on the enabling environment paradigm as the main 'macro-determinant' to attract private investment to the water and sanitation sector.

Figure 2.4 Relationship between promoting private investment to the water and sanitation sector and investment promotion



2.5 Creating a conducive environment: Framework for private investment in water and sanitation

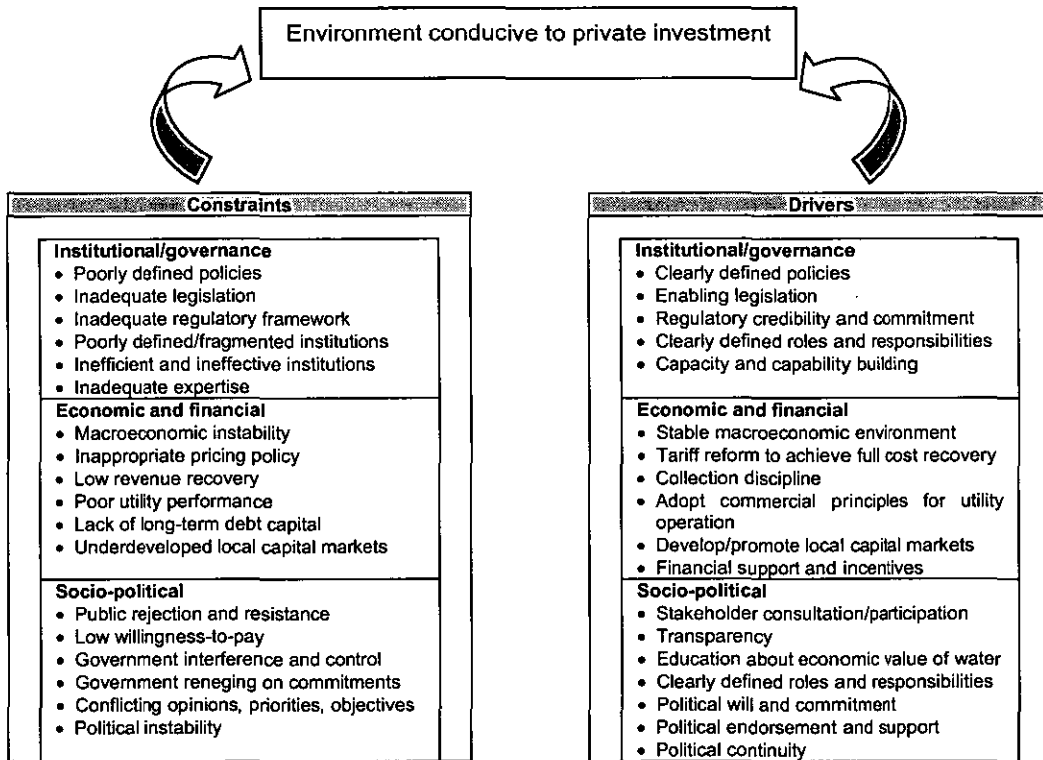
The theoretical and empirical literature on private investment in water and sanitation consistently points to the importance of a core set of factors that strongly influence the private investment decision and hence require special attention when devising a private investment promotion strategy for the sector. These factors can be broadly grouped into three main categories, namely (Figure 2.5):

- (a) ***institutional/governance factors*** which include the policy, legislative, and regulatory frameworks within which investors have to operate and the institutions responsible for their implementation;
- (b) ***economic and financial factors*** such as macroeconomic stability and pricing policy which affect investment performance; and

- (c) **socio-political factors** such as public resistance and political commitment which affect investment success.

The importance of these factors to the enabling environment paradigm is discussed in the following sections.

Figure 2.5 Constraints to and drivers for private investment in water and sanitation



2.5.1 Institutional

Saleth and Dinar (2000) identify three main components of water institutions namely:

- (a) **water policy** which refers to the policy environment;
- (b) **water law** which refers to the legal and regulatory framework; and
- (c) **water administration** which refers to the administrative arrangement.

Collectively, these describe the institutional frameworks and arrangements for the sector and are discussed below.

2.5.1.1 *Policy framework*

Policy as defined by Abrams (2000a), is the set of decisions made at the highest political level in a country to determine what and how things will be done in any given sector. Broad policy guidelines for the water and sanitation sector are usually embodied in various international declarations which generally inform more specific national strategies to reflect prevailing social, political, environmental, technological and economic perspectives. The emphasis on the economic value of water, universal access and financing needs of the sector in the 1990s is credited with encouraging private investment in the sector (Budds and McGranahan, 2003). The Second World Water Forum for example, proposed to mobilise additional annual investments of about US\$100 billion from the international private sector (Winpenny, 2003). Similarly, the International Conference on Freshwater at Bonn recognised the need to augment public funding with private capital by making the sector a more attractive investment opportunity (Ibid.). Such international declarations with the encouragement of international development agencies like the World Bank, have had a direct effect on the level of private investment in the sector with private commitments rising sharply up to 1997 (Estache, 2004).

Policy also matters at the national level in terms of informing investors of government's long-term vision, intentions and provisions for the sector and hence the environment in which they will operate. In Mexico for example, policy changes to focus on privatisation initiatives in the urban water sector realised the creation of financially autonomous utilities and private companies (Saleth and Dinar, 2000). In East Africa, policy changes to address the role of the private sector and remedy regulatory uncertainties have had a profound effect on people's access to efficient, effective and equitable water and sanitation services (Seppälä, 2002). Although difficult to isolate and quantify because of cross-cutting issues such as the importance of effective institutions and political facilitation for policy implementation (Saleth and Dinar, 2000), the general consensus in the theoretical literature focusing on reform efforts in the sector is that policy is important in setting the stage and tempo for attracting private investment to the sector (Saleth and Dinar, 2000; Seppälä, 2002).

Policy considerations for private investment

Policy issues of interest to private investors in the sector include (Foster, 1996; Winpenny, 2003):

- (a) the legal framework guiding policy implementation;

- (b) how the sector will be regulated (e.g. the nature of the regulator, predictability of the regulatory regime governing project income, degree of contract enforcement and level of political interference);
- (c) the roles and responsibilities of various institutions operating in the sector;
- (d) the role and extent of PSP (i.e. the desired level of private investment);
- (e) the support for commercially viable tariffs and effective cost recovery;
- (f) the provision of support mechanisms such as incentives, guarantees and subsidies; and
- (g) the balance of social, environmental and commercial aims.

The extent to which these provide for the financial viability of private investments and promote good corporate governance practices in the sector help determine how conducive the environment will be for private investment.

2.5.1.2 *Legislative and regulatory frameworks*

Throughout the private investment literature, the regulatory framework³¹ is often singled out as the greatest detriment to private investment in the sector due to its far-reaching effect on determining the conditions under which investment takes place and the ability of investors to efficiently conduct business. In the UK water sector for example, the risk of adverse regulatory decisions is identified as one of the largest business risks in the sector (Whelan, 2004). In Bolivia, weak regulatory capacity, political pressure and limited consumer participation in the regulatory process contributed to the early demise of the Cochabamba concession (Nickson and Vargas, 2002). The importance of the regulatory framework is also substantiated in the empirical literature. Pargal (2003) for example, finds that private investment in infrastructure³² is significantly positively correlated with the passage of reform legislation and the existence of a regulatory body. For the water sector however, the relationship between legislation and investment does not hold as the sector's natural monopoly and public good characteristics make it riskier than other sectors. As such, Pargal postulates that investors are inclined to look for better developed regulatory frameworks and more detailed investor protections (compared to other infrastructure sectors) before committing funds to water and sanitation. This emphasises the overarching importance of the regulatory framework in the sector as

³¹ For the purposes of this research, regulation is discussed in terms of the economic regulation of the sector to cover issues such as pricing, investment/costs of service, quality (including service standards and service obligations) and the rate of return on assets.

³² Study covered the water, power, telecommunications, roads and railway sectors in Argentina, Brazil, Bolivia, Chile, Colombia, Ecuador, Mexico, Peru and Venezuela between 1990 and 1998.

sectoral legislation though important, is neither necessary nor sufficient for private investment (Jensen and Blanc-Brude, 2005).

As highlighted by Guasch and Spiller (1999) and Pargal (2003), the sector's public good characteristics, large sunk costs and limited scope for direct competition are at the core of contractual problems that determine the importance of the regulatory framework. Concerns about government seizing control of assets, renegeing on agreements (such as commitment to cost-recovering tariffs and performing certain duties under contract), the predictability of a project's return and the judicial mechanisms in place are crucial to investors' risk perception of the regulatory framework (Sader, 1999; Ramamurti, 2003). Besides deterring private investment, this risk perception can also diminish the potential benefits and gains of private investment (Spiller and Savedoff, 1999). Investors for example, may choose to invest exclusively in areas where market return is very high and where the payback period is relatively short (i.e. cherry-picking more viable service areas). In the absence of an adequate regulatory framework, investors may also insist on high up-front costs. Guasch and Spiller (1999) for example, find that investors' allowances for regulatory risks (such as government guarantees and indemnities) can bid up the cost of capital by 2-6% which makes private transactions more expensive and cumbersome to finance. Adequate legal and regulatory frameworks are therefore necessary not only to attract private investment, but also to reduce the cost of attracting private investment, improve the benefits of private investment and protect consumers' interests.

Indicators of an adequate regulatory framework

An adequate regulatory framework is defined as one in which consumers can have access to utility services of acceptable quality at the lowest minimum cost and private (and public) investors can expect to earn a reasonable real rate of return on their assets. To appraise the performance or adequacy of the regulatory framework, Stern and Holder (1999) propose six criteria as listed below and detailed in Table 2.4:

- (a) clarity of roles and objectives particularly between government and regulators;
- (b) autonomy from political intervention;
- (c) accountability so that regulators' decisions can be challenged;
- (d) participation of relevant parties in contributing to the regulatory process;
- (e) transparency in the decision-making process; and
- (f) predictability in the 'rules of the game'.

In broad terms, these features describe both the likely degree of political independence and the processes which might increase the likelihood of the regulatory framework being acceptable to investors, consumers and governments. Best practice recommendations call for a regulatory framework under an autonomous regulator supported by primary legislation which is accountable in terms of appeals, facilitates consultation, provides information and is consistent in terms of the decisions reached. A caveat to these recommendations however is offered by Levy and Spiller (1994) who emphasise that the regulatory framework must take account of the constitutional, legal and political characteristics of a country. As such, different regulatory mechanisms will evolve in different countries according to their institutional endowment³³.

Table 2.4 Criteria and rankings used in regulatory appraisal

Indicator	Best practice	Unfavourable to private investment
Clarity of roles and objectives	Regulatory function well-articulated and well-enshrined in primary legislation. Clearly separated in practice from policy and commercial functions.	No apparent specification of separate regulatory functions. No primary law covering regulatory issues. No effective distinction between policy and regulation.
Autonomy	Separate regulator with arrangements for appointment and financing which appear to guarantee autonomy of action.	No separately identifiable regulatory function, or it is performed mainly or solely by a senior political official.
Accountability	Full accountability in terms of appeals including a specific legal right to redress.	No appeal or redress available. No formal mechanism of accountability.
Participation	Comprehensive process of formal consultation followed before decisions are made.	Little or no formal consultation takes place.
Transparency	Regulatory documents available to the public unless classified as confidential. Regulator publishes major decisions as well as the reasoning behind these decisions.	No significant public information available regarding regulatory instruments or decisions.
Predictability	Regulatory powers and duties cannot be changed without changes in primary law. Key regulatory instruments or documents cannot be changed without undergoing appropriate processes. Clear policy and coherent approach behind all decisions.	Changes to all aspects of regulation can be undertaken relatively easily. Little or no consistency observed in regulatory practice.

Source: Stern and Holder (1999)

Regulatory instruments and institutions

Guasch and Spiller (1999) identify four types of basic regulatory instruments:

- (a) **specific legislation** whereby regulation is delegated to a regulatory body (usually used in countries where legislative action is costly and where the judiciary is relatively independent from the executive);

³³ The institutional endowment of a country is defined as its legislative and executive institutions; its judicial institutions; informal norms; administrative capabilities; and the character of the society's contending social interests (Guasch and Spiller, 1999).

- (b) **presidential decree** which is a popular regulatory tool in Latin America. In Bolivia for example, the enabling legislation for the public utility regulation law was approved by presidential decree which established the procedures for awarding concessions and outlined the functions of the regulator (Nickson and Vargas, 2002);
- (c) **contracts or licenses** whereby the regulatory framework is embedded in formal contracts which take the form of operating licenses that specify the regulatory framework in which the firm operates. Usually used for performance contracts or BOT-type arrangements; and
- (d) **administrative procedures** which determine how agencies make decisions and specify the independent appeals process. Requires a previously developed body of law and judiciary that is accustomed to challenging administrations on procedural grounds. The regulation of utilities in the USA for example, is based on a well-specified body of administrative procedures at both the federal and state levels.

Regarding regulatory institutions, there is a wide array of regulatory approaches due to different sector designs (i.e. public, private and restricted competition). In some cases, the process of regulation may not be separate from other functions such as policy-making in which case regulation may be carried out by government ministries or government-appointed secretariats. The establishment of a credible, independent regulatory agency however, has become a standard feature of the privatisation process in Europe, Latin America and Asia to signal private investors that the sector will not be subject to arbitrary political interference (Stern and Holder, 1999). As such, independent regulation has become largely synonymous with private ownership/investment.

As previously mentioned, the extent and characteristics of a country's institutional and administrative endowments govern the choice of regulatory instruments and institutions. In countries like the UK for example where decision-making is highly centralised, Spiller and Savedoff (1999) suggest that more rigid institutions and restraints are required as laws can be changed relatively easily and utilities often dominate line ministries. Conversely, in countries like the US that are more decentralised, specific legislation may be difficult to introduce due to political fragmentation. As a result, institutions and the regulatory system should be adapted to the current state of sectoral evolution instead of attempting to adapt the sector to a restrictive and incomplete legal and regulatory environment (Ramírez and Parra, 1999).

2.5.1.3 *Institutional arrangements*

Besides developing sound policies and adequate legal and regulatory frameworks conducive to private investment, effective institutions are also necessary to ensure appropriate implementation of these provisions (Seppälä, 2002). Effective institutions as described by Mullins (2005) have clear roles and responsibilities and have the capacity to carry out their mandate. Government's traditional assumption of several roles in the sector (policy-maker, investor, service provider and regulator) has in many cases led to a 'confusion' of roles and responsibilities with institutions either performing similar tasks (overlap of roles) or assuming multiple and conflicting roles (Beato and Vives, 2003; Ramamurti, 2003). Most relevant to the enabling environment paradigm is what Foster (1996) refers to as the 'poacher-gamekeeper problem' whereby there is the confusion or juxtaposition of regulatory and operational roles and the 'politicisation of management' whereby the external influence of government interferes in the operation of public entities. Both situations have been found to contribute to problems inherent to the sector such as poor accountability, low levels of efficiency, low tariffs, poor quality of service and insufficient investment with the potential to deter private investment (Ibid.). These problems are further complicated by the fragmented nature of the sector whereby there is a split in functions between central and local government authorities and a general lack of well-qualified staff which results in 'weak' institutions (Beato and Vives, 2003).

Recommendations to address these institutional shortcomings and create more conducive conditions for private investment include (Foster, 1996; Sader, 1999; ADB, 2000a; Beato and Vives, 2003):

- (a) the identification of the different roles that exist (e.g. sector strategy, social policy, regulation, investment and operations);
- (b) the allocation of these roles between different tiers of government (need to decide if the different roles should be allocated to separate entities. Where roles are identified as institutionally separated, Foster (1996) and Sader (1999) stress the importance of ensuring an adequate degree of coordination between institutions);
- (c) the creation of autonomous corporatised public entities to reduce government interference and introduce market force discipline; and
- (d) the development of adequate institutional capacity to enable institutions to efficiently and ably carry out their mandates.

2.5.2 Economic and financial

2.5.2.1 Macroeconomic environment

The demand side of FDI theory argues that investment will go primarily to markets large enough to support the scale economies needed for production (Treviño and Mixon, 2004). This premise is also relevant to the water and sanitation sector. The large market economies of Latin America and East Asia for example, have consistently attracted the lion's share of private investment in the sector (recipients of 89% of total private investment between 1990 and 2004). In terms of per capita income³⁴, upper-middle income countries attracted 1.5 times as much private investment in water and sanitation as lower-middle income countries and close to 40 times as much as low income countries (Table 2.5). Similarly, non-IDA³⁵ countries attracted the bulk of private investments in the sector compared to poorer countries. These statistics therefore point to a strong economy status-private investment relationship.

Table 2.5 Income-related distribution of private investment in water and sanitation (1990-2004)

Parameter	Private investment
Upper-middle income	59%
Lower-middle income	39%
Low income	2%
Non-IDA	94%
Blended	5%
IDA	1%

Source: World Bank (2005)

Empirical research also provides evidence of a positive relationship between the macroeconomic environment and attracting private investment. Pargal (2003) for example, finds that private investment is positively related to past period real GDP, indicating that richer economies generate higher private investment flows. In assessing the determinants of private investment in several Latin American countries, Pargal established that a 1% increase in previous period real GDP was associated with an increase of 4.6% in private investment levels. Interest rates were also found to impact the cost of financing on investment decisions and were negatively related to investment volume. Dailami and Klein (1998) also find evidence of a strong relationship between country credit ratings and private capital flows. Governments were able to attract more

³⁴ Income group classifications according to gross national income per capita using the World Bank Atlas method are low income (US\$825 or less), lower-middle income (US\$826-\$3,255), upper-middle income (US\$3,256-\$10,065) and high income (more than US\$10,066).

³⁵ Developing countries with the financial ability to borrow non-concessional loans from the World Bank.

project finance (deals per capita and deals as a percentage of GDP) as country ratings improved.

In an analysis of the importance of macroeconomic factors in determining the risk premium on infrastructure projects, Dailami and Leipziger (1998) find that inflation is dominant in explaining the spread of foreign loans to infrastructure projects with the market imposing a high-risk premium on loans to countries with high inflation. To advance this finding, Dailami and Leipziger theorise that a high rate of inflation is a sign of internal economic instability and of government's inability to maintain expedient monetary policy. From the investor's point of view, high inflation creates uncertainty regarding the net present value of costly long-term investment (Treviño and Mixon, 2004). Countries with higher than average inflation are therefore 'singled out' and 'penalised' in the international capital markets.

Investors generally associate stable and predictable macroeconomic conditions with environments conducive to investment where they are able to realise reasonable rates of return and reduce the cost of doing business (Estache, 2004). The fate of several infrastructure projects after the Asian financial crisis in mid-1997 is a practical example of the importance of a stable macroeconomic environment (Sader, 1999; Baietti, 2001; Green and Campos, 2001). The economic fall-out caused by currency devaluations across several southeast Asian countries resulted in a general collapse in investor confidence manifested in infrastructure FDI falling by half in 1998 (Box 2.1).

Box 2.1 Impact of the Asian financial crisis

The currency crisis that hit several southeast Asian economies in mid-1997 had a devastating impact on private infrastructure projects with infrastructure FDI falling by half in 1998. In late 1997, the currencies of Thailand, Indonesia, the Republic of Korea, Malaysia and the Philippines all experienced sudden, relatively unexpected depreciation. The impact of the crisis varied across the region being more important in those countries with the weakest overall public sector financial position. Currency devaluation increased the domestic cost of external debt servicing, placing considerable strain on public budgetary resources. In addition, falling property values erased future income potential for projects relying on real estate development and the general economic slowdown made demand projections and associated revenue forecasts questionable. The crisis profoundly affected the infrastructure market in several ways. Investor confidence collapsed and financing for infrastructure projects dried up as many commercial lenders abandoned the project finance market, and projects that had not yet reached financial closure suddenly faced a lack of commercial debt. Overall new investment activity in various infrastructure sectors stalled as fiscal restrictions meant that governments could not afford their planned involvement in intended projects or continue to honour payments to existing ones (no new investments made in the water sector). The demand for infrastructure services also decreased as the economic slowdown made it more difficult to cover the economic cost of services (including the effects of the currency devaluation) through increased tariffs. The net result was a sudden recession in the private infrastructure market with projects being delayed, cancelled or on the brink of bankruptcy.

Source: Sader (1999); Baietti (2001); Green and Campos (2001)

Economic indicators such as per capita income have a strong association with investors' concerns about consumers' ability and willingness to pay for water and sanitation services, reflected in a general bias towards high-income and/or highly urbanised service

areas. The importance of the macroeconomic environment in attracting private investment has important implications to this research as the status of a country's macroeconomic environment can serve as an indicator of the private investment potential of that country.

Macroeconomic indicators

Indicators commonly used to define and rate a country's macroeconomic environment include (Cantor and Packer, 1995; Bissoondoyal-Bheenick, 2005):

- (a) **per capita income** which is often used as a measure of the wealth of the population;
- (b) **GDP growth** which is a measure of the change in GDP on a year-over-year basis;
- (c) **inflation** which is an increase in the money supply commonly reflected in an increase in prices and the cost of living;
- (d) **exchange rate** which indicates the costs in one country relative to another with negative numbers signalling a depreciation;
- (e) **interest rate** which is the price a borrower pays for the use of money and the return a lender receives for lending to the borrower; and
- (f) **public debt** which is a measure of the total debt of government held by the public.

2.5.2.2 *Tariff structure and revenue recovery*

Briscoe and Garn (1995) identify the low level of cost recovery in the water sector compared to other infrastructure as a fundamental reason why so little private investment has gone into water supply and sanitation. Water charges unable to cover operation and maintenance costs and lack of continuous adjustment of tariff levels are considered to be major constraints in developing countries (Katko, 1990). Subsidised rates often form part of government's social policy in developing countries or are used to gain political favour. Some researchers criticise this approach claiming that the intended beneficiaries are no better off and have to rely on water vendors who supply water up to ten times the cost of the formal system (Briscoe, 1999b). In addition to inadequate tariffs, poor collection of rates is also identified as another problem with cost recovery in the water sector. The widespread practice of water vending in developing countries however, is perceived by some to indicate a high level of affordability and willingness-to-pay for water (Katko, 1990).

The promise of steady, long-term future cash flows is the basis of the private sector's interest in financing projects (Haarmeyer and Mody, 1998b). Projects must generate revenues that cover operating costs and debt-service payments and earn a competitive rate of return on equity (Haarmeyer and Mody, 1997). As such, cost recovery is essential to private sector operations. In recent years, a number of innovative approaches have been adopted to address the issue of cost recovery and foster a more financially viable sector. In Chile for example, the welfare and business functions of water utilities are separated by introducing the idea of 'water stamps' which are provided by the government to means-tested poor people as part payment of water bills (Briscoe, 1999b). In order to attract the private sector in water utilities in the city of Conakry in Guinea, the government assured the private operator of sufficient revenue by a combination of initially low, but rising revenues from users and initially high, but declining subsidies from the government paid out of a World Bank credit (Ibid.).

2.5.2.3 *Financial support and incentives*

Although more specific to the facilitating private investment phase of the investment promotion strategy, governments typically use an array of mechanisms to provide financial support to water and sanitation projects, thereby creating favourable conditions for private investment. These include (Dailami and Klein, 1998; Dailami and Leipziger, 1998; Sader, 1999; Kumaraswamy and Zhang, 2001; Mehta, 2003):

- (a) **direct financing** which refers to government or government agency equity contribution to the project through a joint venture participation or the provision of local currency term loans/grants;
- (b) **guarantees** which are the most important form of support to mitigate risks faced by lenders and project sponsors (e.g. exchange rate guarantees against currency devaluations and change of law guarantees against legislative and regulatory changes that may affect anticipated revenue);
- (c) **tax incentives** which include favourable tax treatment of income, special depreciation allowances and the lowering/exemption of import duties on machinery and equipment; and
- (d) **subsidies** which can be explicit or implicit mechanisms used to correct the mismatch between affordable tariffs and the cost of service provision.

The premise for the provision of support mechanisms is to compensate investors and mitigate against risks associated with low tariffs, low levels of cost recovery, unstable macroeconomic conditions, poor performance by the public utility, government and/or

public authorities reneging on contractual obligations and the challenge of sustaining reform policies over long periods of time. For these reasons, the use of credit enhancement mechanisms is more prevalent among countries with a high risk premium on infrastructure projects as the intention is to lower this risk premium and render projects attractive to private investors. Dailami and Klein (1998) for example find that support arrangements are more likely to be used in non-investment grade economies than in investment-grade economies. Support mechanisms are also more widely used in BOT projects. This is primarily because new investments such as BOTs (compared to existing assets) are characterised by significant upfront costs, long payback periods and various unknowns (e.g. revenue stream, inflation, interest and foreign currency exchange rates over the long-term) which present additional economic risks to investors (Dailami and Klein, 1998). As a result, government often shares the project risk by providing undertakings, indemnities or guarantees to the project company and project financiers.

The importance of support mechanisms such as guarantees in creating conditions favourable to private investment is also supported in the empirical literature. Griffith-Jones and Fuzzo de Lima (2004) for example, find that the difference in maturities in guaranteed infrastructure projects is up to twelve times what it would have been without guarantees. Interest spreads were also found to be less for guaranteed projects. In Thailand for example, the interest spread over US Treasury for infrastructure finance in 2001 was calculated as 8.5% without guarantees and 2.9% with guarantees. In terms of actual private capital commitments, each dollar of guaranteed mobilised financing for US\$11 of project cost was found to catalyse US\$4.7 of private finance. Support mechanisms therefore reduce risk and make projects more financially viable to private investors.

2.5.3 Socio-political

2.5.3.1 *Stakeholder support*

Green (2003) identifies two sets of stakeholders in any PSP process – stakeholders directly involved in private investment transactions such as lenders, project sponsors, and government, and stakeholders affected by or interested in private investment such as consumers, trade unions and civil society organisations. The cost of social resistance to private investment in the sector is well documented and includes contract cancellations and renegotiations (Sader, 1999; Nickson and Vargas, 2002; Braadbaart, 2005). As such, social acceptance and support for private investment is considered a pivotal factor in successfully completing PSP processes and attracting future investment.

As parties directly involved in searching for, setting-up, negotiating, facilitating, partnering and regulating private investment transactions, the acceptance and cooperation of government and public sector stakeholders are also important for successful private investment in the sector. Conflicting views and objectives among different government departments, lack of coordination, misunderstanding about what private investment can offer and what investors require and resistance to change are identified as important obstacles to private investment in the sector (Sader, 1999; Beato and Vives, 2003). Within government, the different priorities and goals of various public departments can manifest into varying levels of support, expectations and attitudes towards private investment. Ministries of Finance for example, tend to be more positively inclined towards private investment due to their concerns about a country's macroeconomic and financial performance (Sader, 1999). Conversely, managers and employees of the water utility may consider private investment a threat to job security, loss of high-income consumers as investors cherry-pick more profitable project locations and loss of control over service provision. If not supportive of private investment in the sector, the action (or inaction) of water utility decision-makers can frustrate, delay or even contribute to project cancellation (Ibid.).

The long-term nature of water and sanitation investments over the life cycle of several different political leaderships makes lack of political commitment an important concern of investors as changes in fiscal, exchange rate or pricing policies for instance, can dramatically alter investors' economic prospects (Sader, 1999). With the enabling environment paradigm mainly focused on government's role in creating the right environment to attract private investment (Winpenny, 2003), sustained political commitment to and support for what may sometimes be 'painful' reforms to make the sector financially viable is essential to see the sector through these changes (Fay and Morrison, 2005).

2.6 Emerging issues

The review of literature highlighted the following:

- There is a distinct international private investment bias in the literature due to the prevalence of FDI during the 1990s surge in private capital flows to the sector. Similarly, the investment promotion literature is mainly geared towards attracting FDI. In both cases, the general assumption is that private investors regardless of origin are affected by similar factors but to varying degrees. There are however several differences between foreign and domestic investors such as familiarity with

a country's/sector's investment climate, motive for investment and their relationship with local decision-makers which have the potential to affect their investment choices and hence the required strategy to attract this investment. The retreat of several large international investors and the emergence of local private investors in much of the new investments in the sector in many developing countries therefore suggest that factors of interest to domestic investors need special attention to determine whether or not they are indeed similar to those generally accepted in the extant literature.

- Perceptions can have a significant impact on investment choices. As such, it is important to understand investors' perceptions of the utility/sector/environment for investment and how these influence their investment decisions with a view to identifying and accounting for these perceptions in the investment promotion strategy.
- The uneven distribution of private investment in the sector and the relative difference in importance of investment criteria stress the importance of determining location and/or project-specific factors that influence investors' choices. Similarly, since there is no single best practice for investment promotion, strategies to attract private investment to the sector need to adapt to the prevailing investment climate. Countries must therefore take stock of the strengths, weaknesses, opportunities and threats to the environment for investment from an investor's perspective and devise investment promotion strategies appropriate to the local needs and context.

2.7 Chapter summary

This chapter reviewed the theoretical dimensions of investment decision-making and investment promotion using a general to specific approach to develop a framework for attracting private investment to the water and sanitation sector. By considering investors' criteria for investment and recommended strategies to promote this investment, the enabling environment paradigm was identified as the main 'macro-determinant' to attract private investment to the water and sanitation sector. The concept of a conducive environment is however not universal and cannot be generalised as investors' criteria vary and investment promotion strategies have to be developed to suit a country's needs and prevailing investment climate as what may work in one political or institutional environment will not necessarily work in another. This research's interest in attracting private investment to the Caribbean water and sanitation sector must therefore assess both the environment for investment and investors' criteria for investment in the sector to develop an appropriate framework for the Caribbean with respect to attracting this type of investment.

CHAPTER 3 THE DYNAMICS OF SMALL SIZE

3.1 Chapter introduction

The previous chapter developed a framework for promoting private investment in the water and sanitation sector guided by the investment decision-making and investment promotion literature. Given the intended geographical focus of the research – the Caribbean, this chapter examines a major developmental issue relevant to the Caribbean – small size, to highlight issues of relevance to the application of the promoting private investment framework in a small island context. The chapter is organised into three main sections. The first section provides an overview of the characteristics of small states that pose special challenges to their development. Section two examines the effect of small size on attracting private investment to water and sanitation. The chapter concludes with a discussion of various approaches to overcome size constraints with special emphasis on regional cooperation and its possible application in the water and sanitation sector.

3.2 Characteristics of small states

The definition of a small country varies depending on the indicator(s) used. Four main economic and geographic indicators have been used to measure small size – population, geographical area, GDP, and the terms of trade. Although no single criterion adequately classifies all small states, population is often used as it is highly correlated with territory size and GDP (ComSec and World Bank, 2000). In addition, it is often the best available measure of size in terms of information content and ease of conceptualisation (Read, 2001), and is currently used by several international development institutions. The choice of a population threshold to define small states is often a figure selected at the discretion of the user. Kuznets (1960) for example, used an upper limit of between 10 and 15 million people. The steady emergence of new and smaller states however, has resulted in the progressive lowering of this threshold to a commonly used upper limit of 1.5 million (ComSec and World Bank, 2000). Countries above this threshold like Jamaica, Lesotho and Papua New Guinea are also included in the small state category as they share many of the physical and economic characteristics of small states.

Using the number of small states defined by the Commonwealth Secretariat/World Bank Joint Task Force (2000), there are 49 developing small states worldwide. Small states are scattered across every geographic region but most countries fall into three main groups namely Africa (15), LAC (13) and East Asia and Pacific (14). Thirty-two out of the

49 small states are small island countries. Most small states rank in the list of medium human development, 15 are designated as least developed countries while 4 as highly indebted poor countries³⁶ (Liou and Ding, 2002).

Small states, particularly small island developing states (SIDS), have attracted a large amount of research due to common characteristics that impact on their development and determine how they are perceived by the international community. The most important vulnerabilities of SIDS are generally classified under five headings – small size, remoteness and insularity, disaster proneness, environmental fragility and other factors (Briguglio, 1995). Remoteness and insularity and disaster proneness are not of particular interest to this research and so will not be examined further.

3.2.1 Small size

The main features of small size include (Farrugia, 1993; Streeten, 1993; Briguglio, 1995; ComSec and World Bank, 2000):

- (a) limited natural resource endowments and high import content in relation to GDP (makes the economy highly dependent on foreign exchange);
- (b) small domestic markets and dependence on export markets;
- (c) limitations on import-substitution possibilities due to the small size of the domestic market (results in a protected economic environment);
- (d) dependence on a narrow range of products (small size restricts a country's ability to diversify its exports so that it is dependent on a very narrow range of goods and services);
- (e) limited ability to influence domestic prices (small states tend to be price-takers due to the relatively small volume of trade compared to the world markets in which they operate);
- (f) limited ability to exploit economies of scale (results in high per unit costs in production, high costs of infrastructural construction and utilisation per capita, high per unit costs of training specialised manpower and a high degree of dependence on imported technologies);
- (g) limitations on domestic competition (small size does not support a large number of firms producing a similar product which generates a tendency towards oligopolistic and monopolistic organisation); and

³⁶ Classification system used by the United Nations Development Programme to rank countries in terms of development progress and income.

- (h) problems of public administration (small manpower base from which to draw experienced and efficient administrators. Related problems include expensive government functions per capita and impartiality in public service due to familiarity and accessibility).

3.2.2 Environmental fragility

Environmental issues of importance to small states include (Briguglio, 1995; Khaka, 1998):

- (a) pressures arising from economic development and high population densities resulting in an increased demand for and stress on resources;
- (b) limited and fragile freshwater resources (small catchment areas and limited surface storage capacity result in heavy dependence on groundwater resources); and
- (c) fragile ecosystems (pollution caused by inadequate treatment and disposal of sewage can have long-lasting effects).

3.2.3 Other factors

Other important characteristics of small states include (Jalan, 1982; Collier and Dollar, 1999; ComSec and World Bank, 2000; Pelling and Uitto, 2001):

- (a) limited access to commercial borrowing (perceived as less attractive than larger states due to the smaller absolute size of financial transactions and as more risky due to greater economic vulnerability and volatility);
- (b) difficulty in attracting FDI as generally rated to be significantly more risky;
- (c) likely to face diseconomies of scale in developing an indigenous banking sector (dominance of foreign banks results in high costs of banking and financial intermediation. Range of services/products provided by banks also likely to be narrower than that available in larger countries);
- (d) heavy dependence on international development assistance and official aid to help finance development expenditure; and
- (e) heavy reliance on international trade and FDI to overcome inherent scale and resource limitations.

3.2.4 Consequences of being a small state

Most of the small states literature concentrates on the drawbacks of 'smallness'. There is however a growing view that small size might not be a disadvantage after all. Easterly and Kraay (2000) for example contend that small states are no different from large states and so should receive the same policy advice that large states do. After controlling for a range of factors, they find that small states have on average higher income and productivity levels per capita than large states and grow no more slowly than large states. While this may be true in some cases (especially for resource-rich countries like Bahrain and Trinidad and Tobago, countries offering offshore financial services such as the Caymans or countries with a strong tourism product such as Barbados and the Bahamas), very often this relative prosperity is built on fragile economic foundations which are highly vulnerable to resource depletion, changes in consumer taste, disruptions in world markets and natural disasters (Pelling and Uitto, 2001). As such, the general consensus of the theoretical and empirical literature is that small states are different from their larger counterparts and by virtue of their small size, face special challenges that can potentially affect their development and how they are perceived. Some of these challenges are presented below.

3.2.4.1 *Economic and financial*

The characteristics mentioned earlier have important economic and financial implications for small states. A narrow resource base and small domestic markets have negative implications for competition and limit local private sector capacity (ComSec and World Bank, 2000). Limited product/service diversification and heavy reliance on exports make small states vulnerable to changes in the external environment over which they have little if any influence. Even though access to global capital markets is important to compensate for adverse shocks and income volatility, empirical evidence indicates that private markets tend to see small states as inherently more risky than larger states so that spreads are higher and market access more difficult. Collier and Dollar (1999) for example find that controlling for factors such as human capital, aid and different policy measures, small states are perceived to be 28% more risky than larger states and that this risk perception affects actual FDI flows. Similarly, many small states are limited in their access to commercial borrowing and other financial flows due to high levels of indebtedness and high borrowing costs. While there are no major differences in the cost of monitoring loans made to small and large states, there are large differences in the absolute size of the underlying financial transaction making lending to small states less attractive (ComSec and World Bank, 2000). The higher cost of enforcing contracts,

information costs and country risk issues often result in small states facing higher spreads for their borrowing.

Limited freshwater resources, vulnerability to pollution, susceptibility to adverse climatic and other natural events, rapid urbanisation and pressures arising from economic development can have significant financial implications for water and sanitation service provision in small islands. With costs of raw water increasing by a factor of 2 to 3 each time a new source is developed (Briscoe and Garn, 1995), the costs of replacing polluted sources and/or developing new sources for system expansion can be prohibitive. To resolve limited water resource concerns, many small islands have had to adopt technologies such as rainwater harvesting, desalination, infiltration galleries, dual water distribution systems and wastewater reuse (SOPAC, 1998). Imported technologies like desalination which are expected to feature highly as future water supply options for small islands like Barbados where the desalination capacity exceeds 10-50% of the renewable groundwater resources (Bremere *et al.*, 2001), are particularly expensive water supply options as a major portion of their operational costs (e.g. electricity) require foreign capital.

3.2.4.2 *Institutional and socio-political*

Besides economic effects, small size impacts the way small states are governed and the type of institutions they have. In general, small states tend to have proportionately larger governments with highly centralised political and administrative systems usually incurring higher costs per capita compared to larger countries. Public sector wage bills in the Commonwealth Secretariat group of small countries for example, are considerably higher at 31% of GDP than in larger states which average 21% of GDP (ComSec and World Bank, 2000). Despite a tendency for big government, many small states suffer from limited institutional capacity due to limited human resources especially at the technical level. To lower per capita costs and extend resources, persons often act in multifunctional roles which also tends to weaken technical expertise (Farrugia, 1993). Like other countries, senior public officials in small states play a crucial role in the economic, social and political development of their countries. In small states however, senior public officials tend to be highly influential (i.e. they contribute significantly to the success or failure of policies adopted by their political bosses) due to their small numbers, demand for their technical expertise and their multifunctional duties and responsibilities (*Ibid.*).

Small states usually tend to develop closely integrated societies containing an intricate network of personal relationships (Farrugia, 1993). While this may enable easier communication, it can also disable policy-making and decision-implementing processes through personal intervention, especially of major stakeholders. In addition, it is also possible that these close-knit political arrangements and centralisation can lead to higher levels of corruption (Bräutigam and Woolcock, 2001) and greater opportunity for political interference. Social cohesion is often strong due to a common history and cultural identity. This can affect communal interactions with 'outsiders' who are viewed suspiciously as exploiters (Farrugia, 1993).

Finally, related to the issue of dependence on foreign technologies and limited technical resources is that of reliance on foreign experts for advice. Tisdell (1993) contends that small states are likely to rely more heavily on foreign experts for advice than large states which has the disadvantage in that such experts may have limited knowledge of local conditions and may not feel the same duty of care in giving advice as would a local person. As such, there may be a tendency for foreign countries providing advice to assign their least experienced and qualified advisers to small countries as postings to SIDS are frequently less favoured than those to larger countries (Ibid.).

3.3 Small country versus small project

The development literature recognises two main types of small projects – those in small countries and those being developed in small political units of larger countries such as local communities, municipalities, towns, cities and regions³⁷. The typical characteristics of projects that are small because of country size are (World Bank, 1999):

- (a) **remoteness and insularity** – SIDS that are located far from major markets (e.g. Mauritius, Maldives and many Pacific islands) making it more expensive for investors to transport needed materials;
- (b) **limited institutional capacity** – small states find it more difficult to meet the fixed costs associated with developing institutions, thereby increasing the risk to investors (e.g. through the lack of a regulatory framework); and
- (c) **limited diversification of production** – small states often have a small resource base and industrial sector concentrated in a few areas, thereby increasing the risk to investors of any adverse market conditions.

³⁷ The criterion used to define project/system size varies. Small systems can range from systems serving less than 3,300 persons to systems serving less than 10,000 persons (Clark *et al.*, 1994; Okun, 1996).

Projects that are small because they are undertaken at a sub-national level face similar problems as those in small countries, but also have their own specific characteristics which include (World Bank, 1999):

- (a) the potential for support from a larger government entity; and
- (b) more restrictions as a result of national policy and law.

In addressing size in water and sanitation, much of the literature concentrates on small projects/systems undertaken/operated at the sub-national level due to the fragmented nature of the sector. Given that both types of small projects face similar problems and the prevalence of small projects undertaken at the sub-national level in the literature, the ensuing discussion on size-related issues in the sector relies heavily on the concept of a small project/system at the sub-national level.

3.4 The significance of small size in attracting private investment

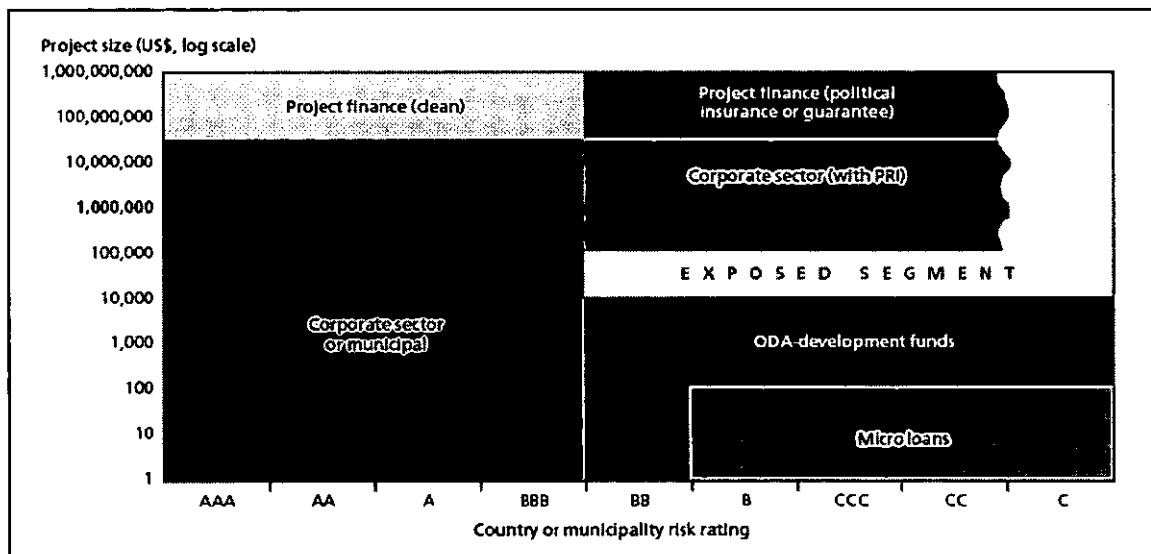
The water and sanitation sector is highly fragmented as the product is expensive to transport and cheap to store thereby making it more of a local service. In the USA for example, 31% of public water systems are community water systems serving 91% of the population (Clark *et al.*, 1994). In Spain, 86% of municipalities serve less than 5,000 persons (Amil and Serra, 1996). The local nature of these services means that investments tend to be smaller than in other more centralised infrastructure sectors. Even where large investments are expected, they are spread out over time (to keep pace with growth in demand) so that the sector is characterised by small incremental investments. The Manila concessions for example, are expected to invest about US\$5 billion over 30 years but the initial round of financing did not exceed US\$350 million (Haarmeyer and Mody, 1998c). Decentralisation also means that facilities are often under the control of local government entities, many of which have weak management structures, are not creditworthy and financially inexperienced (Haarmeyer and Mody, 1997; 1998a).

These features have important implications for financing. Many local governments and water utilities are not considered 'investment grade'³⁸ which limits lenders' willingness to participate in bond financing or syndications. Banks tend to have a natural bias against small projects due to proportionately higher transaction costs and reduced arrangement

³⁸ Investment grade ratings assigned by credit rating agencies such as Standard & Poor's and Moody's assess the relative likelihood that a borrower will default on its obligations. Investment grade rating categories can range from high quality ratings (AAA/Aaa) to below investment grade quality (less than BBB/Baa2) (Cantor and Packer, 1995; Winpenny, 2003).

fees (Haarmeyer and Mody, 1998a). Because of their size, water projects tend to be too small to bear the overhead costs of project finance but too large to be funded from aid (Winpenny, 2003). As mentioned in Section 2.2.2.1, project financing, although the preferred method of attracting private investors to BOT-type projects, is an intensive, time-consuming and expensive financing option. Project finance is generally available subject to a minimum size (usually US\$50-100 million) which depends on the bank and the project. Below US\$50 million, returns to scale tend to make project financing uneconomical so that smaller projects are generally funded by government or the corporate sector using balance sheet financing. Local government entities and/or water utilities with below investment grade ratings usually require the support of credit enhancement mechanisms such as political insurance or sovereign guarantees to make projects financially viable. Figure 3.1 illustrates the relationship between investment grade rating and project size and the implications for financing options. For sub-investment grade locations (less than BBB), project sizes between US\$10,000-\$100,000 are considered too small for the corporate sector (Winpenny, 2003). Projects that fall within the 'exposed segment' generally do not get financed. With the majority of prospective projects falling within the exposed segment (US\$10-50 million is a common size for water projects), many water projects are therefore not considered bankable (Ibid.).

Figure 3.1 Water projects: Segmentation and financing options



Source: Winpenny (2003)

Small size also has important implications for regulatory and related institutional requirements necessary to support private investment in the sector. Because of limited human resources and considerable fixed costs, small countries generally have difficulty

recruiting and retaining qualified persons to staff regulatory institutions, manage the utility and provide the policy capacity in the relevant Ministries (Stern, 2000). Buckle (1999) for example, finds that it is difficult to provide a fully effective decision-making regulatory capacity (rather than advisory or recommendatory) with less than 30–40 staff. Genuine separation of powers can also become virtually impossible due to the regular interaction of the political, economic and social elite (Stern, 2000). With the success of regulatory institutions dependent to a considerable degree on creating autonomous institutions that are sustainable and possess an effective regulatory memory, and the importance of regulatory capability to the enabling environment paradigm, small countries potentially face a serious problem of establishing the requisite regulatory environment to attract private investment. A variety of approaches including advisers (consultants), regulation by contract, multi-utility regulation and regulation by a multi-national regulatory agency³⁹ have been adopted with varying levels of success to address problems related to providing and funding specialist regulatory staff in many small countries (Stern, 2000).

The validity of a size-investment relationship is substantiated by the private investment literature. Unfortunately, the World Bank's private investment database lacks good coverage of small-scale projects due to poor reporting of these activities (Izaguirre and Hunt, 2005). What it does report however, is the investment activity bias in large urban cities especially in Latin America and East Asia due to investors' fondness for countries with large economies and populations and high levels of urbanisation. In Latin America for example, 85% of private investment activity between 1990 and 2004 was attributed to Argentina, Brazil, Chile and Mexico (World Bank, 2005). In East Asia, 90% of this activity over the same period took place in China, Malaysia and the Philippines. The fact that these countries account for 62% (LAC) and 70% (East Asia) of their regional populations and 66% (LAC) and 65% (East Asia) of their regions' urban populations (United Nations, 2004) is significant and supports the claim that private investors, particularly large international investors are more attracted to large-scale investments than small-scale ones.

3.5 Overcoming the disadvantage of small size

To address size-related and scale-related issues in water and sanitation, several approaches have been adopted including:

³⁹ For example, the establishment of the Eastern Caribbean Telecommunications Authority (ECTEL) by the Organisation of Eastern Caribbean States (Dominica, Grenada, St. Kitts & Nevis, St. Lucia and St. Vincent & the Grenadines) to regulate the telecommunications sector in the Eastern Caribbean.

- (a) aggregating or bundling utilities and/or projects;
- (b) the formation of multi-utilities; and
- (c) regional cooperation.

Regional cooperation is of special interest to this research because of the Caribbean's history, reputation and relative success in using regional cooperation as a strategic response to overcome size constraints (see Section 5.5). Aggregation and multi-utilities are however briefly discussed as they have specific applications to water and sanitation and highlight various size-related concepts.

3.5.1 Aggregating or bundling utilities and/or projects

Aggregation is the grouping of several municipalities into a single administrative structure for the provision of a particular service or function (ERM *et al.*, 2005). Aggregated structures generally vary by scale where two or more neighbouring municipalities combine, by scope to provide a range of related services or by process (voluntary based on mutual interests or imposed by government). The main driver for aggregation is usually the potential to realise economies of scale⁴⁰. Other drivers relevant to this research include access to finance and PSP. These are briefly discussed below.

3.5.1.1 *Aggregation to increase efficiency through economies of scale*

For water supply, the conventional wisdom supported by empirical research has been that the larger the quantity of water produced and the more people served, the smaller the unit cost of production. Katko (1988) for example, finds that scale economies exist for Swedish water and sewage systems serving over 25,000 persons. Tynan and Kingdom (2005) find strong evidence of economies of scale based on utility size in Africa, Vietnam, Peru and the United States. Utilities, particularly those serving less than 125,000 people were found to be able to reduce per customer operating costs by increasing their scale of operation. Besides the more traditionally cited sources of scale economies in the water delivery network, storage and treatment facilities, scale economies also apply to other areas such as professional expertise and procurement. Although the range over which these economies persist is of considerable disagreement

⁴⁰ Economies of scale refer to an economic property of production that affects cost if the quantity of all input factors is increased by some amount. Economies of scale tend to occur in industries with high capital costs in which those costs can be distributed across a large number of units of production (both in absolute terms and especially, relative to the size of the market).

in the literature (Dajani and Gemmell, 1973; Kim and Clark, 1988), there is consensus that small systems suffer from poor economies and poor efficiencies of scale.

The need to improve the efficiency of service provision by generating economies of scale to share total production costs over a larger demand base and reduce the unit costs of production has been the main factor driving the aggregation of water and sanitation providers. In the USA for example, 'regionalisation' through federal legislation was founded on the grounds of the effect of economies of scale on water supply technology (Clark, 1979). In England and Wales, the 1973 Water Act mandated the aggregation of water and sanitation services which saw 200 public water supply undertakers and 1,400 sewerage authorities consolidated into 10 regional water authorities (Lynk, 1993). Small town water services are often inefficient because they are too small to access certain services or cannot realise the full benefit of the infrastructure at their disposal. Through aggregation, utilities are able to reduce overhead and operational costs and combine services and revenue to form a critical mass capable of efficiently supporting the full range of utility functions.

3.5.1.2 *Aggregation to access finance and introduce PSP*

Besides improving service efficiency, aggregation has also been used to access finance and introduce PSP. The Hungarian government for example, has determined a minimum loan size and provides a bonus to municipalities applying as a group versus individual municipalities (ERM *et al.*, 2005). In Brazil, although water and sanitation services are by constitution a municipal responsibility, a number of state water companies were created in the 1970s to accelerate the pace of investment to develop access to services (Ibid.). The basis for aggregation to access finance has been that it is more efficient to provide a longer-term loan to a single entity than smaller loans to a number of entities. Pooling projects for financing also makes it more economical for credit rating agencies to evaluate credit risks due to the importance of the size and composition of the borrower pool (Haarmeyer and Mody, 1998b). Smaller pools (20-100 borrowers) generally face more stringent credit requirements from lenders than larger pools that are able to access finance at lower interest rates (Ibid.). Aggregation in this context has been achieved mainly by (Haarmeyer and Mody, 1998c):

- (a) bundling water and sanitation projects to form economically viable entities than can be attractive to investors (e.g. Malaysia bundled its entire sewerage system under one concession);

- (b) consolidating equity funds to leverage sponsors' equity and attract a larger group of investors; and
- (c) increasing balance sheet financing by consolidating the ownership and operation of water utilities.

Aggregation has also been used to introduce PSP. In the Philippines for example, PSP acted as an important driver in the creation of water districts (ERM *et al.*, 2005). In England and Wales, the creation of regional authorities provided an attractive demand base for the privatisation of the sector (Ibid.). Aggregation in this context has been achieved by (ERM *et al.*, 2005):

- (a) consolidating well-performing utilities with less successful entities to prevent 'cherry picking' by private operators and to increase investments in areas that otherwise would be undesirable; and
- (b) creating a larger entity out of several smaller entities which would be unable to attract private investment by themselves because of their size.

3.5.2 Multi-utilities

Internationally, the term 'multi-utility' is generally associated with big multinational companies active in more than one utility sector in national and international markets. In this context, the main drivers for operating as a global multi-utility include (Sommer, 2001a; Finger and Allouche, 2002):

- (a) reducing costs through economies of scale in areas such as project development and implementation and administration;
- (b) entering and developing new markets through strategic alliances with existing companies⁴¹ (establishing a local presence);
- (c) increasing market share and market concentration; and
- (d) diversifying risks by operating in several sectors/markets.

The more traditional concept of a multi-utility however, is that of multi-service provision at the municipal or regional level to offset disadvantages from insufficient size of the customer base in smaller and/or more remote communities. In Germany for example, 900 municipal multi-utilities offer electricity, gas, water and district heating to their

⁴¹ Suez Lyonnaise des Eaux for example, through its subsidiary Aguas de Barcelona was able to gain rapid market access in Latin America (e.g. Santiago in Chile; Buenos Aires, Cordoba and Santa Fe in Argentina; La Paz and El Alto in Bolivia; Limeira in Brazil; and Bogota in Colombia).

respective municipalities (Rothenberger, 2002). In Gabon, electricity and water are provided to 39 and 32 centres respectively with some of these centres serving as little as 1,000 inhabitants (Trémolet, 2002). Advantages of multi-utility operation include (Sommer, 2001a; Rothenberger, 2003):

- (a) reduced costs through economies of scale and scope⁴² involving physical assets, customer service functions, technical expertise and administration. British gas and electricity utilities for example report savings of up to 10% while German multi-utilities estimate a 25% reduction in staff costs and 33% reduction in meter reading, billing and collection costs (Rothenberger, 2002);
- (b) the opportunity to cross-subsidise less profitable utility operations such as water and sanitation with more viable operations. In Gabon for example, even though water accounts for only 15% of the multi-utility's revenue, it receives 60% of pledged investments (Trémolet, 2002);
- (c) improvement in willingness-to-pay for some services (e.g. water and sanitation) due to credible threats to withhold other 'priority' services such as telecommunications and electricity that are easy to disconnect;
- (d) the opportunity to extend different services to smaller and/or more remote communities due to the use of shared networks and assets; and
- (e) the provision of a 'one-stop shop' to customers – able to provide integrated full service packages.

Several countries have adopted a multi-utility strategy to attract private investment by removing barriers to competitive entry, lowering payment risks and lowering political risks (Sommer, 2001b). The opportunity to leverage existing distribution networks, customer bases and other assets already in place to provide one utility service can reduce barriers to entry of companies interested in providing additional utility services in the same market. Electric utilities for example, have the potential to allow voice and data transmission directly over the electric power grid. Firms offering several services also have greater leverage in collecting revenue and greater political clout and so are less vulnerable to such risks (Ibid.).

⁴² Economies of scope arise when it is less costly to combine two or more outputs from the same organisation than to produce them separately. In utility operation, economies of scope are induced by the common production of two different goods such as joint pipe laying for gas and water or centralised metering and billing.

3.5.3 Regional cooperation

The term 'regional'⁴³ cooperation' is more frequently associated with political and economic regional integration in the form of free trade areas, custom unions, common markets and complete economic and political unions. In this context, regional integration frameworks improve a region's investment climate by increasing the geographical scope and size of markets, enabling policy coordination and harmonisation and reducing business transaction costs (UNCTAD, 1998; Lim, 2001). The promise of regional cooperation however as a means by which countries can jointly affect the dynamics of their development, goes beyond trade and politics and has found favour as a strategic response to non-economic and non-political issues of regional interest especially where there is some resource constraint at the national level. Regional cooperation to realise the efficient operation of common services and activities (formally referred to as 'functional cooperation') can occur independently of the formal integration process and usually involves the adjustment of policies and activities between countries to achieve common goals (Samuel, 1990; Bryan and Bryan, 1999). The range of issues for which functional regional cooperation has been applied spans various areas of public policy including education, the environment, disaster management, culture and health. It is this form of regional cooperation that is of import to this research.

According to Smith (1993), the process of regional cooperation can differ in terms of:

- (a) **scope** – the range of issues and transactions falling under the cooperation scheme;
- (b) **depth** – the extent of policy harmonisation or coordination;
- (c) **institutionalisation** – the degree to which accommodation and decision-making takes place in organised and predictable ways; and
- (d) **centralisation** – the extent to which there exists a supra-national decision-making apparatus to establish common policy and to resolve disputes.

The 'scope' for regional cooperation is of interest to this research because of the intended focus on the application of regional cooperation in the water and sanitation sector to help foster an environment conducive to private investment, especially where small size is a disadvantage to attracting this type of investment.

⁴³ For the purposes of this research, 'region' refers to a geographical area comprised of neighbouring countries that are socially, economically or politically interdependent (e.g. the European Union and the Caribbean).

3.5.3.1 *Advantages and disadvantages of regional cooperation*

The use of a regional approach to develop strategic responses to issues of common interest has several advantages which include (Tutangata and Power, 2002):

- (a) overcoming capacity/capability constraints that arise in small populations;
- (b) achieving economies of scale in the provision of centralised services;
- (c) sharing of investment and transaction costs for capital intensive activities;
- (d) pooling resources to promote and attract external funding;
- (e) better formulation of policies or activities that have 'spill-over' effects that create their own economies of scale; and
- (f) providing a stronger voice in the global community.

More specifically, a coordinated regional strategy (SPFC, 2000):

- (a) provides a more meaningful role in setting regional priorities and programmes;
- (b) empowers member countries to determine their own priorities and programmes;
- (c) improves the utilisation of limited regional resources;
- (d) enhances the delivery and impact of regional initiatives; and
- (e) addresses issues of wasteful duplication and overlap in regional programmes and among regional organisations.

Despite these benefits, the regional integration literature highlights a number of impediments at regional and national levels. Obstacles include waning political will, changes in integration/cooperation strategy, national rivalries and technical impediments to the implementation and enforcement of common policies (Vaitsos, 1978; Bryan and Bryan, 1999). Problems can also arise if national interests are advanced over regional ones, or national programmes do not reflect the regional agenda. Lewis (2002) finds this especially relevant if member countries are at different levels of development and feel 'hampered' by the requirements of 'weaker' countries. In the absence of corrective mechanisms, the benefits of regional cooperation can be asymmetrically distributed among partners with some partners gaining more from cooperation. Weak institutions and/or personnel and unstable budgetary support can also be problematic. Montero (2002) in his analysis of successful and unsuccessful regional cooperation programmes indicates some basic principles for sustained regional cooperation. These include:

- (a) the existence of a common purpose among members;
- (b) significant national priority in relation to the common purpose to ensure the necessary national support and follow-up;
- (c) the availability of a minimum human and material resources capacity at the national level or the necessary political will to develop and put that capacity into the national and regional interest;
- (d) the identification of a recognised individual and/or institutional leadership to guide and develop the programme;
- (e) the development of a promoting, implementing and coordinating national and regional institution or body; and
- (f) securing long-term, sustainable financial contributions.

Small countries, particularly SIDS have a strong tradition of regional cooperation because of their geographical proximity to each other and the similarity of the issues that they face. Various international fora such as the Barbados Programme of Action for SIDS and the Commonwealth Secretariat/World Bank Joint Task Force on small states advocate the increased use of regional organisations and programmes geared towards sustainable development. As mentioned earlier, a range of regional programmes and initiatives exist. The application of a regional cooperation framework to the water and sanitation sector is examined below.

3.5.3.2 *Regional cooperation in water and sanitation*

Deregulation, privatisation and technological advancement are credited with the emergence of complex integration structures in the energy and telecommunications sectors (Zhou, 2003). For energy, the nature of regional cooperation is guided by specific supply and demand needs, differences in energy resource endowments and size of local markets (Hira and Amaya, 2003). In telecommunications, numerous cooperation efforts evolve because of the high investment priority placed on the sector for the realisation of national and regional socio-economic goals (Dymond, 1987). Compared to both these sectors, water and sanitation have experienced modest opportunities for regional cooperation as the sector has not experienced major technological breakdowns or come close to exploiting economies of scale in management and operations as other utilities (Seppälä *et al.*, 2001). As a result, separation into production and transmission components as is done for developing energy markets is rare and not considered cost-effective, thereby limiting the range of effective regional cooperation initiatives.

The driving force for regional cooperation in the water sector has primarily been the management of shared and/or limited water resources. Various treaties, commissions and agreements outline the extent and intensity of cooperation and regulate the joint utilisation of approximately 261 international watersheds and numerous transboundary aquifers which cover about one-half of the earth's land surface and affect 40% of its population (Wolf *et al.*, 1999). Regional cooperation is also traditional in the water-electricity co-generation industries of many Middle Eastern and North African countries to alleviate freshwater shortages (Shamloul, 2002). More recently, many developing countries have begun to promote regional cooperation to address institutional capacity, governance and investment constraints in the sector. The Asian and Pacific region for example is renowned for various regional initiatives to formulate and implement strategies and policies that accord appropriate priority to water and sanitation infrastructure development and management. High on the agenda is the possible role of regional cooperation initiatives to assist in mobilising the required finances for the sector. Initiatives in the region which show the scope for regional cooperation in the sector include (SPFC, 2000; Zieroth, 2001; PWA, 2002; UNESCAP, 2006):

- (a) strengthening and reforming institutions in the sector (e.g. the establishment of a 'utility' section in the South Pacific Applied Geoscience Commission⁴⁴ to specifically address the needs of the sector);
- (b) the creation of an investment forum to help countries assess their needs, exchange experiences, raise the profile of the sector and facilitate access to potential sources of technical assistance and finance;
- (c) pooling of funds available within the region in search of better yields (e.g. expanding the role of the Asian Development Bank in financing regional infrastructure; expanding the Asian Bond Fund and making it infrastructure financing-friendly; setting up new institutions such as an Asian investment bank for cross-border financial intermediation; and establishing/reinvigorating sub-regional banks/funds);
- (d) the establishment of a regional regulatory framework to overcome capacity constraints, achieve economies of scale and attract private investment through improved credibility;
- (e) the establishment of financially viable utilities that result in improved performance by developing appropriate financial and cost recovery policies, tariffs, billing and collection systems, financial and operating systems;

⁴⁴ An independent, inter-governmental regional organisation that provides technical assistance, strategic planning and policy development support to Pacific Island countries in the field of geosciences.

- (f) collaboration on certain projects across national boundaries that require cooperation and coordination among one or more countries; and
- (g) harmonising regional standards and developing best practice guidelines.

In the context of introducing PSP into the provision of water and sanitation services, Jha (2005) suggests a regional contract for these services whereby a single contract is developed to provide these services to more than one country or a single investor procures compatible contracts in each country. Such initiatives are expected to:

- (a) reduce the costs of business development and transaction preparation by spreading them over a larger market; and
- (b) offer international investors more visibility so that they will be eager to win a large regional contract to supplement their credentials.

3.6 Emerging issues

The argument can be made that many of the issues identified as drawbacks of smallness such as limited institutional capacity, limited access to commercial borrowing and increased political (stakeholder) interference are not unique to small states. In fact, the review conducted in chapter 2 (informed predominantly by private investment experiences in large urban centres), highlighted similar issues as constraints to creating an environment conducive to private investment in the sector. Where small states differ and size becomes important is in small states' inherent and natural capacity to effectively address these issues to their advantage. Small size also impacts investors' perceptions. Creating an environment conducive to private investment in water and sanitation can overwhelm the resources of small economies due to the institutional, financial and social costs involved. With this in mind, should small states subscribe to the international best practice recommendations on how to attract private investment to their water and sanitation sectors? What modifications if any are necessary to the enabling environment paradigm when dealing with small states? These issues are not adequately addressed in the literature apart from general statements affirming that determinants for attracting private investment to the sector are applicable to all countries regardless of size. The extent to which these determinants apply to small states and the extent to which they can be directly translated into best practice for small states are unclear.

Strategies to overcome size constraints and help create an environment conducive to private investment in the sector are generally concerned with achieving economies of scale and scope. Aggregation and multi-utilities are relatively established means by

which the disadvantages of small size can be alleviated by reducing costs, combining services, increasing market share and diversifying risks. Regional cooperation on the other hand is less frequently used as a size response mechanism in the sector due to its limited scope and application to water and sanitation issues. Besides recent use in the Asian and Pacific region, the literature fails to adequately address the potential for regional cooperation to improve a country's or region's environment for private investment in its water and sanitation sector. This potential is of interest to this research.

3.7 Chapter summary

This chapter introduced the concept of small size and its impact on attracting private investment to the water and sanitation sector. Approaches to address size-related and scale-related issues in water and sanitation were also presented. Building on issues highlighted in the previous review chapter regarding the relative nature of determinants to attract private investment to water and sanitation, this chapter narrowed the research focus to look at the implications of small size on the enabling environment paradigm and the potential of responses such as regional cooperation to address possible constraints.

CHAPTER 4 RESEARCH DESIGN AND METHODOLOGY

4.1 Chapter introduction

This chapter presents the research design and methodology adopted to answer research questions formulated from the theoretical frameworks developed in the previous review chapters. Particular attention is given to the development of research instruments, sources of data and data collection strategy. The chapter is organised into eight sections. Section one presents the research objectives and research questions, followed by a discussion of the research design. Data collection instruments and procedures are then presented in sections three, four and five. Sections six and seven consider ethical issues and research limitations respectively. The chapter concludes with some preliminary data analysis.

4.2 Research objective and research questions

Despite the fall-off of private investment in water and sanitation, significant investment needs and budgetary constraints still render it a viable financing option for the sector. To regain investor confidence and stimulate interest in the sector, it is therefore necessary to understand the drivers for this type of investment and create conditions conducive to its use. What are the drivers and deterrents to private investment in the Caribbean water and sanitation sector? Are the necessary systems in place to attract private investment to the sector? Does the Caribbean's small size affect the effectiveness of these systems to attract private investment? These are just some of the questions fundamental to understanding the potential for private investment in the Caribbean water and sanitation sector and the framework necessary to facilitate this investment.

Guided by issues arising from the review of literature, a research hypothesis, a primary research question and four secondary research questions were formulated to investigate the phenomenon of private investment in the Caribbean water and sanitation sector as discussed below and presented schematically in Figure 4.1.

4.2.1 Primary research question

How can private investment be attracted to the Caribbean water and sanitation sector?

The objective of this question is to develop a framework to attract private investment to the Caribbean water and sanitation sector.

4.2.2 Secondary research questions

What is the current state of the operating environment and how conducive is it to private investment?

The objective of this question is to examine the macroeconomic, policy, legal and regulatory frameworks within which the water and sanitation sector operates and determine the extent to which these encourage (discourage) or have the potential to encourage (discourage) private investment.

What are the main determinants or criteria for private investment in the water and sanitation sector?

The objective of this question is to identify factors that influence the private investment decision in the sector. The question intends to assess investors' criteria for investment and examine water sector officials' level of awareness of factors important to private investors.

What is the scope for and strategy to attract private investment to the water and sanitation sector?

The objective of this question is to identify appropriate forms of private investment and ways to encourage this investment given the local context and conditions.

To what extent is size an issue and what is the scope for addressing small size as a constraint to attracting private investment?

The objective of this question is to examine the impact of small size on the investment potential of the Caribbean water and sanitation sector and to determine what can be done to mitigate against likely disadvantages of small size.

4.2.3 Research hypothesis

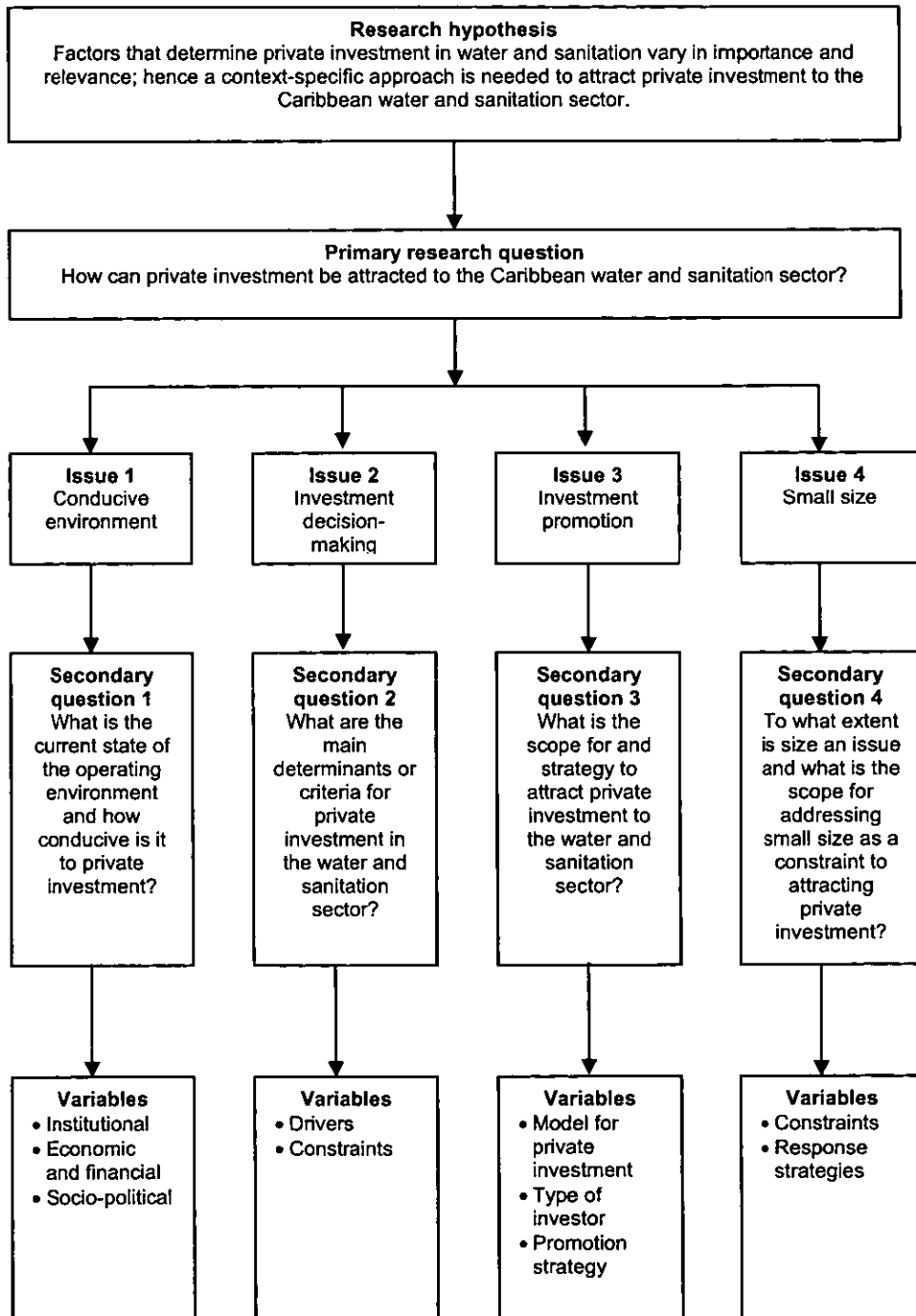
The guiding hypothesis for the research is:

Factors that determine private investment in water and sanitation vary in importance and relevance from location to location; hence a context-specific

approach is needed to attract private investment to the Caribbean water and sanitation sector.

The basis for the research hypothesis stems from the fact that investors' criteria for investment vary and there is no single blueprint for investment promotion as strategies to attract private investment need to adapt to the prevailing investment climate.

Figure 4.1 Schematic of research hypothesis and questions



4.3 Research design

The research design is a blueprint of research that links the data to be collected to a study's initial research questions and ultimately to its conclusions. Several factors govern the choice of research strategy. Yin (2003) offers a framework for deciding on an appropriate research strategy which considers the type of research questions, the extent of control over behavioural events and the degree of focus on contemporary as opposed to historical events (Table 4.1). Resources such as the budget available to the researcher, time available for data collection and the skills of the researcher also affect the research strategy (Remenyi *et al.*, 1998).

Table 4.1 Research design selection criteria

Research strategy	Form of research question	Requires control over behavioural events?	Focuses on contemporary events?
Case study	how, why	no	yes
Survey	who, what, where, how many, how much	no	yes
Archival analysis	who, what, where, how many, how much	no	yes/no
History	how, why	no	no
Experiment	how, why	yes	yes

Source: Yin (2003)

Most important is the type of research question. The research questions presented in Section 4.2 are 'how' and 'what' questions intended to be both descriptive and exploratory in nature. Private investment in water and sanitation is a contemporary phenomenon that cannot be manipulated by the researcher. Using Yin's research design selection criteria, these conditions favour a case study or survey strategy. Both strategies are supported by the extant literature (see Section 2.3.2). Lim (2001) speaks of investor surveys and in-depth case studies as common sources for empirical work on investment determinants. Privatisation studies generally adopt a case study approach which allows researchers to observe the phenomenon within its real-life context (Larimo, 1995). According to Braadbaart (2005), limitations inherent in water privatisation research such as restricted access to information on privatisation experiences are best resolved by focusing on single cases. Case studies are generally used where no single perspective can provide a full account or explanation of the research issue, and where understanding needs to be holistic, comprehensive and contextualised (Ritchie and Lewis, 2003). The case study as a research strategy is an all encompassing method using a variety of qualitative and quantitative data collection techniques to focus an enquiry around a specific instance or event (Yin, 2003). The use of multiple sources of evidence (including surveys) is one of the strengths of the case study strategy as it allows the investigator to address a broader range of issues. This multidimensional

approach is well-suited for the research to adequately address the research questions and issues.

4.3.1 Case study research strategy

Yin (2003) identifies five components of a case study research strategy – a study's questions, its propositions, its unit(s) of analysis, the logic linking the data to the propositions and the criteria for interpreting the findings. Research questions and propositions have already been addressed (Section 4.2). The key issue in selecting and making decisions about the appropriate unit(s) of analysis is to decide what it is you want to be able to say something about at the end of the study (Patton, 2002). The focus for data collection was:

- (a) the operating environment for private investment in the water and sanitation sector;
- (b) investors' criteria for investment in the sector;
- (c) water sector officials' awareness of investors' criteria for investment;
- (d) investors' and water sector officials' perceptions of the scope and strategy for private investment in the sector; and
- (e) investors' and water sector officials' perceptions of the impact of small size on attracting private investment and likely response strategies.

The 'case' was therefore the primary unit of analysis while private investors, water sector officials and documents were sub-units of analysis or more simply put, data sources for the research. More specifically, given the strategic nature of the research questions and the fact that investment decision-making is invariably a top management exercise (see Section 2.3.3.1), the research focused on middle to top-level managers as informants for the research. Linking data to propositions and the criteria for interpreting the findings represent the data analysis steps in case study research (Yin, 2003). Salient observations, themes and patterns emerging from the data were then examined within the context of the theoretical framework developed during the review of literature.

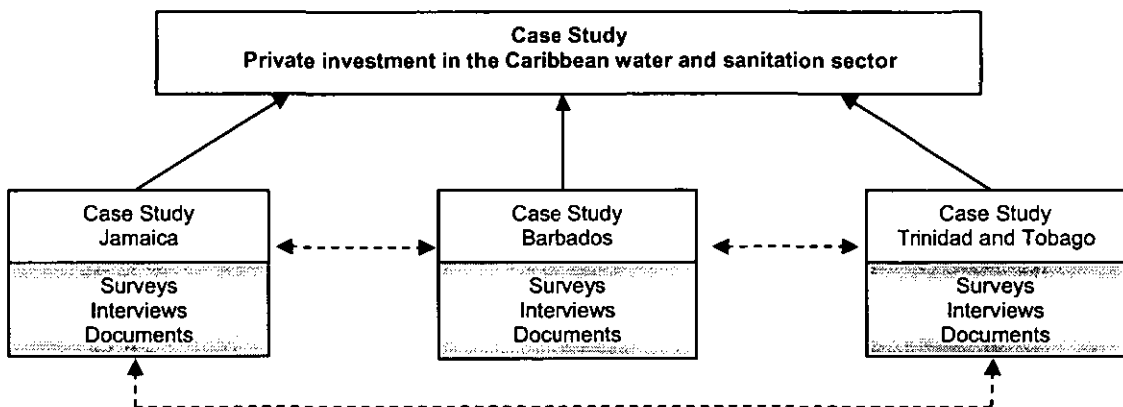
The particular focus of the research on the phenomenon of private investment in the water and sanitation sectors in Jamaica, Barbados and Trinidad and Tobago⁴⁵ favoured a multiple-case design. The logic underlying the use of multiple-case studies is to choose cases that either predict similar results (literal replication) or produce contrasting results

⁴⁵ Further references to Trinidad and Tobago will be shortened to Trinidad.

but for predictable reasons (theoretical replication) (Yin, 2003). The three case locations were selected for various reasons. Most important was the diversity of private investment operational models across locations – private utilities in Jamaica, BOTs in Barbados and Trinidad and a management contract in Trinidad. The case locations were also known to be at different stages of sectoral development. Examining different forms of the phenomenon in different environments was therefore expected to enrich the research and allow for better generalisation of the findings. Accessibility, familiarity and data availability were also important considerations during case selection. As pointed out by Braadbaart (2005), access to information on water privatisation experiences in developing countries is generally restricted as details of contract preparation and negotiation are often shrouded in secrecy and persons involved are usually close-lipped. Aware of these challenges, the cases were chosen on the basis that the researcher had established a rapport with likely informants and document gatekeepers through previous work experience and professional association, who would be more likely to open-up and be more forthcoming with information than persons in an unfamiliar environment. The researcher was also aware of problems of inadequate data and limited human resources in some Caribbean islands. These problems were not expected to be significant in the case locations as they represented the largest countries in the Caribbean with longstanding structured institutions and procedures.

The use of more than one unit of analysis resulted in embedded or nested case studies within the overall primary case approach. Using Yin's classification, the emerging case study strategy design was a multiple-case (embedded) design (Figure 4.2).

Figure 4.2 Embedded multiple-case study strategy



Three main sources of evidence were used within the case study framework to answer the research questions – surveys, interviews and documents (Table 4.2). These will be discussed in turn in Section 4.4.

Table 4.2 Data collection techniques used in the research

Research question	Data collection technique
What is the current state of the operating environment and how conducive is it to private investment?	Document review Semi-structured interview
What are the main determinants or criteria for private investment in the water and sanitation sector?	Questionnaire survey Semi-structured interview
What is the scope for and strategy to attract private investment to the water and sanitation sector?	Questionnaire survey Semi-structured interview
To what extent is size an issue and what is the scope for addressing small size as a constraint to attracting private investment?	Questionnaire survey Semi-structured interview

4.3.2 Survey research strategy

A survey research strategy was adopted outside of the case study framework to access data sources beyond the case locations. Using a questionnaire survey technique, this research design focused on the investment criteria of international private investors in the utilities sector and Caribbean water utility managers' awareness of these investment criteria, perceptions of the impact of small size on attracting private investment and the scope for regional cooperation to address size constraints.

4.3.3 Validity and reliability

The quality of a research design can be judged according to four logical tests (Yin, 2003):

- (a) construct validity – the extent to which correct operational measures are established for the concepts being studied;
- (b) internal validity – the extent to which a causal relationship can be established whereby certain conditions are shown to lead to other conditions;
- (c) external validity – the extent to which a study's findings can be generalised; and
- (d) reliability – the extent to which the operations of a study can be repeated with the same results.

The use of multiple sources of evidence is one of the strengths of the case study research strategy, the most important advantage being the development of converging

lines of enquiry (Yin, 2003). This process of 'triangulation' is based on the premise that no single method, data source, evaluator or theoretical interpretation of data can adequately address a phenomenon. The approach to and consideration of research design, instrument development and administration and subsequent data analysis was undertaken with a view to maximising validity and reliability throughout the research process. Validity within the case study framework for example, was obtained by interviewing where possible more than one expert informant to ascertain the same information and supplementing this data with documentary evidence. Attention to question wording and context during instrument development and pilot testing of the instrument(s) by a panel of experts ensured that the instrument(s) addressed the appropriate concepts. Interviews were administered using an interview guide and transcribed verbatim by the researcher to ensure reliability and consistency. Systematic sampling for survey participation from up-to-date sample frames was undertaken to facilitate representational generalisation. A case study database was maintained and case reports presented with frequent referencing of data sources. These and other tactics employed in the research to maximise validity and reliability are detailed in subsequent sections.

4.4 Data collection techniques

4.4.1 Questionnaire surveys

A survey is a system for collecting information from or about people to describe, compare or explain their knowledge, attitudes and behaviour (Fink, 2003). The survey questionnaire or instrument is the tool used to obtain this information in a structured format through the use of careful question construction and measurement of key variables central to the research. Survey questions are either factual, designed to elicit background information on the respondent for classification purposes or subjective, designed to measure respondents' beliefs, attitudes, preferences or opinions on the topic under investigation. The range and intensity of these subjective experiences are measured using rating scales which place each respondent on an attitudinal dimension or continuum.

The main types of survey instruments include self-administered questionnaires, interviews, content analysis of records and structured observation (Oppenheim, 1992; Fink, 2003). The following sections concentrate on self-administered questionnaires, the development and administration of which was guided by the methods literature (Moser and Kalton, 1971; Oppenheim, 1992; Frankfort-Nachmias and Nachmias, 1997; Fink,

2003). This survey method was chosen primarily because of its ability to reach a large number of respondents in a timely and cost-effective manner.

4.4.1.1 *Survey instrument development*

Three sets of self-administered questionnaires were used to obtain an overview of the attitudes, perceptions and expectations of three sets of respondents to private investment decision-making in the water and sanitation sector (Appendix 1). These were:

- (a) **Survey A** – Survey of local financial institutions on investment decision-making in the water and sanitation sector administered to local financial institutions in each case location;
- (b) **Survey B** – Survey of locational determinants and investment decision-making in the utilities sector administered to international private investors in the utilities sector; and
- (c) **Survey C** – Survey of locational determinants and the potential for regional cooperation in the water and sanitation sector administered to Caribbean water utility managers.

Survey A was undertaken within the case study framework to gauge the interest of local financial institutions to investing in the water and sanitation sector. Attitudinal questions probed respondents' perception of the local water and sanitation utility with the intention of developing a measurable index of investors' perception as a determinant of investment in the sector. The survey also identified the key priorities for investors by focusing on incentives for investing in the sector. Questions about background characteristics sought to classify respondents in terms of organisation type, size and investment activity.

Survey B was designed to gauge the interest of international institutional investors in the utilities sectors and to identify the conditions that this category of investor perceived as important when making decisions on new investments or judging the performance of existing ones. Attitudinal questions probed respondents' motivation for investing abroad and their perception of investment locational determinants. The survey also identified the key priorities of investors by focusing on factors determining the success or failure of their best, worst and smallest investments to provide greater insight into factors that influenced investors' choices. Survey C was designed to determine the level of awareness of Caribbean water utility managers to conditions perceived as important to investors when making the investment decision in the water and sanitation sector. Attitudinal questions probed respondents' perception of investors' priorities, focusing on

locational determinants and factors determining investors' success or failure of specific investments. Respondents' attitudes towards regional cooperation in the sector were also assessed. Both surveys were conducted outside the case study framework.

The survey instruments were developed using constructs identified in the literature, used in similar instruments⁴⁶ and highlighted during exploratory telephone interviews with a small focus group of prospective respondents. For Survey A for example, attitudinal statements on investors' perception of the utility were generated from the collective opinion of the investor focus group on important attributes of the utility for consideration from an investment perspective. The survey instruments were then pilot tested by a five-member panel of experts who were asked to assess the relevance of each item to the intended measurement, evaluate the clarity and conciseness of the items, suggest additional items that may have been omitted, comment on the terminology used, comment on the time taken to complete the survey and comment on the general layout of the survey instrument(s). Survey instruments were modified incorporating feedback from the expert panel which included the removal of redundant items, rewording of statements, removal of the middle response category (for Surveys B and C) and reordering of the scale direction. Aesthetic changes were also made to improve the layout.

The Likert scale was used as the rating scale for all three survey instruments due to the following advantages⁴⁷ (Oppenheim, 1992; Spector, 1992):

- a) use of multiple items allowing more detailed exploration of an attitude;
- b) items presented as statements to be rated;
- c) response choices indicating varying degrees of agreement with or endorsement of the statement;
- d) easy construction and use of simple scoring methods; and
- e) good performance when it comes to a reliable, rough ordering of respondents with regard to a particular attitude.

A five-point unipolar Likert scale was used for Survey A whereby response choices were numbered consecutively from high to low⁴⁸ (from 5 to 1). A four-point scale was used for

⁴⁶ For example, "What international investors look for when investing in developing countries: Results from a survey of international investors in the power sector" (Lamech and Saeed, 2003); "Obstacles and constraints for increasing investment in the water and sanitation sector in Latin America and the Caribbean" (IDB, 2003a); and "Water UK investor survey: Key findings" (Whelan, 2004).

⁴⁷ Other rating scales were also examined. The Bogardus scale which is a social-distance scale was not applicable to the research. Thurstone and Guttman scales were considered laborious and beyond the resources of the research due to the number of judges required to assess the items and complex scale development procedures respectively.

Surveys B and C whereby response choices were numbered consecutively from 4 to 1. The traditional Likert scale employs five categories for each item although three and seven have sometimes been used (Moser and Kalton, 1971). The rationale behind using a four-point scale in Surveys B and C was to force respondents to take a position with the absence of a neutral response choice. This recommendation was made following the comments of the expert panel reviewing those instruments. The choice of scale order from high to low versus the commonly used low to high range was also made following comments from the expert panel about the natural tendency of persons to associate higher scores with more positive responses. Attitude scores for the multi-item question on investors' perception of the local water and sanitation utility were summed to give a utility perception scale (UPS) which was taken as the measure of investors' attitude towards the local utility. In so doing, a subjective indicator such as investor perception was transformed into a measurable index for rating and assessment purposes.

Two types of response choices were used in the rating scale – agreement and evaluation to correspond with the phrasing of attitude statements. Agreement response choices asked respondents to indicate the extent to which they agreed with items, using response choices such as strongly agree, most likely and highly supportive. Evaluation response choices asked respondents to rate statements along a good-bad dimension, using response choices such as critical factor, most important, most adequate and excellent.

4.4.1.2 *Sample design*

For Survey A, a list of 130, 116 and 110 financial institutions in Jamaica, Barbados and Trinidad respectively was compiled using telephone listings for financial institutions. The population of interest included financial institutions that fell in the category of potential sources of water and sanitation infrastructure financing – commercial banks, leasing companies, insurance companies, pension funds and finance companies. The sampling frame was eventually modified to 104, 49 and 82 financial institutions after a clean-up of the initial lists (Table 4.3). Firms excluded from the final sampling frame included those that were not registered with the central bank and financial regulator in each case location, were no longer in business or had merged with other firms already in the sampling frame. Firms that were registered as different legal entities for regulation purposes were removed from the list and represented by their holding or parent organisations. Duplicate listings and firms that did not participate in the local economy were also excluded. The latter condition was most relevant to Barbados where for

⁴⁸ Scale ranged from highly favourable attitude or strong agreement to unfavourable attitude or strong disagreement with the premise that the strength of agreement is directly proportional to a person's attitude.

example 52 financial institutions were excluded from the list as they were offshore banks that did not participate in local financing arrangements.

Table 4.3 Sample design data for Survey A

	Jamaica	Barbados	Trinidad
Study population (N)	104	49	82
Estimated sample size (n')	59	36	51
Actual sample size (n)	62	27	40
Number completed	28	15	25
Response rate	45.2%	55.6%	62.5%
Sample as % of N	59.6%	55.1%	48.8%
Sampling error	±4.8%	±7.1%	±5.5%

The sampling procedures used for Survey A conformed to the methods literature (Conway, 1967; Kalton, 1983; Barnett, 1991). Sample size estimates were calculated for precision at the 95% confidence interval⁴⁹ (Table 4.3). Financial institutions were then arranged in alphabetical order in each list and subject to systematic sampling using a sampling interval of 1 in 2. In all three cases, the sampling fraction (sample size divided by the population size) was above 30% (59.6% for Jamaica, 55.1% for Barbados and 48.8% for Trinidad), indicating that enough of the population had been sampled for generalisation of the survey findings (Weisberg *et al.*, 1989). Sampling errors in the region of the desired ±5% margin of error also indicated that the samples were good approximations of the populations. Response rates of 45.2%, 55.6% and 62.5% were achieved for surveys administered in Jamaica, Barbados and Trinidad respectively.

For Survey B, a list of 105 international firms involved in the utilities sector was compiled using the World Bank's private participation in infrastructure projects database for LAC⁵⁰, the Directory of Development Organisations 2003 for Central America and the Caribbean⁵¹ and industry-specific business magazines⁵². The population of interest which was not intended to be statistically representative, included companies that had put their own or a sponsor's capital at risk and had played a role in identifying investment opportunities in the utilities sector and putting together the initial capital for an investment. Companies located in the UK or with representative offices and/or affiliates in the UK were selected from the list of 105 firms to form a final sample size of 44 companies. Contact details for these companies were then obtained using resources such as the Hemscott Company Guru and Financial Analysis Made Simple (FAME)

⁴⁹ 95% probability that the interval will contain the true parameter value.

⁵⁰ The PPI project database tracks contract and investment information for private infrastructure projects in low and middle-income countries from 1990. Database sources include commercial news databases, specialised and industry publications and internet sources (World Bank, 2005).

⁵¹ The Directory is a compilation of contact data of the main sources of assistance available for private sector development and poverty reduction.

⁵² For example, Global Water Intelligence and Project Finance International.

company databases⁵³ and company websites. Of the 44 companies included in the survey, 12 completed the questionnaire representing a response rate of 27.3%.

For Survey C, a list of 45 respondents was compiled using the membership database of the CWWA⁵⁴. The population of interest which was not intended to be statistically representative included senior managers and decision-makers in the water and sewerage utilities in several Caribbean countries. Twenty-one managers completed the survey questionnaire, representing a response rate of 46.7%.

4.4.1.3 Survey administration

The extensive use of self-administered surveys as data collection tools has resulted in considerable experimental research on response inducement techniques. Prenotification, follow-ups, university sponsorship, personalisation and incentives are considered to positively influence response rates to mail surveys (Jobber, 1986; Harvey, 1987; Fox *et al.*, 1988; Diamantopoulos *et al.*, 1991; Church, 1993). These measures were incorporated as much as possible during the administration of the survey.

Prenotification by telephone was conducted to confirm the suitability of the organisation for inclusion in the survey, identify the appropriate person(s) to receive the survey instrument and in the case of Survey B, obtain some commitment to participate. During this exchange which occurred either with the intended respondent or his/her personal assistant/secretary, it became clear that the preferred means of receiving Survey B was via electronic mail. This mode of delivery was considered to prescribe to much of the response inducement techniques developed for the more traditional mail survey. In addition, lower costs and increased response speed of electronic mail surveys justified its use (Mehta and Sivadas, 1995; Tse *et al.*, 1995; Tse, 1998). Electronic mail was also the choice of delivery for Survey C due to the geographical spread of the sample population. Prenotification by way of an introduction to the Survey C sample was done by e-mail on behalf of the researcher by the president and secretariat of the CWWA. The researcher's prior involvement in the association was stressed in this introduction to encourage participation. The mode of delivery for Survey A was largely determined by time constraints and the researcher's familiarity with each case location. Survey instruments were hand-delivered by the researcher in Jamaica and by private courier in Barbados and Trinidad. Prenotification by telephone was also done to alert respondents to look out for the questionnaire.

⁵³ Provides business and financial information for up to 500,000 companies in the UK.

⁵⁴ Membership open to individuals operating in the water, wastewater and solid waste sectors in the Caribbean.

Personalised cover letters were developed addressed to the intended respondent(s) (Appendix 2). These included the survey objectives, introduction to the survey instrument, the time required to complete the survey, survey return instructions and contact details. Assurances of confidentiality and highlights of the benefits of participation such as access to the final report were also included. For Survey A, a sachet of English tea was included with the cover letter and survey instrument as a 'break-the-ice' non-monetary incentive for participation. For Surveys B and C, cover letters were sent as e-mail messages with the corresponding survey instruments sent as e-mail attachments. E-mails were entitled, "Please read – Survey of ..." in keeping with information provided during prenotification and to help differentiate the survey instruments from possible 'junk' mail. For each survey, academic affiliations were highlighted with the use of the university's e-mail account, university's logo on the cover letter and survey instrument(s) and the provision of contact details for the research supervisor for verification purposes.

Surveys B and C were distributed in February and March 2004 respectively and were timed to coincide with anticipated low peak periods – Tuesday to Thursday mornings. Follow-up contact took the form of reminder e-mails in the first instance, and reminder e-mails and telephone calls in the second and third instances. Completed questionnaires were for the most part returned by e-mail. A few were returned by regular mail or by fax transmission. Survey A was distributed between January and March 2005 to coincide with the researcher's field visit to each case location⁵⁵. Follow-up contact was by telephone. Completed questionnaires were either collected by the researcher while still in the case location or mailed to the university's address.

4.4.2 Key informant interviews

The purpose of qualitative interviewing is to capture the perceptions and experiences of those being interviewed without the constraints of predetermined categories. Interviews differ depending on the amount of structure imposed by the researcher which will in turn determine the freedom of the respondent in replying to or elaborating on questions (Remenyi *et al.*, 1998). The unstructured or informal conversational interview is the most open-ended approach to interviewing, relying entirely on the spontaneous generation of questions in the natural flow of an interaction between the interviewer and interviewee (Patton, 2002). A more formal type of interview is the semi-structured interview which

⁵⁵ Case study field visits - Jamaica (January 10-27), Barbados (January 28 – February 17) and Trinidad (February 18 to March 9).

follows a sequence of standard question formulations outlined in an interview guide. This interviewing approach was adopted for the research to take advantage of the following features (Oppenheim, 1992; Kvale, 1996; Patton, 2002):

- (a) the exact instrument used in the evaluation is available for inspection;
- (b) the interview is highly focused so that interviewee time is used efficiently;
- (c) it offers a more systematic and comprehensive way of collecting evidence;
- (d) comparison across cases is possible in multi-case studies; and
- (e) analysis is facilitated by making responses easy to find and compare.

4.4.2.1 Interview design and protocol

Constructs addressed in the survey questionnaires were further developed to allow respondents to freely express their perceptions, opinions and experiences in an interview situation. A series of open-ended questions developed from the literature were fashioned into 4 interview guides to correspond to different data sources (Table 4.4; Appendix 3).

Table 4.4 General content of interview guides

Interview guide for...	Questionnaire content
Water sector officials	<ul style="list-style-type: none"> • Environment for private investment • Private investment experience • Scope and strategy for private investment • Impact of small size • Scope for regional cooperation
Utility regulators	<ul style="list-style-type: none"> • Regulatory framework for private investment • Private investment experience • Impact of small size • Scope for regional cooperation
Private service providers	<ul style="list-style-type: none"> • Environment for private investment • Investment experience in the sector • Motivation to invest
Local financial institutions	<ul style="list-style-type: none"> • Perception of the sector • Investment experience in the sector • Incentives to invest in the sector

In keeping with the methods literature (Remenyi *et al.*, 1998; Yin, 2003), a case study protocol was developed detailing the procedures and general rules to be followed during the collection of interview evidence. Field interview procedures were replicated as much as possible at each case location and included:

- (a) establishing initial contact with the organisation's management at the highest level possible to achieve legitimacy and gain access to informants;
- (b) having at least three water utility informants in each location for the purposes of data validation;
- (c) having at least two water sector informants external to the water utility in each location;
- (d) having at least one water ministry/government informant in each location;
- (e) having at least one water utility regulation informant in each location;
- (f) having at least two water sector private service provider/investor informants in each location;
- (g) having at least one financial institution informant in each location;
- (h) e-mailing interview guides to the respective informants before the interview session to familiarise them with the research and assist in their preparations;
- (i) securing multiple interviews per site so as to reduce travelling time;
- (j) interviewing informants in a familiar and convenient environment of their choice;
- (k) tape-recording all interviews;
- (l) identifying documentary evidence to support verbal information; and
- (m) developing a rapport with at least one friendly gatekeeper or informant in each location to assist with follow-up off-site requests.

4.4.2.2 *Sample design*

Sampling for semi-structured interviews within the case study framework was very specific to fulfil a requirement to interview persons with the likelihood of representing the best practice in support of the research constructs. The composition of this judgement sample was not intended to be statistically representative of the population but to comprise individuals considered to have the knowledge and information to provide useful ideas and insights. The interview sample frame included (Appendix 4):

- (a) senior water sector officials (from both the utility and government);
- (b) senior water utility regulators;
- (c) private service providers/investors in the sector; and
- (d) senior executives of financial institutions.

Respondents were identified from the sample frame created for the survey questionnaires, recommendations and/or referrals by other informants and through the researcher's interactions⁵⁶ to satisfy the requirements of the field interview protocol in each case location. In total, 52 interviews were conducted (Table 4.5).

Table 4.5 Classification of interview respondents

	Jamaica	Barbados	Trinidad
Water utility	12	5	7
Utility regulator	1	1	2
Private service provider	3	2	3
Financial institution	2	4	3
General	2	2	3

4.4.2.3 Interview administration

In addition to the general methods literature on interview techniques (Oppenheim, 1992; Kvale, 1996; Patton, 2002), interview administration was guided by specific methods literature on interviewing corporate 'elites'⁵⁷ in business research (Healey and Rawlinson, 1993; Hertz and Imber, 1993; Yeung, 1995; Cochrane, 1998; McDowell, 1998; Welch *et al.*, 2002). Case study informants were contacted by e-mail and a provisional interview schedule prepared to coincide with the fieldwork schedule⁵⁸. Upon arrival at the case location, informants were contacted by telephone during which interview dates, times and location were confirmed. Interview guides were delivered beforehand to assist respondents in their preparations.

Prior to the start of each interview, respondents were given an overview of the research and their consent obtained to record the interview. To ensure consistency and reduce interviewer bias, questions were presented in their pre-determined order with minimum deviation from the original wording. Standard pre-prepared explanations were provided when necessary. Interviewer interference was minimised to requests by respondents to clarify and/or elaborate on certain issues. Interviews outside the fieldwork schedule were conducted by telephone using the established face-to-face interview protocol.

⁵⁶ For example, potential respondents were identified at the following seminars: 'Financing of asset rich utility businesses' hosted by the Utilities Special Interest Group of the Strategic Planning Society in London, UK on November 4, 2003; 'Global change and water in the Caribbean' hosted by UNESCO's International Hydrological Programme in Kingston, Jamaica on March 17-19, 2004; and 'Financing of water and sanitation services in the Caribbean' hosted by the IDB in St. Peter, Barbados on April 26, 2004.

⁵⁷ Elite interviewee defined as an informant who occupies a senior or middle management position; has functional responsibility in an area which enjoys high status in accordance with corporate values; and has considerable industry experience.

⁵⁸ Case study field visits – Jamaica (March 1 – April 12, 2004 and January 10-17, 2005), Barbados (April 13-27, 2004 and January 28 – February 17, 2005) and Trinidad (April 27 – May 10, 2004 and February 18 – March 9, 2005).

Interviews lasted 45 minutes on average. At the end of each session, comments and impressions of the interview were noted. Interviews were then transcribed verbatim in preparation for analysis (Appendix 5). Interview transcripts were sent by e-mail to respondents who had specified a desire to review the written account of the interview before inclusion in the research. Respondents were given one week to make amendments.

4.4.3 Documents

Records, documents and archives constitute a rich source of information about many organisations and programmes. Within the case study framework, the most important use of documents was to corroborate and augment evidence from other sources (Yin, 2003). Documents were used to:

- (a) set the context for interviews or discussions with the organisation being studied;
- (b) provide specific details to corroborate information from other sources; and
- (c) make inferences.

A systematic approach was adopted for the collection of documentary evidence (Table 4.6). At each case study location, a request was made for documents pertinent to the constructs of the research. Visits to libraries and government statistical archives also provided access to other documents relevant to the research. Notes taken during and after interviews and documents collected throughout the fieldwork period formed part of the case study database.

Table 4.6 Case study documentary evidence

Source	Type of document
Water utility Water ministry Water utility regulator	<ul style="list-style-type: none"> • Annual reports • Strategic business plans • Contract documents • Internal memos/reports • Acts of parliament • Policy papers • Tariff structure reports • Capital expenditure budgets
Private investor	<ul style="list-style-type: none"> • Annual reports • Promotional brochures
Library Government statistical archive	<ul style="list-style-type: none"> • Housing and population census • Living conditions reports • Country economic reports • Academic journals/reports • Newspaper clippings

4.4.4 Database summary

Besides the review of literature, the research generated a sizeable amount of qualitative and quantitative data from survey questionnaires, interviews, documents and notes. Collectively, this information formed the research database which was organised where applicable by case location and stored in a variety of formats - electronic, hard copy and audiotape for easy retrieval. Reference to the research database was done as much as possible during data presentation and analysis to provide a chain of evidence from the research questions to research conclusions and to facilitate independent secondary analysis. A summary of the research database is presented in Table 4.7.

Table 4.7 Research database summary

Data	Quantity
Survey A	68
Survey B	12
Survey C	21
Semi-structured interviews	52
Documentary records	250+

4.5 Ethical considerations

The basic ethical principle governing data collection is that no harm should come to the respondents as a result of their participation in the research (Oppenheim, 1992). Prior to data collection, an ethical clearance checklist was completed as required by the university's Ethical Advisory Committee. The research was found to conform to the university's ethical checkpoints without need for formal approval by the committee. Ethical issues considered and adhered to throughout the entire research process included:

- (a) obtaining respondents' informed consent to be interviewed;
- (b) providing a purpose statement at the beginning of the interview which outlined the research background and objectives;
- (c) keeping promise of confidentiality and/or anonymity;
- (d) respecting the boundaries set by respondents regarding access to company documents and information;
- (e) obtaining respondents' consent for interviews to be recorded;
- (f) providing respondents with the option to review interview transcripts;
- (g) safeguarding the storage of interview transcripts and survey instruments;
- (h) honest presentation of the research findings; and
- (i) use of the research findings for academic purposes only.

4.6 Limitations of the research methodology

Access to the various data sources was the most significant constraint to the research methodology. A lot of time was spent networking, making introductions and getting past the personal assistants and secretaries of the intended corporate executive respondents. As a mere student, the researcher had limited leverage with which to get the attention of the survey respondents, many of whom appeared to suffer from 'questionnaire fatigue'. To quote one prospective respondent, "If I answered every questionnaire sent by PhD students I would not have any time to do my job." Some organisations blatantly indicated non-interest while others declined participation indicating that they had a corporate policy not to participate in surveys. In some cases, interviews had to be rescheduled up to three times due to respondents' busy schedules. This often had a domino effect on the entire fieldwork timetable in that each cancellation resulted in a reshuffling of previous arrangements. Even when granted access, some respondents were tight-lipped about their experiences and were non-committal in their responses. Access to organisational documentary evidence was restricted to 'closed' files which limited the potential scope of the investigation. Other limitations to the research methodology included budgetary and time constraints (fieldwork conducted abroad) and respondents' occasional memory failure since their experiences were several years old.

4.7 Preliminary data analysis

Data analysis consists of examining, categorising, tabulating or otherwise recombining the evidence to address the initial propositions of a study (Yin, 2003). Quantitative data generated by the survey questionnaires (particularly Survey A) and qualitative data generated from interviews and documents were subject to different analytical processes which are discussed in the following sections. The choice, application and interpretation of statistical tests used during analysis were discussed and verified by a statistician from the university's Mathematics Support Centre.

4.7.1 Quantitative data: Survey questionnaire

4.7.1.1 *Data preparation, screening and transformation*

The preparation and treatment of data obtained from the survey questionnaires conformed to the Statistical Package for the Social Sciences (SPSS)⁵⁹ statistics methods

⁵⁹ SPSS 12.0 for Windows.

literature (Norušis, 1993; Field, 2000; Coakes and Steed, 2003; Bryman and Cramer, 2005). This included defining variables and missing values⁶⁰ and coding and recoding⁶¹ data. For Survey A, missing values for the UPS were replaced with the mean score of the non-missing values for the respective participant to prevent distortion of the final scale. Using the criterion suggested by Bryman and Cramer (2005), the scale was defined as missing for a participant if more than 10% of the scale data were missing. For the 22-item UPS, this 10% limit meant that respondents with more than 2 items missing were defined as missing for the scale⁶². In keeping with a between-subjects design, three sets of grouping variables were used to classify participants into independent groups – by country; by organisation category (banking vs. non-banking)⁶³; and by infrastructure investment activity (investor vs. non-investor).

The internal-consistency reliability of the 22-item UPS was examined prior to data analysis to determine how well the individual scale items reflected issues that contributed to how the local utility was perceived. Both the split-half reliability and Cronbach's alpha methods indicated an internally reliable scale with correlation coefficients over 0.8⁶⁴.

Univariate procedures such as frequency distributions and measures of central tendency and dispersion were used to summarise the survey data. A series of bivariate non-parametric tests were used to determine differences and relationships between and among variables (Table 4.8). The premise for using non-parametric tests was three-fold. Firstly, in all three surveys, the data were not normally distributed for variables according to the Shapiro-Wilk statistic⁶⁵. Secondly, non-parametric tests were considered desirable due to the small size of the sample(s), which according to Bryman and Cramer (2005) makes it more difficult to determine the extent to which conditions of normality and equal variance have been met. Finally, non-parametric tests are preferable when analysing ordinal variables. A summary of these tests is provided in Box 4.1.

⁶⁰ Missing data for all variables defined as '99'.

⁶¹ Refers to the modification of original data values. This included recoding negatively worded scale items, replacing missing scale values and combining scale item variables into a single perception index (UPS).

⁶² Applied to only 2 participants with 7% and 100% missing data.

⁶³ Banking institutions defined as regular deposit-taking financial institutions such as commercial, merchant and development banks, while non-banking institutions refer to all other financial institutions such as unit trusts, pensions fund managers, insurance companies, securities and building societies.

⁶⁴ Correlation coefficient of 0.89 (alpha for part 1) and 0.86 (alpha for part 2) using the split-half reliability method and 0.93 using Cronbach's alpha. There was marginal improvement of the correlation coefficient for the 18-item scale.

⁶⁵ Considered to be more accurate than the Kolmogorov-Smirnov statistic and more appropriate for sample sizes less than 100 (Field, 2000; Coakes and Steed, 2003). Numeric transformation of variables, for example to natural logs, still resulted in non-normal data.

Table 4.8 Non-parametric tests used during data analysis

Name of test	Nature of dependent variable	Number of comparison groups
Chi-square	Nominal	2+
Mann-Whitney	Ordinal	2
Kruskal-Wallis	Ordinal	3+
Spearman's rho	Ordinal	2+

Source: Bryman and Cramer (2005)

Box 4.1 Summary of statistical tests and procedures used in data analysis

Frequency distributions, measures of central tendency, measures of dispersion

The frequency distribution is usually a first step in summarising data and is a measure of the number of cases in each category. One of the most important ways of summarising a distribution of values for a variable is to establish its central tendency which is the typical value in a distribution. Different methods of expressing central tendency include the arithmetic mean, the median and the mode. The mean is the most familiar average which works well with many statistical methods. Measures of dispersion determine how widely spread a distribution is and include the range and the standard deviation.

Non-parametric tests

Chi-square – used to compare the observed with the expected frequencies of cases found in one variable in two or more unrelated samples or categories of another variable.

Mann-Whitney test – compares the number of times a score from one sample is ranked higher than a score from the other sample. Equivalent to the independent groups t-test for normal data.

Kruskal-Wallis test – similar to the Mann-Whitney test but used to compare scores in more than two groups. Equivalent to the one-way analysis of variance ANOVA test for normal data.

Spearman's rho – used to examine the relationship (rank correlation) between pairs of ordinal variables. The direction and strength of the relationship are indicated by the sign and size of the correlation coefficient respectively. Equivalent to Pearson's coefficient for normal data.

Source: Field (2000); Bryman and Cramer (2005).

The significance of test results was reported in the three ways suggested by (Coolican, 1999) based on p the probability level:

- (a) significant: $0.05 > p < 0.01$;
- (b) highly significant: $0.01 > p < 0.001$; and
- (c) very highly significant: $0.001 > p$

A significant result was interpreted to mean that the difference (or relationship) observed was genuine and unlikely to have occurred by chance. All probabilities reported were based on two-tailed tests as each comparison had two possible directions.

4.7.1.2 UPS validation

The typical scale validation strategy involves investigating the extent to which the scale items correlate with each other and seem to be measuring the same concept(s). Factor analysis is often used to determine whether these item correlations can be 'explained' in

terms of their common underlying dimensions or factors. Exploratory factor analysis⁶⁶ was conducted on the 22-item UPS to assess the extent to which the items measured how financial institutions perceive their local water and sewerage utility. Five factors were extracted using the principal component method⁶⁷ with the first factor accounting for 43.1% of total variance and the fifth or smallest factor accounting for 4.7% of total variance (Table 4.9). Orthogonal rotation using the varimax method indicated that 12 items correlated highly with the first factor, 3 items each correlated with the second and third factors and 2 items each correlated with the remaining 2 factors (Appendix 6: Table A1). The basis for determining item-factor correlation was guided by two conventions proposed by Bryman and Cramer (2005). Items that correlated less than 0.3 with a factor were omitted from consideration on the basis that they accounted for less than 9% of the variance. Additionally, factors were interpreted in terms of items unique to them by choosing the correlation above which no item correlated highly with more than one factor.

Table 4.9 Variance of extracted and rotated factors

Factor	Extraction loadings		Rotation loadings	
	% of variance	Cumulative %	% of variance	Cumulative %
1	43.1	43.1	28.1	28.1
2	7.9	51.0	15.3	43.4
3	7.0	58.0	11.1	54.5
4	5.8	63.8	7.3	61.8
5	4.7	68.5 ^a	6.6	68.4 ^a

^a Difference in cumulative percent due to rounding

Criteria for deciding how many factors to keep are heavily dependent on sample size. The graphical scree test⁶⁸ is considered to provide fairly reliable criterion for factor selection with a sample size greater than 200. Kaiser's criterion of retaining all factors with eigenvalues greater than 1 is considered accurate when the sample size exceeds 250 and the average variance is greater than or equal to 0.6 (Bryman and Cramer, 2005). Given that the survey sample size did not satisfy conventional sample size requirements for factor analysis, the correlation between paired items was also used to assist in determining the number of factors to retain for the UPS. The scree plot (Appendix 6: Figure A1) and Kaiser's criterion suggested that factors 1 through 4 should be retained. Spearman's rho however indicated no correlation for items 17, 18 and 22 relative to the other items. On this basis, it was decided to retain factors 1 through 3 which accounted for 18 of the original 22 scale items.

⁶⁶ The small size and uniqueness of the target population restricted this examination of factorial validity to the actual survey (usually done following a pilot survey).

⁶⁷ Extraction using the principal axis factoring method was unsuccessful up to 500 iterations as the communality of a variable exceeded 1. The principle component method assumes that the communality or common variance of every variable is 1, thereby allowing the original data to be transposed into constituent linear components (Field, 2000).

⁶⁸ Graph of descending variance (eigenvalue) accounted for by the factors initially extracted. The plot typically shows a break between the steep slope of the initial factors and the gentle one of the later factors. Factors to be retained are those which lie before the point at which the eigenvalues seem to level off.

The reliability of factor analysis is reputed to be dependent on sample size as correlation coefficients fluctuate much more in small samples than in large ones. The factor analysis literature includes a range of recommendations regarding the minimum sample size necessary to obtain stable factor solutions that correspond closely to population factors⁶⁹. Empirical research has shown however that changes in the subject to variable ratio make little difference to the stability of factor solutions. Guadagnoli and Velicer (1988) for example find that contrary to popular opinion, the most important factors in determining reliable factor solutions are the absolute sample size and magnitude of factor loadings⁷⁰. MacCullum *et al.* (1999) propose that the necessary sample size is dependent on the research design including the level of communality of the variables. Communalities above 0.6 are found to be perfectly adequate for small samples (less than 100). Normally distributed data are preferable but not prerequisites for using factor analysis (Field, 2000). When considered individually, data for several of the scale items were non-normal. As a single UPS however, the data followed a normal distribution thereby justifying the use of factor analysis to assess the factorial validity of the scale and to reduce the number of scale items to a more precise set of factors.

4.7.1.3 UPS interpretation

For the 18-item UPS, the possible range of total scores for each participant was 18 to 90. This represented the full spectrum of the scale with the lowest end of the scale (18) defined as 'negative utility perception' and the upper end (90) defined as 'positive utility perception'. A 'neutral utility perception' was interpreted as being in the region of 54 on the scale⁷¹. A unique UPS was then calculated for each participant by summing the values of the 18 scale items. The resulting scale range was 21 to 70. A unique UPS range was calculated for different grouping variables to determine how perception of the local utility varied across these groupings (Appendix 6: Table A2). For certain analyses (frequency distribution, crosstabulation and correlation), the UPS was collapsed into five ordinal groups⁷² for simplification purposes and to facilitate analysis with other ordinal variables.

Interpretation of an attitude score on a summated rating scale cannot be made independently of the distribution of scores of some defined group (Edwards, 1957). This

⁶⁹ For example, a minimum of five to ten participants per variable up to about 300 subjects is recommended.

⁷⁰ If a factor has four or more loadings greater than 0.6 it is considered reliable regardless of sample size.

⁷¹ The 'neutral' point on a summated rating scale does not necessarily correspond to the midpoint of the possible range of scores. Scores in the middle region could be due to lukewarm response, lack of knowledge, lack of attitude in the respondent or to the presence of both strongly positive and strongly negative responses which would balance out each other (Edwards, 1957; Oppenheim, 1992).

⁷² UPS groupings – 20-30; 31-40; 41-50; 51-60; and 61-70.

highlights a major criticism of the Likert scale – poor reproducibility. Since the same total score can be obtained in different ways, two or more identical scores can have different meanings. For this reason, the pattern of response is more interesting than the total score. In addition, because the scale is not an interval scale, no conclusions can be drawn about the meaning of distances between scale positions. Guided by these constraints, interpretation of the UPS for a participant or group of participants was done relative to other participants or other groups of participants.

4.7.1.4 Introduction to the survey respondents

Survey A

Sixty-eight respondents representing 68 different financial institutions across the case locations completed the survey questionnaire. There was no significant difference ($p>0.05$) in the classification of survey respondents across case locations (Table 4.10; Appendix 6: Table A3). In all 3 cases, the majority of respondents were from non-banking institutions, banking institutions were more active in infrastructure financing than their non-banking counterparts and investors had larger investment portfolios than non-investors. Respondents' profiles were therefore consistent with that of typical infrastructure financiers in developing countries whereby banking institutions (e.g. commercial banks) are more active in infrastructure financing than non-banking institutions (e.g. pension funds) and infrastructure investors have investment portfolios large enough to provide project financing for infrastructure projects (>US\$50 million). In Jamaica, loans were the most common form of infrastructure financing while bond issues were the primary means of infrastructure investment in Barbados and Trinidad. More detailed profiles are presented in Appendix 6: Table A4; Table A5; Table A6.

Table 4.10 Survey A: Respondents' characteristics

Variables	Percent			
	All	Jamaica	Barbados	Trinidad
Banking	42.6	39.3	40.0	48.0
Non-banking	57.4	60.7	60.0	52.0
Investor	66.2	60.7	66.7	72.0
Non-investor	33.8	39.3	33.3	28.0
Size of investment portfolio				
<US\$10 m	20.3	21.4	25.0	16.7
US\$11-50 m	21.9	28.6	8.3	20.8
US\$51-100 m	10.9	7.1	25.0	8.3
US\$101-500 m	21.9	21.4	16.7	25.0
>US\$501 m	25.0	21.4	25.0	29.2
Investments linked to infrastructure				
0%	33.8	39.3	33.3	28.0
1-5%	24.6	21.4	25.0	28.0
6-10%	15.4	17.9	16.7	12.0
11-15%	9.2	7.1	8.3	12.0
16-20%	4.6	3.6	8.3	4.0
>21%	12.3	10.7	8.3	16.0
Type of infrastructure investment				
Loans	53.5	64.7	37.5	50.0
Bonds	55.8	29.4	75.0	72.2
Equity	23.3	17.6	25.0	27.8

Survey B

Most of the respondents were private operators/contractors (58.3%) while the remaining 41.7% represented financial institutions. The majority of respondents (91.7%) had investments in water and sanitation. Other utility investments included electricity (58.3%), gas (41.7%) and telecommunications (33.3%). Water and sanitation was however considered to have the lowest investment potential of the utility sectors.

Survey C

For Survey C, 33.3% of the respondents were water utility managers from Jamaica, 19% from Barbados, 14.3% from Trinidad and Tobago and the remaining 33.3% from other Caribbean islands (Antigua, Dominica, Grenada, Montserrat and St. Lucia). In terms of the status of their respective water and sanitation sectors, respondents were most satisfied with the level of service coverage, water resource development, water quality and service reliability (Appendix 6: Table A7). Respondents were least satisfied with the level of revenue recovery, government's budget allocation to the sector, the level of unaccounted-for-water, the level of investment besides government and tariff rates. All of the respondents were in agreement that additional investment was needed in the sector, particularly to assist in strengthening institutional capacity, for the construction of new infrastructure and rehabilitation of existing infrastructure. The majority of respondents (85.7%) had some experience with private investment with only 5.6% very satisfied with this investment. Where there was no private investment, respondents felt that investors were not interested in the sector (100%), the utility had not been successful in sourcing private investment (33.3%) or there was strong opposition to private investment (33.3%).

4.7.2 Qualitative data: Interviews and documents

The challenge of qualitative analysis lies in making sense of massive amounts of data. This involves reducing the volume of raw information, sifting trivia from significance, identifying significant patterns and constructing a framework for communicating the essence of what the data reveal. Patton (2002) identifies two approaches of relevance to the research – the case study approach and an analytical framework approach (Table 4.11). The case study approach is a specific way of collecting, organising and analysing qualitative data and in that sense represents an analysis process which results in a product – the case study. The analytical framework approach involves organising and analysing data using theoretical propositions developed during the review of literature and reflected in the research questions and research hypothesis. A mixed approach was adopted for the research with case studies thematically presented as descriptive and

explanatory reports of the operating environment for private investment in the water and sanitation sector and the attitudes and perceptions of water sector officials and private investors to private investment in the sector.

Table 4.11 Options for organising and reporting qualitative data

	Approach	Description
Case study	People	If individuals or groups are the primary unit of analysis, then case studies of people or groups may be the focus for case studies.
	Critical incidents	Critical incidents or major events can constitute self-contained descriptive units of analysis, often presented in order of importance.
	Various settings	Describe various places, sites, settings or locations before doing cross-setting pattern analysis.
Analytical Framework	Processes	Organise data to describe important processes
	Issues	Organise analysis to illuminate key issues, often the equivalent of the primary evaluation questions
	Questions	Responses to interviews can be organised by question especially where a standardised interviewing format was used.
	Sensitising concepts	Organise and describe data through sensitising concepts

Source: Patton (2002)

The process of moving from raw qualitative data to the case study was an iterative one guided by the methods literature (Kvale, 1996; Silverman, 2001; Patton, 2002; Ritchie and Lewis, 2003; Yin, 2003). A code and retrieve method was used to organise and analyse the data. Codes were developed for interview data relying on the content of standardised questions used during interviews and concepts highlighted during the review of literature and reflected in the research questions. Each interview was read at least three times during which notes and comments were made in the margins alongside the relevant data passages. Illuminating and collaborating quotes were highlighted for easy identification. Using the thematic framework developed for data analysis, quotes with their corresponding notations and comments were transferred into their appropriate categories using a cut and paste technique. Care was taken to ensure that enough information was transferred during the retrieval process so that the substantive content and context of the information was not lost.

Documentary evidence was also subject to similar analytical treatment. Data were sorted and arranged to describe the operating environment for private investment in each case location, focusing on the policy, legal and regulatory frameworks for the water and sanitation sector. Descriptive accounts were also given of actual private investment experiences to showcase the range and diversity of private investment in each case location.

4.8 Chapter summary

This chapter introduced the research objectives, research questions and guiding research hypothesis. A primary research question and four secondary research questions were formulated to investigate the phenomenon of private investment in the Caribbean water and sanitation sector as follows:

Primary research question

How can private investment be attracted to the Caribbean water and sanitation sector?

Secondary research questions

- (a) What is the current state of the operating environment and how conducive is it to private investment?
- (b) What are the main determinants or criteria for private investment in the water and sanitation sector?
- (c) What is the scope for and strategy to attract private investment to the water and sanitation sector?
- (d) To what extent is size an issue and what is the scope for addressing small size as a constraint to attracting private investment?

The research hypothesised that ***factors that determine private investment in water and sanitation vary in importance and relevance; hence a context-specific approach is needed to attract private investment to the Caribbean water and sanitation sector.***

A case study research strategy utilising surveys, interviews and documents as the main sources of evidence was adopted for the research. Case studies from Jamaica, Barbados and Trinidad were selected to examine different forms of private investment in the water and sanitation sector in different environments. Quantitative data were analysed using a variety of statistical tests while qualitative data were categorised into themes derived from the literature and reflected in the research questions and hypothesis for further discussion and interpretation.

CHAPTER 5 THE RESEARCH STUDY AREA

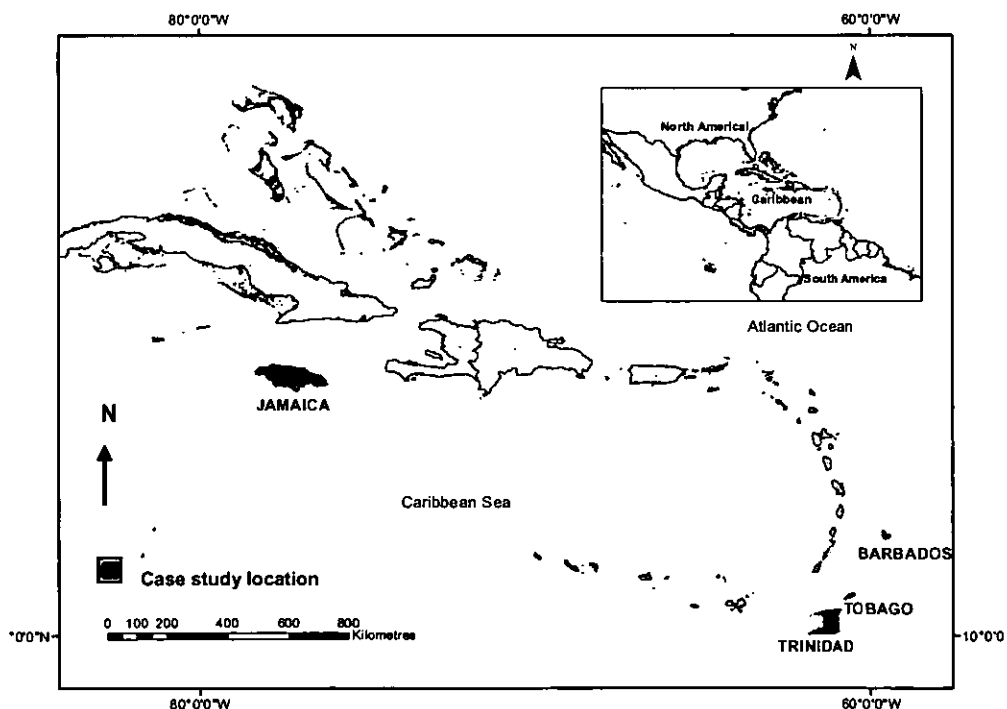
5.1 Chapter introduction

This chapter contains background information on the research study area to contextualise and introduce basic physical, geographic, historical, social and contemporary factors that may impinge on the research problem and issues.

5.2 The research setting

The general research setting is the Caribbean⁷³ which from a strict geographical standpoint is an archipelagic group of islands stretching from the Yucatan and Florida peninsulas in a south-easterly direction towards the north-eastern coast of the Latin American mainland (Figure 5.1). For classification purposes, the Caribbean is included in the larger LAC geographical region which includes Central and South America. In terms of the level of development, the region qualifies as a less developed region with countries assigned to lower-middle and upper-middle income categories.

Figure 5.1 Map of the Caribbean highlighting the case study locations



⁷³ For the purposes of this research, the term 'Caribbean' refers to the English-speaking independent states of the Commonwealth Caribbean – Antigua & Barbuda, Barbados, Dominica, Grenada, Jamaica, Montserrat, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines and Trinidad & Tobago and the mainland nations of Belize and Guyana.

5.2.1 General features of the Caribbean

The Caribbean is home to about 5.7 million inhabitants, a mere 1.1% of the LAC population (United Nations, 2004). With 64.2% of the population living in urban settlements in 2003 and an urban growth rate of 1.58% per annum between 1995 and 2000, the Caribbean is considered the most urbanised island region (Pelling and Uitto, 2001). The Caribbean environment is also characterised by widespread market distortions, economic dependence on one or a few productive activities (e.g. tourism, sugar and culture), supply-side bottlenecks, high levels of domestic and international indebtedness, a shortage of foreign exchange, high levels of unemployment and monopolistic and oligopolistic market structures in which transnational enterprises are the major market participants (Nicholls *et al.*, 2000). Many of these characteristics are a result of the small size of the islands, all of which except Jamaica⁷⁴, fall within the 'small states' population threshold limit of 1.5 million (ComSec and World Bank, 2000).

The development literature considers small countries to be at a disadvantage in attracting foreign investment, some authors claiming that even with good policies and other positive characteristics for attracting foreign investment, small countries are generally rated to be significantly more risky (Collier and Dollar, 1999). While data on international private flows into Caribbean countries are fragmentary, the indications are that these countries have been able to attract relatively large amounts of FDI in relation to both GDP and per capita measurements (Fairbairn and Worrell, 1996; Carrington, 1999). In 1996 for example, six Caribbean countries were ranked among the first thirty largest recipients of FDI inflows per US\$1000 GDP (Table 5.1). Most of this FDI is services-oriented however, bound for the tourism sector. Light manufacturing, agri-business, entertainment and the energy sector in the case of Trinidad, account for the balance of FDI flows. More recently, business services has also emerged as an important FDI destination due to the Caribbean's good techno-intellectual skills, good telecommunications infrastructure and time zone advantages. The region's favourable business climate, investor-friendly environment, macroeconomic policy instruments, generous fiscal incentives, stable political climate and transparency in the conduct of public business are credited as important determinants of this FDI (Carrington, 1999; ProInvest, 2004).

⁷⁴ Although above the 'small state' population threshold, Jamaica is included in the small state category as it shares many of the physical and economic characteristics of small states (ComSec and World Bank, 2000).

Table 5.1 Caribbean ranking in sourcing FDI flows (1996)⁷⁵

World ranking	Per US\$1000 GDP		Per capita	
	Country	US\$	Country	US\$
5	Guyana	1.50	-	-
14	St. Kitts & Nevis	0.82	-	-
15	Dominica	0.81	-	-
17	St. Vincent	0.70	-	-
18	Grenada	0.69	-	-
19	-	-	St. Kitts & Nevis	404.80
21	Trinidad & Tobago	0.62	-	-
22	-	-	-	-
26	-	-	Antigua & Barbuda	284.80
28	-	-	Dominica	253.50
29	-	-	Trinidad & Tobago	242.40

Source: UNCTAD (1998)

The size of the public sector in the Caribbean is large with up to 25% of GDP consumed by the central government (Swaroop, 1996). This figure has the potential to double if public sector expenditure for public utilities, state-owned corporations and statutory bodies is also taken into account. In most cases, having a large public sector is by choice (deliberate socio-economic policy of government) rather than due to any economic constraint, except in countries like Jamaica and Guyana where a large portion of public expenditure goes towards debt service. With respect to infrastructure, the bulk of service provision is in the public domain in most Caribbean countries due to high unit costs of producing goods and services (except for areas such as electricity generation, telecommunications and urban transportation where technological advancements have created conditions for competition and increased the role of the private sector).

By virtue of their small size, many of the countries in the Caribbean have limited skilled human resources at their disposal (Barrett, 1986). The role of government is sometimes multi-faceted requiring senior officials to act in multifunctional roles. In some of the smaller islands there is little job specialisation. A civil engineer in a water utility for example (who in some cases may be the only engineer), must also be proficient as an electrical and mechanical engineer and may even have to function in a top administrative position as well.

Social cohesion in the Caribbean is strong due to a common history and cultural identity. As such there is a tendency for islands to develop closely integrated societies which can negatively impact on policy-making and decision-implementing processes due to the 'accessibility' of public sector managers and government officials (Farrugia, 1993). This solidarity can also affect communal interactions with 'outsiders' who are viewed

⁷⁵ More recent FDI data for the Caribbean difficult to obtain as data for the Caribbean are usually undifferentiated from that used for the larger regional grouping of LAC.

suspiciously as exploiters. The Caribbean's colonial past also contributes to a general distrust of foreign interventions.

The Caribbean is particularly susceptible to adverse climatic and other natural events such as hurricanes, floods and earthquakes. Of the 25 countries that suffered the greatest number of natural disasters during the 1970s and 1980s, the most disaster prone island group was the Greater Antilles⁷⁶ in the Caribbean (Pelling and Uitto, 2001). The economic and social impact of these natural disasters is often staggering due to considerable infrastructure damage, export losses and loss of life. Hurricane George in 1998 for example, caused US\$2.5 billion in insured losses with 70% of these in the Caribbean (Ibid.). Like other small islands groups, the Caribbean is characterised by limited and fragile freshwater resources with some countries like Barbados classified as water-scarce. Finally, the islands which are predominantly of limestone and volcanic origin are particularly vulnerable to pollution from sewage, industrial effluents, saline intrusion and poor land use practices.

5.3 Water and sanitation in the Caribbean

5.3.1 Status of the sector

Although the Caribbean is perceived to be well advanced compared to other regions in meeting target 10 of the United Nations' Millennium Development Goals⁷⁷ (UNDP, 2004), underinvestment in water and sanitation infrastructure (less than 2% of GDP) has resulted in deteriorating levels of service and constrained economic growth due to unexploited development opportunities. Investment needs are still significant, estimated at US\$193 million for water and US\$254 million for sanitation (Clayton, 2004).

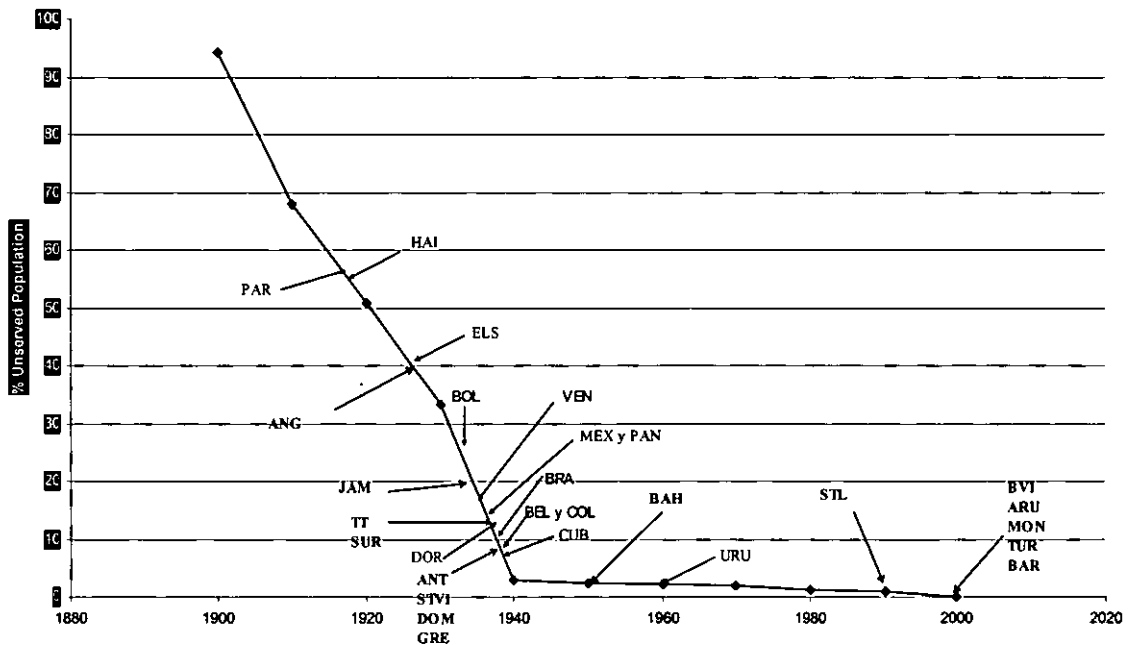
Much of the water and sanitation infrastructure in the Caribbean predates independence from Britain in the 1960s and 1970s. This has resulted in a myriad of problems associated with ageing infrastructure such as high unaccounted-for-water and inadequate and unreliable levels of service. Figure 5.2 highlights the predicament of several Caribbean countries with respect to their water supply coverage status. As the graph suggests, the status of the water sector in several Caribbean countries (except Barbados, St. Lucia and Montserrat) is similar to that of the USA in the 1930s and 1940s. The situation is even worse for rural water supply and for sanitation in terms of coverage and technology type. Only a small percentage of the population is connected to

⁷⁶ The Greater Antilles are the four largest islands in the north-western part of the Caribbean Sea and include Cuba, Hispaniola (Haiti and the Dominican Republic), Jamaica and Puerto Rico.

⁷⁷ To halve by 2015, the proportion of persons without sustainable access to safe drinking water and basic sanitation.

conventional sewerage systems, the majority relying on in situ sanitation systems such as latrines and septic tanks. The lack of wastewater treatment is considered to be one of the most serious sanitary problems in the Caribbean with data for 2000 indicating that only 13.7% of the wastewater collected by the few existing sewerage systems is treated (PAHO, 2001). The situation is even more troubling as the efficiency of these treatment systems is known to be very low. Microbiological contamination of drinking water remains the principal water quality problem with only 59% of the population in 1994 receiving disinfected water on a regular basis (PAHO, 1997). While there is a low prevalence of water-borne diseases and illnesses related to poor hygiene and sanitation, there are concerns about the potential of a high risk disease outbreak due to contaminated drinking water and inadequate sewage disposal. The rapid and unplanned nature of urban expansion in the Caribbean, increasing standards of living and changing lifestyles place additional pressure on the sector in terms of supply demands and preservation of environmental quality (Biswas, 1998).

Figure 5.2 Water supply coverage in select LAC countries compared to the USA



Key to Caribbean country codes: Antigua (ANT); Barbados (BAR); Dominica (DOM); Grenada (GRE); Jamaica (JAM); Montserrat (MON); St. Lucia (STL); St. Vincent & the Grenadines (STVI); and Trinidad & Tobago (TT).

Source: PAHO (2001)

Common problems and challenges faced by the Caribbean water and sanitation sector include (CEHI, 2001; San Martin, 2002):

- (a) poor coordination among institutions due to the fragmented and sectoral approach to water resource management;

- (b) inadequate water legislation, regulatory and monitoring frameworks and institutions – each institution has its ‘own’ piece of legislation and mandate which limits the scope for action and coordinated efforts;
- (c) inappropriate pricing policies due to inadequate tariffs, low user charges and infrequent adjustment for inflation;
- (d) low cost recovery for operation and maintenance due to poor enforcement and a ‘free water’ culture;
- (e) high cost of provision due to overstaffing and poor maintenance of facilities;
- (f) low coverage rates due to low investment capacity and the difficult financial situation of most water utilities;
- (g) weak technical capacities among water sector personnel;
- (h) poor stakeholder participation and low awareness among public and decision-makers due to existing institutions and policies;
- (i) lack of consistency on policies to promote contribution of water resources to national economies;
- (j) pollution from untreated municipal and industrial discharges due to deficient legislation and/or monitoring and a lack of incentives for improved technologies;
- (k) insufficient information to support decision-making due to inadequate data collection and information management;
- (l) poor feasibility assessment of projects due to inadequate economic valuation of water resources;
- (m) over-exploitation of groundwater resources due to distorting incentives, deficient legislation and/or weak enforcement; and
- (n) inadequate urban and rural land use planning resulting in deforestation, soil erosion and water resource degradation.

Policy-makers, regulators, practitioners and water users are generally well aware of the main problems facing the sector and have adopted diverse approaches and responses to address these challenges. Some of these include reform of institutional arrangements, growing interest in increasing the role of the private sector especially in providing water supply and sanitation services and adopting integrated water resources management (IWRM)⁷⁸ policies for planning and management purposes (San Martin, 2002). Countries have experienced different levels of success in responding to challenges in the sector. In some countries, the reform process has been very slow and haphazard with proposals

⁷⁸ IWRM as defined by Mudege and Taylor (2001) is a process which promotes the coordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

for new legislation in draft form for years without receiving parliamentary approval. IWRM is still in an early conceptual phase in many countries. There is therefore some disparity in the developmental status of the sector throughout the Caribbean.

5.3.2 Sources of financing

Caribbean utilities have traditionally accessed funds to finance capital expenditure from internally generated funds, government financing, bilateral funding grants and concessionary loans and multilateral financial institutions. Because of their risk profile, many Caribbean utilities are generally unable to borrow money directly from international capital markets or can only do so at very high interest rates (Pemberton, 2003). As a result, the majority of external funding for water and sanitation projects has been through bilateral and multilateral funding agencies. Other sources of financing such as commercial banks, direct equity investment (foreign and/or local) and capital markets (bonds and securities) are rarely used if at all. In most cases, government's guarantee for the revenue of the project is the only recourse to utilities being able to access these sources of capital.

5.4 Private investment in the Caribbean

Sources of private sector finance in the Caribbean are very similar. There are branches and subsidiaries of foreign banks, indigenous banks (private and public), trust companies (usually subsidiaries of commercial banks), finance companies, credit unions, public and private development finance institutions, building societies and insurance companies. Some countries such as Barbados also allow offshore banking which is a major source of revenue but is largely irrelevant to the domestic banking requirements of the region (World Bank, 1994). Local capital markets while successful in terms of achieving significant savings mobilisation and attracting foreign financing (with a strong manufacturing and financial services bias), are limited in terms of the choice and depth of instruments offered. In Trinidad for example, financial firms and utilities dominate listed equities accounting for 60% of total market capitalisation, thereby limiting the frequency of trading activity (CBB, 2004b).

Most of the financing activity in the Caribbean is confined to short and medium-term commercial bank lending partly due to a traditional firm-bank relationship. There is also a fair deal of activity in the primary market for short-term government paper, particularly 91-day treasury bills and the issue of development bank bonds. Secondary trading in the

shares of listed public companies is done through stock exchanges in Barbados, Jamaica, Trinidad and the Eastern Caribbean⁷⁹, but generally only in small volumes due to the small number of domestic investors and listed public companies.

Competitive pressures, technological change and the desire for financial institutions to increase revenues have however resulted in significant growth in financial services since the 1990s. Republic Bank Ltd. in Trinidad for example, through a strategic expansion policy throughout the Caribbean has increased its asset base by 16% over 1993-2002 and increased its annual net profit by 23% over the same period (Thurston, 2003). Its Republic Finance and Merchant Bank Ltd. (FINCOR) subsidiary has gained a reputation for being able to structure innovative capital market instruments and finance development and infrastructural projects in Trinidad and the Eastern Caribbean. Similarly, Jamaica Money Market Brokers Ltd. has expanded money market brokerage operations beyond Jamaica to Barbados, Trinidad and St. Lucia (through its Caribbean Money Market Brokers subsidiary) to allow clients to trade in the Jamaican and regional equities markets (JMMB, 2006).

5.4.1 Private investment in the water and sanitation sector

Private investment in the water and sanitation sector is slowly gaining acceptance and prominence on the financing agenda of several Caribbean countries. The corporatised water utilities in Dominica and St. Lucia for example, have successfully raised capital through the divestment of shares. Trinidad's water utility regularly uses bond issues to finance capital investment projects. Management contracts have been used in Trinidad and Guyana while the utility in Belize has been privatised through the sale of shares to a British-Dutch consortium. BOT-type contracts have been used in several countries to construct new desalination facilities, water and wastewater treatment plants. Local private water and sewerage utilities operate in Jamaica.

The influence of multilateral and bilateral institutions is credited for catalysing much of the private investment activity in the Caribbean water and sanitation sector (McDavid, 2003). Private investment is typically promoted by these organisations by direct lending and guarantees to the private sector for specific projects, equity participation and/or through sector reform efforts to create 'enabling environments' conditional to the terms of concessional grants/loans and/or technical assistance. In 1994 for example, the IDB

⁷⁹ The Eastern Caribbean Securities Market is a regional securities market serving Antigua & Barbuda, Dominica, Grenada, Montserrat, St. Kitts & Nevis, St. Lucia and St. Vincent & the Grenadines.

through its Multilateral Investment Fund facility provided a grant of US\$1.5 million to the Jamaican government to support an 18-month programme to develop legislation and regulatory instruments to enable private investment and establish an independent multi-utility regulator (IDB, 2003b). Despite these efforts, organisations like the IDB admit that the small size of the Caribbean islands poses a challenge to attracting adequate levels of private investment to the sector and that coordinated and tailored initiatives through country strategies, action plans and sector studies are necessary to remedy this size constraint (Ibid.).

Besides the constraints of small size, general obstacles to the private financing of water and sanitation infrastructure in the Caribbean are reported as (IDB and CDB, 1996):

- (a) a lack of a tradition of privately-owned firms as service providers;
- (b) the absence in most countries of an appropriate legislative environment and an independent, effective regulatory body to oversee the functioning of privately-owned (or operated) public utilities;
- (c) a past history in many countries of political interference in matters such as price-setting and staffing;
- (d) a legacy in many countries of under-priced public sector services;
- (e) the absence in most countries of an adequate pool of skilled labour to manage public utilities;
- (f) the accumulated debt burdens of most publicly-owned water utilities plus poorly maintained assets;
- (g) the public debt overhang of some national governments, reducing possibilities for public sector financial guarantees and risk-sharing using sovereign debt; and
- (h) the existence of shallow local capital markets plus a lack of strong local banking sectors in many countries, thereby reducing the possibilities for local private sector equity and debt financing.

Researchers generally credit the status of Caribbean utilities as one of the most important determinants of private investment, claiming that if private investors are to become interested in financing the sector, Caribbean utilities must be managed so that they demonstrate strong financial performance, efficient and effective operations, stable corporate structures and effective regulatory environments (Pemberton, 2003).

5.5 Regional cooperation in the Caribbean

The Caribbean has a long tradition of regional cooperation dating back to the late 1950s when the focus was on political integration through a West Indies Federation. Since then, the fundamental premise for regional integration has been the promotion of economic development primarily as a means of accelerating industrialisation and expanding competitiveness. The Caribbean Community and Common Market (CARICOM) established in 1973 represents the most recent expression of formal Caribbean integration. The objectives of CARICOM are (CARICOM Secretariat, 2001):

- (a) to facilitate regional economic integration through the Caribbean Common Market;
- (b) to provide a mechanism for the coordination of the foreign policies of member states; and
- (c) to promote non-economic (functional) cooperation in as many areas as possible especially in relation to various areas of social and human endeavour.

While progress towards economic integration has been slow due to ongoing national rivalries, waning political will and regional economic difficulties that have threatened the viability of the regional economic movement, CARICOM is renowned for its success in relation to foreign policy and functional cooperation (Samuel, 1990; Bryan and Bryan, 1999). Functional collaborative efforts in the areas of health, education, labour, and environmental issues have resulted in a number of successful regional ventures such as the University of the West Indies, the Caribbean Hotel Association and the Caribbean Meteorological Organisation. The Caribbean is also home to the world's first example of a multinational regulatory agency – the Eastern Caribbean Telecommunications Authority which provides regulatory services to the telecommunications sector in the Eastern Caribbean⁸⁰ (Samuel and Welsh-Haynes, 2000; DeFreitas *et al.*, 2001). Such regional initiatives have broadened the scope of involvement of people other than government and business groups to address issues pertinent to the region that are likely to benefit from the coordination of joint action and cooperation.

⁸⁰ Established in 2000 to introduce pro-competition reforms in the telecommunications sector and increase the supply of informatics-related skills in Dominica, Grenada, St. Kitts & Nevis, St. Lucia and St. Vincent & the Grenadines. Benefits include the provision of high quality technical expertise common to all member territories and the development of a regulatory approach that can address cross-cutting technical issues. Greater investor confidence in the objectivity and stability of the regulatory authority combined with more competitive rates are expected to lead to greater foreign and domestic investment (World Bank, 2002a).

5.5.1 Regional cooperation in the water and sanitation sector

A number of regional initiatives and institutions have evolved in the Caribbean, some under the auspices of CARICOM to address various issues related to the water and sanitation sector. The better known organisations are the Caribbean Water and Wastewater Association (CWWA), the Caribbean Environmental Health Institute (CEHI), the Caribbean Basin Water Management Programme (CBWMP), Global Water Partnership Caribbean (GWPC) and the Organisation of Caribbean Utility Regulators (OOCUR). A brief introduction to each organisation is provided in Box 5.1.

Box 5.1 Regional institutions involved in the Caribbean water and sanitation sector

CWWA

CWWA is a non-governmental organisation committed to the advancement of the science, practice and management of water supply and waste disposal in the Caribbean. Since its inception in 1992, CWWA's major activity has been its annual conference and exhibition where industry practitioners explore important themes of relevance to the sector and share experiences. Over the years, the conference has evolved into the single largest assembly of professionals and executives in the Caribbean industry, and in some cases, provides the only opportunity for networking among industry professionals. Besides the main CWWA body, national sections of the association also exist in three countries, namely the Bahamas, Jamaica and Trinidad and Tobago. CWWA membership is open to individuals, companies and utilities operating in the water, wastewater and solid waste sectors. Twenty-five regional (including 15 utility members) and seven international countries are represented.

CEHI

CEHI was initially established as a project in 1979 under the aegis of CARICOM as part of an environmental health strategy for the English-speaking Caribbean. CEHI provides technical and advisory services on environmental management; serves as a regional reference centre for environmental data; coordinates research relevant to the environmental problems of the region; provides environmental services; and promotes uniformity in professional practice, design, standards and technical methods in environmental health/management.

CBWMP

CBWMP is a non-profit organisation established in 1975 to provide training on a regional basis to employees of member water utility companies and to develop local in-house training capabilities within the utilities themselves. Its strategic plan is predicated on the following beliefs: water must have priority on the national agendas of Caribbean countries; each utility can achieve more by working in partnership with others; networking among utilities is essential for the sustainable development of each utility; collective experiences can provide solutions to the challenges faced by various utilities; and water supply problems facing the region can be solved by the utilities themselves. As part of CBWMP's focus on organisational development and training, CBWMP is currently in the process of developing benchmarks and indicators for its 13 member utilities. It also operates as a certifying authority for water and wastewater operators with the aim of promoting certification as a means of ensuring effective utility operation.

GWPC

GWPC is a working partnership among various stakeholders in water resources management in the Caribbean region established in 2004 as the regional arm of the Global Water Partnership. GWPC's objectives include: establishing proactive alliances in water resources management; promoting public participation in the management of water resources through capacity building and information sharing; promoting integrated water resources management (IWRM); aligning the Caribbean region with other global water initiatives in order to capitalise on international experiences and opportunities for regional capacity building in IWRM; improving water governance through the promotion, enhancement and effective implementation of legislation, policy, programmes and institutional regulatory and administrative frameworks; and collaborating with other organisations and institutions working in other areas of sustainable development.

OOCUR

OOCUR is a non-profit organisation established in 2002 to assist in the improvement of utility regulation in member countries, foster development of transparent and stable utility regulation and foster cooperation among utility regulators. To facilitate the sharing of information and experiences among members, OOCUR hosts an annual conference, regular workshops and produces a newsletter. Full membership is open to regulatory bodies with responsibilities in the telecommunications, electricity, natural gas, water and transportation sectors in the Caribbean.

Source: CWWA (2003; 2005); OOCUR (2003); Sweeney (2003); GWPC (2004); CEHI (2005)

The main opportunities for regional cooperation facilitated by these institutions include sharing knowledge and experiences, overcoming capacity/capability constraints, providing centralised services and harmonising regional standards (Martin and Sohail, 2005). Annual conference and regular workshops hosted by CWWA and OOCUR for example, provide opportunities for networking among industry professionals. Training and professional development are possible through CBWMP. Regional initiatives like the CWWA typically have a 'loose' association with Caribbean governments and very limited influence on government policy for the sector. This exclusion from the formal sector policy framework is seen as one of the main weaknesses of such organisations as in the absence of formal regional agreements, their position and mandate can appear 'weak' (Bryan and Bryan, 1999).

More recently, there have been attempts to develop greater ministerial commitment to regional water and sanitation issues through increased government participation in regional organisations. In 2005 for example, government ministers for the first time held a ministerial meeting during the CWWA conference to discuss the way forward for a unified approach to water and wastewater management in the Caribbean (JIS, 2005). Plans are now afoot to convene this level meeting annually to coincide with the CWWA conference and *"to keep the lines of communication open"* through the creation of a *"loose coordinating secretariat"* over the 12-month waiting period between conferences (Ibid.).

Another new regional initiative in the sector is a professional exchange programme between the water utilities in Jamaica and Trinidad (WASA, 2004c; WASA and NWC, 2006). Signed in April 2006, the memorandum of understanding between the two utilities is a 2-year non-binding agreement to facilitate the sharing of knowledge, experience and skills towards the mutual improvement in the delivery of water and sanitation services. Areas for cooperation include water and wastewater treatment, desalination, project management, early contractor involvement, PSP, financial modelling and strategic planning. Proposed modes of cooperation include site visits and participation in project planning and implementation activities. At the end of this 'trial' 2-year period, the intention is to extend similar professional exchange programmes to other Caribbean water utilities.

With regards to regional financing initiatives in the sector, the Caribbean Development Bank (CDB) assists member countries⁸¹ (particularly the smaller and/or less developed

⁸¹ Regional members are Anguilla, Antigua & Barbuda, The Bahamas, Barbados, Belize, British Virgin Islands, Columbia, Cayman Islands, Dominica, Grenada, Guyana, Jamaica, Mexico, Montserrat, St. Kitts & Nevis, St. Lucia, St. Vincent & the Grenadines, Trinidad & Tobago, Turks & Caicos Islands and Venezuela.

members of the region) in the coordination and financing of development programmes. This may involve mobilising financial resources from within and outside the region, co-financing projects and providing technical assistance by undertaking pre-investment surveys or identifying and preparing project proposals. CDB's involvement in water and sanitation financing is indirect and complex however as financing is rooted in its sector strategies of economic and social infrastructure, the environment, poverty reduction and health. Financing of projects in the sector has been addressed for example through its Basic Needs Trust Fund programmes which target small projects in poor rural communities. As such, financing of the sector constitutes a very small portion of CDB activity. In 2003 for example, total net approvals inclusive of loans, contingent loans, equity and grants to the sector amounted to only 6.4% of total CDB financing (Brunton, 2004).

5.6 Chapter summary

This chapter presented background information on the research study area to provide context for research issues to be explored in the case studies.

CHAPTER 6 CASE STUDY: JAMAICA

6.1 Chapter introduction

This chapter examines the phenomenon of private investment in the Jamaican water and sanitation sector using survey, interview and document data to determine the operating environment for private investment, criteria for investment decision-making and scope and strategy for private investment in the sector. The potential for various size-related response strategies such as regional cooperation to improve investment prospects in the sector is also examined.

6.2 General information

Jamaica is the most westerly and largest English-speaking island in the Caribbean with a total area of 10,991 sq. km (Figure 5.1) and population of 2.61 million, of which 52% reside in urban centres. Of 232 countries surveyed in the CIA World Factbook, Jamaica is ranked 171st in terms of area, 139th in terms of population, 136th in terms of total GDP and 144th in terms of GDP per capita (CIA, 2005). Although Jamaica's population is above the 1.5 million small states threshold, it is still considered a small state as it shares many of the characteristics of smaller countries.

6.3 Status of the water and sanitation sector

The development of piped water supplies in Jamaica can be traced back to 1799 when the privately owned Falmouth Water Works Company was established to supply the town of Falmouth, Trelawny. Since then, different approaches have been used to extend water and sewerage services to various sections of the country. Public ownership under a series of government-appointed boards and commissions has however dominated the sector since the 1870s⁸². Up to 1980, responsibility for water supply and sewerage services was essentially split between the 'capital city focused' Water Commission and the 'rest of Jamaica focused' National Water Authority. Government's intention to rationalise water use and management under a single service provider was realised in 1980 with the amalgamation of both entities into the incumbent National Water Commission (NWC).

⁸² After the transfer of the island's capital from Spanish Town to Kingston in 1870, the private development of water supplies was no longer encouraged and government proceeded to purchase the assets of various private water works companies.

Since inception, NWC's primary focus has been the provision of urban water supply and sewerage services, a fact supported by dissimilar levels of coverage to urban and rural communities (Table 6.1). Minor rural water supply systems⁸³ have been and are still the responsibility of local government councils (parish councils). Approximately 74% of Jamaican households receive water from NWC, of which 83% have piped water. Coverage for urban and rural households is 91% and 56% respectively, with 5% of urban households receiving non-piped sources compared to 38% of rural households. To compensate for the shortfall in public water supply, 28% of rural households rely on private sources of water⁸⁴ compared to 7% of urban households. Centralised sewerage services are available to only 22% of households, with 75% of households relying on on-site disposal systems such as flush toilets (37%) and pit toilets (38%). The most common sanitary convenience in rural areas is the pit latrine used by 60% of rural households.

Table 6.1 Water and sanitation coverage in Jamaica (2001)

Source of water	Total (%)	Urban (%)	Rural (%)	Type of toilet facilities	Total (%)	Urban (%)	Rural (%)
Public source	74.2	90.5	56.0	Not shared	76.8	74.1	79.8
Piped into dwelling	44.8	65.7	21.6	WC linked to sewer	18.2	} 62.7	4.0
Piped into yard	16.7	19.9	13.1	WC not linked to sewer	30.8		29.5
Standpipe	10.7	4.3	17.9	Pit	27.8	11.4	46.3
Catchment	2.0	0.6	3.4				
Private source	16.5	6.6	27.7	Shared	20.6	24.0	16.8
Piped into dwelling	6.4	4.5	8.6	WC linked to sewer	3.8	} 16.6	} 3.4
Catchment	10.1	2.1	19.1	WC not linked to sewer	6.6		
				Pit	10.2	7.4	13.4
Spring/river	4.7	0.2	9.5				
Other	4.6	2.7	6.8	No toilet facilities	2.6	1.9	3.4

NOTE: Adjusted for non-response

Source: STATIN (2003; 2004)

In the context of 'improved drinking water sources' and 'improved sanitation'⁸⁵, the majority of Jamaican households have good water and sanitation coverage. While coverage is good however, reliability of water supply is erratic in some areas and sewage disposal practices are not considered environmentally friendly. The level of unmet demand has shown an upward trend primarily due to high levels of UFW, a slow rate of new supply development, little or no system rehabilitation and poor demand management. Water quality is generally good but is compromised by saline intrusion, nitrate contamination from fertilizers and sewage, improper disposal of industrial effluents and the use of pesticides in catchment areas. Sewage effluent quality from standalone

⁸³ Defined as systems with distribution networks less than 100 mm in diameter.

⁸⁴ Private sources in this context does not necessarily refer to water obtained from a privately operated water utility but can apply to discrete sources for individual use such as boreholes or rainwater catchment tanks.

⁸⁵ 'Improved drinking water sources' include household connections, public standpipes, boreholes, protected dug wells and protected rainwater collection. 'Improved sanitation' includes connection to public sewers, connection to septic systems, pour-flush latrines, simple pit latrines and ventilated improved pit latrines (WHO and UNICEF, 2000).

'package' plants is often inconsistent, with more than 85% of these plants failing to meet sewage effluent standards. The situation is aggravated by the demands of increasing urbanisation, the existence of dispersed and remote rural communities, challenging terrain especially in rural areas, annual drought conditions and the need to comply with more stringent sewage effluent standards. Investment needs for the sector to remedy these deficiencies and provide universal access are estimated at US\$2-3 billion.

6.3.1 Status of the public water utility

NWC's performance has been mixed. 1999/2000 for example, saw the largest growth in sales revenue at 17% and increase in operating margin by 15% following an interim tariff adjustment. Financial and operational data for 2003 however, indicate a slowdown in revenue growth and operating losses of J\$618 million reflecting an operating profit margin of -12% (Table 6.2). Declining performance has been attributed to unexpected pension liabilities, increases in debt, implementation of projects with wider economic benefits but limited financial returns, a tariff insufficient to cover capital costs, high UFW (65%), lower than expected collection efficiency and incurred interest costs due to cash flow deficits and reliance on overdraft facilities. NWC's financial situation is also a by-product of government's systematic weaning of budgetary support, concurrent with NWC having to go into 'expansion mode' to fulfil government's mandate for universal access by 2010. In keeping with government's Public Sector Modernisation Programme, NWC has been receiving progressively smaller disbursements and subsidies from government and has had to assume more of the capital costs of the sector.

Table 6.2 Financial and operational data for NWC (2003)

Parameter	Value
Working ratio	1.0
Operating ratio	1.4
Debt service ratio	35%
Gross operating margin	-1%
Operating profit margin	-12%
Sales growth	7%
Collection efficiency	89%
Staff per 1000 connections	6
Employee cost/total cost	46%
Production (Mm ³)	281.3
Consumption (Mm ³)	98.9
Unaccounted for water (UFW)	65%

Source: NWC (2003; 2004a) and author's calculations

6.3.2 Sources of financing

The financing of major capital works has predominantly been the responsibility of the public sector either from revenues generated by NWC, specially designated funds such as the K-factor fund provided as a tariff surcharge (see Section 6.4.5.2), budgetary allocations from government or funds facilitated by government on behalf of NWC from various commercial, multilateral and bilateral sources. Bank loans and overdrafts guaranteed by government are normally sourced from local commercial banks and financial institutions to provide working capital and fund NWC's systems rehabilitation programme. Multilateral and bilateral sources such as the Inter-American Development Bank, European Union, European Investment Bank, Japan Bank for International Cooperation, Overseas Economic Corporation Fund, Caribbean Development Bank and United States Trade and Development Agency provide concessional loans and grants which are normally matched in part by government to fund NWC's major capital works programme. More recently, there has been some private sector investment through developer contributions/exactions, PPPs and private service providers. The extent of this investment is unknown however as it is not differentiated from other non-NWC and non-government financing sources. The typical financing mix for major capital works is NWC (2%), government (41%) and other sources (57%).

Government's systematic weaning of NWC from public funds has resulted in NWC having to assume more local and foreign debt to finance capital expenditure, NWC trying to improve its financial performance to facilitate self-funding and increased emphasis on obtaining additional multilateral and bilateral funding. Capital work estimates for 2004/05 however indicate that there is a significant shortfall in terms of traditional sources of financing. Budgetary allocations for example, are just 54% of requested government funding and contributions from multilateral and bilateral sources fall below expectations. Aware of this shortfall and the significant investment needs of the sector, government's strategy is to mobilise additional sources of financing including private investment.

6.3.3 Projects for financing

Several capital projects have been planned for the 2004/05 fiscal year to improve water and wastewater treatment facilities, improve operational efficiencies and develop water supply systems for service expansion. A list of these projects is presented in Appendix 7.

As shown in Table 6.3, the majority of projects are less than US\$1 million with only one project valued more than US\$50 million.

Table 6.3 Capital expenditure for 2004/05 (NWC)

Project cost	Number of projects
Less than US\$1 million	47
US\$1.1 to US\$10 million	11
US\$10.1 to US\$50 million	6
Greater than US\$50.1 million	1

Source: NWC (2004b)

6.4 Overview of the operating environment

6.4.1 Macroeconomic environment

Jamaica's monetary and exchange rate policies have been strongly determined by the economic effects that resulted from the major financial crisis in 1995/96⁸⁶. Since then, government's primary macroeconomic objective has been the control of inflation by adopting a very restrictive monetary policy combined with an attempt to stabilise the foreign exchange rate. While these policies have been successful in reducing inflation, they have contributed to a high interest rate environment which has been detrimental to private sector investment, growth and external competitiveness. Since 2004, there has been a general stabling and predictability of the macroeconomic environment allowing the central bank to relax its monetary policy stance while maintaining focus on preserving low inflation. Government's outlook based on market conditions includes restoration of strong foreign and local investor confidence fuelled by foreign exchange market stability⁸⁷. On the international scene, positive policy trends are considered to counterbalance the significant risk stemming from the government's debt size (135% of GDP at year-end 2004) and have led to the revision of Jamaica's sovereign credit rating from B negative to B stable.

The Jamaican economy is heavily dependent on services which account for approximately 61% of GDP (Table 6.4). Targeted sectors for FDI include tourism, information and communication technology, telecommunications, specialised minerals such as bauxite, agribusiness and culture (music and film). Government's economic programme is aimed at strengthening the framework for private investment with

⁸⁶ Financial sector crisis when several domestic financial institutions and insurance companies ran into severe liquidity and solvency problems. Government intervention succeeded in averting the collapse of the financial system but led to rapid accumulation of high-cost domestic debt.

⁸⁷ For example, the Jamaican stock market in 2004 recorded one of its strongest year performances reflecting growth of 66.7% in its main index. Macroeconomic stability was also reflected in a mere 1.63% depreciation in the foreign exchange rate, the lowest since 1998 (BOJ, 2005).

numerous initiatives implemented in this regard including measures to reduce deficiencies in infrastructure services. Problems such as water shortages, inadequate sewage facilities and the underdeveloped transport network have been prioritised and there is active encouragement of PSP by government to address these issues.

Table 6.4 Economic indicators for Jamaica (2004)

Parameter	Value
GDP per capita	US\$3,100
GDP – real growth rate	1.2%
GDP – services	61.3%
GDP – industry	32.7%
GDP – agriculture	6.0%
Inflation rate	13.7%
Public debt (of GDP)	135%
Exchange rate – J\$ per US\$	61.39
Average lending rate	24.89%
Sovereign credit rating	B/stable/B ^a

^aAs at December 10, 2004 (local and foreign)

Source: BOJ (2005); Standard & Poor's (2005)

6.4.2 Institutional arrangements

The Ministry of Water and Housing (MOWH) is the premier agency charged with developing and implementing government's policy objectives for the sector. Prior to 1998, policy formulation was carried out by the Ministry of Public Utilities which in addition to water and sanitation also had responsibility for electricity, telecommunications and transport. Widespread dissatisfaction with service provision however, exacerbated by an unprecedented drought in 1997, prompted government to establish a Ministry of Water⁸⁸ devoted exclusively to developing the sector. Implementation of government's policy for the sector is vested in NWC, a statutory organisation responsible for providing potable water and sewerage services to over 74% and 18% of the Jamaican population respectively. Long-term strategic planning within NWC is conducted by its Corporate and Strategic Planning Division⁸⁹ responsible for:

- (a) coordinating planning activities within NWC to facilitate orderly development and expansion of water and sewerage systems;
- (b) analysing and monitoring regulatory compliance to utility benchmarks and targets;
- (c) designing and maintaining tariffs to reflect NWC's revenue targets and socio-economic objectives;

⁸⁸ Housing portfolio added in 2000.

⁸⁹ Also established in 1998. The division is headed by a Vice President who is supported by a General Manager Corporate Planning, General Manager Special Projects and Public-Private Sector Partnerships, Financial Analyst, Corporate Economist, Tariff Analyst, Strategic Planner, Policy Analyst and Industrial Engineer.

- (d) identifying and negotiating sources of funding to finance projects; and
- (e) structuring PPPs to improve NWC's service delivery.

The work of NWC is supplemented by 12 parish councils who under the direction of the Ministry of Local Government, Community Development and Sports operate small distribution systems, community catchment tanks, standpipes and truck-borne water operations to rural communities. Community-based organisations are also involved in the operation and management of community water supply systems, largely due to local government encouragement for community self-help programmes. With respect to sanitation, NWC operates centralised and standalone sewerage systems in designated urban areas. Additional sewerage services are provided by the Urban Development Corporation (UDC)⁹⁰, hotels, public and private housing developments⁹¹ and educational institutions. Sewage treatment plants serving hospitals and health care facilities across the country are operated by the Ministry of Health (MOH).

Economic and quality standards regulation is provided by the Office of Utilities Regulation (OUR), an independent body attached to the Ministry of Development in the Office of the Prime Minister⁹². OUR's responsibilities include licensing utility service providers, tariff adjustment and the setting, monitoring and enforcement of service quality standards. Water quality and sewage effluent monitoring is conducted at the parish level by the Environmental Health Unit of the MOH. The National Environment and Planning Agency (NEPA) is the semi-autonomous government agency charged with the implementation of environmental protection laws and regulations. In so doing, NEPA monitors and enforces water quality and sewage effluent standards. The sector is also subject to the regulation of the Water Resources Authority (WRA), the agency responsible for the control and management of the country's water resources⁹³.

The Ministry of Finance and Planning (MOFP) monitors the financial performance of NWC and through the Planning Institute of Jamaica (PIOJ)⁹⁴, coordinates external financing for NWC's investment programmes. This may include MOFP underwriting or offering government's guarantee to secure commercial or donor financing on NWC's behalf. Government and donor financial resources for small-scale, community-based

⁹⁰ UDC is government's urban developer. Its role is to plan and design urban environments in designated areas and to undertake large-scale projects as a catalyst for development or to facilitate urban renewal and revitalisation.

⁹¹ Public housing developments provided by the National Housing Trust.

⁹² The Ministry of Development is responsible for development projects, investment promotion and social, economic and support programmes. OUR is headed by a Director General who is supported by two Deputy Director Generals (one specific to electricity and water) and a team of economists, financial analysts, engineers and legal personnel.

⁹³ WRA's duties include allocating water resources, issuing and monitoring water abstraction licences and monitoring water quality.

⁹⁴ PIOJ is the central planning agency responsible for initiating and coordinating plans, programmes and policies for the economic, financial, social, cultural and physical development of Jamaica. Funding assistance from international development partners is managed by its External Cooperation Management Division.

water infrastructure projects are mobilised by the Jamaica Social Investment Fund (JSIF)⁹⁵. Loans to JSIF from external partners including multilateral and bilateral organisations⁹⁶ are administered by government. The National Housing Trust (NHT)⁹⁷ operates both as a financier and developer of public housing projects and in so doing, is often actively involved either by itself or as part of a joint venture in the financing of new water and sewerage infrastructure. The same is true for UDC as it carries out its urban renewal mandate. Private housing developers are also involved in financing the sector as they are required to meet all on-site infrastructural costs in discrete new developments. In addition, where off-site infrastructure is undertaken to benefit a new housing development, industrial park or private residence exclusively, the capital cost has to be met by the developer.

A summary of the institutions involved in the sector is shown in Table 6.5. Additional information on the function, responsibilities and framework within which these organisations operate is included in Sections 6.4.3 to 6.4.5.

Table 6.5 Institutions involved in the Jamaican water and sanitation sector

Focus	Institution
Policy	<ul style="list-style-type: none"> • Ministry of Water and Housing • Ministry of Local Government, Community Development and Sports
Regulation	<ul style="list-style-type: none"> • Office of Utilities Regulation • Ministry of Health • National Environment and Planning Agency • Water Resources Authority • National Water Commission
Service provision	<ul style="list-style-type: none"> • National Water Commission • Parish Councils • Urban Development Corporation • National Housing Trust • Ministry of Health • Private housing developers • Private operators
Finance/planning	<ul style="list-style-type: none"> • Ministry of Finance and Planning • Planning Institute of Jamaica • Jamaica Social Investment Fund • National Housing Trust • Urban Development Corporation

⁹⁵ JSIF is a temporary, autonomous government-sponsored institution designed to address the most pressing socio-economic needs of the poor. This is usually achieved through a national partnership between central and local government and private and public organisations working at the local level to address the immediate demands of communities.

⁹⁶ Includes the World Bank (40%), Inter-American Development Bank (20%), Caribbean Development Bank, Government of the Netherlands (6%), European Union, Organisation of Petroleum Exporting Countries (4%) and Department for International Development (JSIF, 2005).

⁹⁷ NHT is a public sector enterprise responsible for mobilising additional funds for housing.

6.4.3 Policy framework

Government's broad objectives for the sector were initially outlined in the National Industrial Policy of 1996 in keeping with a national strategic plan for economic growth and development. General water and sanitation targets of the policy included upgrading and expanding water and sanitation infrastructure, improving the quality and scope of water and sanitation services and reducing the cost of service provision in line with world standards. Complementary to sector reform which resulted in the formation of the Ministry of Water in 1998, industry-specific policy was approved in March 1999 followed by the development of strategies and action plans to enable policy implementation. The resulting policy document - Jamaica Water Sector Policy: Strategies and Action Plans⁹⁸ (MOWH, 2004), was presented island-wide during a series of public consultations at the parish level. The document was also widely circulated among the business community, non-government organisations, parish councils and other interest groups and posted on WRA's website. The original document of November 2000 has since been revised and updated to its current June 2004 version.

The main objectives of the policy are universal access to water by 2010⁹⁹, expansion of central sewerage services to major towns by 2020 and improvement in NWC's efficiency. The main elements of the policy are to reorganise institutions involved in the sector, ensure minimum standards of service, mobilise additional sources of funding, introduce cost recovery mechanisms and develop a regulatory framework to protect customers, investors and the environment. To this end, government pledges to *"update the legislative framework by amending existing laws, and where necessary, passing new laws to reflect the policy and facilitate its implementation"*.

In recognition of the different challenges of urban and rural service provision, the Water Sector Policy outlines separate objectives and implementation strategies for urban and rural water and sanitation. The focus for urban water and sanitation which is the mainstay of NWC's operations is the development of an *"enabling environment"* to encourage the implementation of conservation measures, increase the efficiency of NWC's operations and encourage optimal utilisation of water through multi-purpose uses such as hydropower generation, recreation and recycling. Institutional responsibilities for operation, economic regulation and water quality/sewage standards monitoring are

⁹⁸ Commonly referred to as the Water Sector Policy.

⁹⁹ Universal access in this context does not necessarily mean piped water to every household. Access to be achieved through a combination of service supply options including water shops, wayside tanks and loading bays, community catchment tanks, standpipes, trucking and self-provision through individual household rainwater tanks and wells.

clearly defined. OUR is mandated to set tariffs which allow service providers to fully recover efficient cost levels including both capital and operating costs. Where necessary to achieve social objectives, government intends to provide subsidies equal to the tariffs, fees and charges otherwise payable by the consumer. With respect to financing capital costs, government makes clear its intention to access financing from a “wider range of sources” to include millage¹⁰⁰ and private investment in new infrastructure and private operation of water and sewerage services. PSPs are expected to meet the following criteria:

- (a) terms for privatisation that are in the country’s best interest;
- (b) improved economic efficiency in both operating performance and the use of capital investment;
- (c) technical and managerial expertise and the introduction of new technology to achieve productivity improvements;
- (d) injection of large-scale investment capital and/or access to private capital markets;
- (e) insulation from short-term political intervention in utility operations and limited opportunity for intervention by powerful interest groups;
- (f) transfer of risk and responsibilities of ownership from government to the private sector over the long-term;
- (g) delivery of a reliable and efficient service to communities throughout the island; and
- (h) a sector more responsive to consumers’ needs and preferences.

PSP is recognised as “*part of the government’s strategy to secure economic benefits for Jamaica, and not an end in itself*”. The policy clearly delimits PSP options under consideration. Service and management contracts, leases, concessions and BOT-type arrangements are identified for investigation pending government’s objective(s) for this investment. Divestiture is not considered a financing option since “*the Government of Jamaica will continue to own and/or control (directly or through designated entities such as the NWC), the natural resources and existing infrastructural assets*”.

Responsibility for the provision of water services in rural areas has historically been transferred back and forth between NWC and parish councils resulting in an “*ill-defined and unsatisfactory*” relationship between both entities¹⁰¹. The Water Sector Policy

¹⁰⁰ Charges such as the K-factor levied on customers in addition to the tariff to fund new projects from which they will benefit.

¹⁰¹ Between 1988 and 1993 for example, water provision throughout the island was NWC’s responsibility. In 1993, NWC transferred ‘simple’ systems to parish councils and retained systems that were more complex and expensive to operate and maintain.

proposes to formally determine the responsibilities of NWC, parish councils and other water operators. With regard to financing and cost recovery, the policy makes allowances for higher than normal subsidies to offset higher delivery costs and lower incomes in rural areas compared to urban areas. These features of rural water supply are recognised as likely deterrents to attracting private investment. Regardless, recommendations for private investment include deliberate inclusion of rural areas in private urban systems and provision of incentives by government. Where appropriate, government intends to promote the involvement of cooperatives and small entrepreneurs through community participation in the operation and management of community water supply systems. To support this emphasis on rural service provision, government has approved the establishment of a Rural Water Supply Ltd.¹⁰² to facilitate the development of small water supply projects for small rural communities.

6.4.4 Legislative framework

The NWC Act (GOJ, 1980) is the primary legislation governing water and sanitation service provision in Jamaica which recognises NWC as the “*statutory water undertaker*”. The defined functions of NWC are enumerated in Section 4(1) of the Act and include:

- (a) preparing and submitting proposals to the Minister for the establishment of an efficient, coordinated and economical water supply system capable of meeting the island's water needs;
- (b) preparing and submitting for Ministerial approval, details of schemes for the development of water resources and water supply in particular areas and the delivery of such schemes;
- (c) reviewing water supply service quality, reliability and availability and the rates charged for such services in addition to advising the Minister on these and other water supply-related matters; and
- (d) providing and improving water supply services throughout the island within the limits of its resources.

The Act empowers NWC with the consent of the Minister to borrow money and raise money by issuing stocks, debentures and other securities. Authorised loans to NWC may be guaranteed by the Minister responsible for finance pending parliamentary approval. The NWC is also authorised to purchase and sell water in bulk and acquire

¹⁰² To be formed from a merger of the Project Implementation Unit of the GOJ/IDB Rural Water Programme and Carib Engineering Corporation Ltd. The Rural Water Supply Ltd. is expected to have a multi-functional role involving project management, water supply system design and construction management.

parish council systems subject to Ministerial approval. NWC's regulatory powers extend to issuing licences to other service providers and the regulation of all wells¹⁰³ to the extent that “any person who without a licence from the Commission [NWC], from any source whatever supplies water to any other person in any area in which water is supplied by the Commission shall be guilty of an offence”.

Provision for other “statutory water undertakers” is made in the Water Supply Act (GOJ, 1958) taken to mean parish councils or “any committee authorised by any law or regulations to supply water”. The Act empowers the Minister on the application of statutory water undertakers to provide for joint water supplies and transfer of undertakings by agreement, determine supply boundaries in the case of multiple applications and resolve disputes between statutory water undertakers. Parochial water supply by parish councils is governed by the Parishes Water Supply Act¹⁰⁴ (GOJ, 1889). The Act empowers the Minister to define service area limits, order monies to be advanced for construction and/or maintenance and determine the repayment of advances and interest. Parish councils with Ministerial approval determine water rates using either a uniform rating based on property value or a graduated scale of charges based on property value or the amount of water supplied. Parish councils are also empowered to supply water free of charge¹⁰⁵ or with the consent of NWC¹⁰⁶, connect to their mains to supply free water as they see fit. Regulatory powers of the parish councils extend to making by-laws for regulating water (mis)use, sale, delivery and supply.

6.4.4.1 Regulation-specific legislation

Regulatory provisions for utility services¹⁰⁷ are made in the OUR Act (GOJ, 1995) which established OUR as a corporate body. The key functions of OUR are specified in Section 4(1) of the Act and include regulating the provision of prescribed utility services and receiving and processing utility service licence applications. In the performance of its functions, the Act enables OUR to encourage utility service competition, protect consumers' interests and promote and encourage the development of modern and efficient utilities. The Act also empowers OUR to prescribe service standards, prescribe the system of accounts to be kept by a licensee and impose regulatory service fees.

¹⁰³ Includes sinking, construction, maintenance and use of all new wells.

¹⁰⁴ Not in force in the parishes of Kingston and St. Andrew.

¹⁰⁵ Also provided for in the Parochial Water Works Charges Act (GOJ, 1913).

¹⁰⁶ Section 20(1) of the NWC Act empowers the Minister to modify water rates due to NWC in areas where NWC supplies water within the limits of a water supply district as defined in the Parishes Water Supply Act.

¹⁰⁷ Includes water, sewerage, electricity, telecommunications and public transportation by road, rail or ferry.

In carrying out its duties, the Act instructs OUR to have regard to protecting the environment, ensuring that consumers are afforded an economical and reliable service and that persons financing the operation of a utility service are afforded a reasonable return on capital invested in providing that service. Unless the “enabling instrument”¹⁰⁸ specifies the manner in which rates may be fixed by a licensee or specified organisation, OUR may either on its own motion or upon application, prescribe the rates to be charged by a licensee or specified organisation in respect of its prescribed utility services. In cases where the enabling instrument of a specified organisation contains provisions regarding returns or profits to be received, the Act mandates OUR to limit rates to ensure compliance with such provisions. Where a project is assisted by a loan provided by a financial institution on terms approved by the Minister, rates approved by OUR should be such as to ensure that while the legal obligation to the financial institution remains outstanding, the licensee or specified organisation receives a minimum return on its rate base¹⁰⁹ as prescribed by the Minister. Finally, in the event of an enquiry, interested parties may be represented before OUR by an attorney-at-law and may call witnesses as necessary.

As mentioned in Section 6.4.2, three other agencies besides OUR are involved in regulating the water and sanitation sector. The WRA by way of the Water Resources Act (GOJ, 1996), regulates and manages the abstraction, allocation and conservation of Jamaica’s water resources. Licences issued by WRA are necessary to abstract water and to drill or modify wells. Persons are exempt from abstraction licences only if they have a right of access to a water source or require water for household domestic use. The Public Health Act (GOJ, 1985) does not specifically address the water and sanitation sector but in the interest of public health, empowers MOH to “*carry on all activities which appear to be requisite, advantageous or convenient in the interest of public health*”. NEPA is empowered by the Natural Resources Conservation Authority (NRCA) Act (GOJ, 1991) to formulate standards and codes of practice for maintaining the quality of the environment. Permits and licences are required from NEPA to construct or modify wastewater treatment works and discharge sewage effluent.

Pursuant to the NRCA Act, drafting instructions have been issued for the National Wastewater and Sludge Regulations (GOJ, 2004b) to complement existing sewage and trade effluent standards. These regulations will make provision for the operation of wastewater treatment plants, certification of wastewater treatment operators, monitoring

¹⁰⁸ Defined as any permit or statutory instrument by which the licensee or specified organisation is authorised to provide a prescribed utility service.

¹⁰⁹ ‘Rate base’ in relation to a licensee or specified organisation means its rate base as determined by OUR in accordance with the principles set out in the enabling instrument.

and reporting requirements for licensed treatment plants, requirements for sewage effluent disposal and fees and penalties for sewage effluent discharges. In an effort to streamline monitoring and reporting requirements for sewage disposal, the regulations will assign MOH, WRA and NEPA joint monitoring responsibility of sewage effluent standards. NEPA will however administer the standards.

6.4.4.2 *Sector-specific legislation*

Cabinet has also approved the issuing of drafting instructions for a new bill, the Water Supply and Sewerage Services Act (WSSS Act) (GOJ, 2004a) to serve as industry-specific legislation for the water and sanitation sector¹¹⁰. Provisions under the new Act will include:

- (a) Ministerial designation of a Director of Water to coordinate the macro-planning of the sector and assume planning and approval functions previously executed by NWC;
- (b) defined functions of OUR with respect to regulating service providers, receiving and processing licence applications for service provision, promoting competition among service providers and making information available to the public;
- (c) removing the regulatory powers of NWC and parish councils by repealing the NWC and Parishes Water Supply Acts; and
- (d) establishing a fund from the mandatory contributions of water supply licensees to assist in the financing of water supply expansion.

Most of the WSSS Act focuses on the empowered regulatory duties of OUR with respect to the licensing of water supply and sewerage services. In deciding whether to grant a licence, OUR is expected to consider water resource plans and planning approvals in the case of water supply and sewerage services respectively. The Act will empower OUR to “*determine whether the applicant is a fit and proper person to be granted a licence*”, such person agreeing to comply with the provisions of the Act, is not disqualified by reason of any legal impediment, possesses the technical qualifications to perform the obligations imposed by the licence and satisfies the financial requirements for service provision. Persons aggrieved by a decision made by OUR will be able to appeal against the

¹¹⁰ A legal consultant was hired in March 2002 to draft instructions for the WSSS Act. The MOWH has hosted three industry-specific legislation workshops to involve stakeholders and incorporate their views in the legislative framework, the final draft of which was submitted to the Ministry in November 2002. Work continues at the ministerial level to finalise Cabinet submission in relation to the drafting instructions. It is anticipated that the WSSS Act will be enacted in 2005/06.

decision to the Appeal Tribunal¹¹¹. Finally, the Act will empower OUR to make an application to the courts in the event that a licensee has failed to comply with the conditions of the licence or has contravened provisions of the Act. In such cases, OUR will consider the resources available to the licensee, the continued economic viability of the licensee and the conduct of the licensee's competitors.

6.4.5 Regulatory framework

6.4.5.1 *Regulatory framework for the NWC*

Although Section 11 of the OUR Act empowered OUR to prescribe rates for utility services, up to 1999, rates were set and charged by NWC subject to Ministerial approval in accordance with the NWC Act. However, in anticipation of an amendment to the NWC Act by way of the pending WSSS Act¹¹², the task of reviewing rates charged by NWC has been delegated to OUR. Complementary to tariff review, OUR also developed a regulatory framework which outlined several performance targets and benchmarks to be achieved by NWC. The first consultative document for the water sector was issued in February 1999 as a public discussion paper to provide an overview of the principles on which service quality standards for the sector were being set and to propose appropriate standards for NWC¹¹³. Standards¹¹⁴ were developed based on NWC's performance, policy, data availability, existing regulations, corresponding relevant standards as specified for the electricity utility and standards from other countries, particularly the UK¹¹⁵. Following consultation, NWC began reporting on overall and guaranteed standards¹¹⁶ in April 2000 with compensatory payment for failure to meet the agreed on guaranteed standards commencing in April 2001¹¹⁷.

Since then, NWC's performance in terms of overall standards has featured highly at tariff reviews to the extent that targets and reporting requirements have been revised to

¹¹¹ Appeal Tribunal to consist of 3 members appointed by the Minister – former Judge of the Supreme Court or Court of Appeal as chairman, one member appointed on the recommendation of the Advisory Council and one member appointed on the recommendation of the Consumer Affairs Commission.

¹¹² Amended NWC Act to make rate-setting the sole purview of OUR.

¹¹³ Consultation lasted four months during which time the document was circulated and written comments to the proposals and specific questions invited from the general public and other interested parties such as service providers, businesses, professionals and academics.

¹¹⁴ Standards can be divided into three major areas covering the entire spectrum of NWC's operations, namely the production process, service supplied and customer interface. Standards relating to customer service and intrinsic quality are determined by OUR while health and safety standards and environmental impact are monitored by MOH and NEPA. OUR however monitors NWC's compliance to all set standards.

¹¹⁵ The UK was chosen as a model because it was considered to have a well-developed quality of service and guaranteed standards scheme for the water sector.

¹¹⁶ Overall standards are intended as general performance measures to ensure that consistently good quality service is provided to customers while guaranteed standards address specific aspects of service provision for which NWC has to make compensatory payments to affected customers if in breach.

¹¹⁷ One year 'grace period' given between introducing the standards and implementation of guaranteed standards to allow NWC time to put the necessary systems in place, e.g. automatic compensation to customers.

correspond with rate determination. Tariff review applications have to be accompanied by detailed supporting documentation to justify the request for a tariff increase, outline financial projections and present the proposed capital investment programme¹¹⁸. Rate determination notices are then issued by OUR detailing the results of the tariff review, revised performance targets for NWC and expectations for efficiency improvements and customer service. In order to satisfy the provisions of the OUR Act and to benefit from the widest possible cross-section of views, OUR has adopted the practice of public consultations, the results of which are also considered in rate reviews¹¹⁹. At the end of the tariff review and concurrent with the final determination, a new regulatory framework is drafted by OUR outlining standards and reporting requirements to be fulfilled by NWC, the effective date of the decision and the effective time period of the tariff regime.

The prevailing regulatory framework for NWC became effective on April 1, 2004 and is intended to remain in effect until March 2006. Financial and operational performance targets have been established with the intention of securing continued improvements in NWC's efficiency and overall performance. Regulatory oversight is achieved through the quarterly and/or annual submission of various reports¹²⁰ by NWC to OUR.

6.4.5.2 *Tariff structure*

The present tariff structure is a uniform, two-tiered system comprising a fixed component represented by a customer service charge¹²¹, and a variable component represented by a volumetric charge. Domestic tariffs have an increasing block structure comprising six blocks, tiered in such a way so that the first 14 cubic metres is heavily subsidised (Table 6.6). Wastewater tariffs are set at 100% of the water consumption charge and are charged to residents located within a 0.1 km radius of a NWC sewerage treatment facility regardless of connection to the system. In addition, there is a surcharge - the price adjustment mechanism (PAM), added to all billed water, sewerage and service charges to protect the real revenues of NWC. PAM is calculated as the weighted average of changes in foreign exchange rates (0.175), inflation (0.605) and electricity costs (0.220), with the electricity and foreign exchange components of PAM applied as a monthly adjustment to customers' bills. The inflation component of PAM is applied as a lump sum

¹¹⁸ NWC's September 2003 tariff review application for example, was supported by the findings of a tariff review study which among other things outlined NWC's proposals to meet performance targets set by OUR, developed a cost of service model, reviewed existing tariffs and suggested new tariff structures.

¹¹⁹ For the 2003 tariff review for example, a supplement summarising NWC's tariff proposal was published in the local newspaper and the public invited to submit written comments. In addition, public consultations were held in major urban centres to give stakeholders an opportunity to be heard and make presentations to OUR. During these public meetings, NWC had to elaborate on their tariff proposal and respond to questions and comments.

¹²⁰ Includes financial reports; statistical information on operations and customer service; quality of service standards reports; reports relating to performance on capital projects; and status reports on restructuring programmes.

¹²¹ Designed to recover fixed costs related to metering, billing, collection, customer services and depreciation.

on an annual basis minus a 3.5% efficiency gain calculation¹²². This becomes effective on January 1 each year at which time a new base rate is set to reflect the change in PAM¹²³.

Table 6.6 OUR determined water rates as at January 1, 2004

Category	Rates (J\$) ^a
Domestic	
0 – 14 m ³	23.83
14 – 27 m ³	42.02
27 – 41 m ³	45.37
41 – 55 m ³	57.91
55 – 91 m ³	72.12
>91 m ³	92.83
Commercial	89.37
Condominium	44.33
Primary school	35.75

^aRates per cubic metre calculated using PAM of 48% as at August 2003

Source: OUR (2003b)

Under the previous regulatory framework, a 4% K-factor¹²⁴ was also added to PAM to provide revenue to cover additional capital costs associated with additional capital works necessary to comply with OUR performance target requirements and/or achieving government's water sector policy. A K-factor was not included in the rates for the 2003 review as NWC's anticipated J\$600 million profit as a result of a 26.36% tariff increase was allowed as sufficient to cover operating expenses, undertake essential rehabilitation programmes and contribute to capital expansion.

In determining the tariff increase to be granted to NWC, OUR calculates the percentage change in revenue required to offset the shortfall between what is termed the 'revenue requirement' and projected revenue¹²⁵. The revenue requirement is the sum of NWC's total operating costs¹²⁶ and return on equity. In calculating the appropriate return on equity for NWC, the returns of international utilities¹²⁷ are used as proxies to estimate elements of the capital asset pricing mechanism¹²⁸. The basis for this methodology is two-fold. Firstly, OUR believes that the return on investment should be calculated on a

¹²² With the expected expenditure on mains replacement as well as the installation of source meters, OUR anticipates an improvement in UFW of at least 2% each year assumed to result in at least 2% improvement in efficiencies. Additional efficiency gains of 1% on production and distribution costs and 0.5% on indirect costs yields an overall efficiency gain of 3.5% (OUR, 2003a).

¹²³ New base rate is set annually equal to old base rate $\times (1 + \text{PAM} - 3.5\%)$.

¹²⁴ K-factor managed in a separate account in accordance with OUR regulation.

¹²⁵ Projected revenue determined by examining trends in water production and consumption and customer account information.

¹²⁶ Includes salaries, pension costs, administration, repairs and maintenance, electricity costs, purchase of water, loan interest, depreciation, bad debt and regulatory fees. Assumptions of expected cost savings and changes in cost items are incorporated in OUR's determination of total operating cost.

¹²⁷ Countries used are France, Brazil, China, Chile, Greece, Spain, Hong Kong, Italy, USA and the UK.

¹²⁸ Model used to provide framework relating the required return on an investment to the risk of that investment.

real basis and in US dollar terms since the new policy of regular revaluation of assets¹²⁹ and PAM account for any inflationary and foreign exchange movements. Secondly, it facilitates benchmarking against international utilities. The resulting return on equity therefore represents what OUR considers a reasonable profit that will allow NWC to do critical rehabilitation projects as well as contribute to the financing of capital expansion.

The current regulatory framework for NWC represents a departure from its 1999 predecessor with respect to OUR's approach to expectations of efficiency gains, the use of PAM and the setting of performance benchmarks. The OUR attributes this change to reflect government's expectation for NWC to operate in a commercially-focused manner and from a regulatory perspective, be treated similarly to any private sector operator.

6.4.5.3 *Regulatory framework for private service providers*

Until recently, OUR's regulatory framework for the sector especially as it relates to quality of service standards, has been developed specifically for NWC. This is largely due to the fact that NWC is the dominant actor in the sector and in the opinion of OUR *“should be held at a higher level of accountability when compared to other small water providers . . . and to impose similar standards on them [small water providers] would be burdensome and unnecessarily costly”*. As a result, a 'simplified' regulatory framework has been developed for small private operators, the terms of which form part of their licence conditions (Appendix 7).

With respect to rate charges, the licence stipulates that rates are set to allow the licensee to make a reasonable return on capital taking into account costs incurred during service provision. The formula used by OUR to calculate the revenue requirement is the sum of operating costs¹³⁰, depreciation¹³¹, taxes¹³² and return on investment¹³³. The weighted average cost of capital is used to calculate the licensee's rate of return. Audited schedules supporting specific operating costs, depreciation expenses and taxes have to be submitted to OUR at the end of each financial year. Licensees are invited to submit proposals for initial tariffs after their operating licences have been granted. Applications

¹²⁹ Asset revaluation has resulted in over 100% increase in depreciation charges. The majority of assets utilised by NWC are acquired from overseas and as such, are impacted by foreign exchange movements.

¹³⁰ Includes incurred costs not directly associated with investment in capital plant but incurred in connection with the licensed business such as salaries and property rental.

¹³¹ Calculated by applying annual depreciation rates as agreed with OUR to the gross value of the individual plant asset accounts.

¹³² Calculated based on the net income of the licensee payable to GOJ (incentives to encourage capital investments are not included in the calculation of income taxes).

¹³³ Calculated based on the approved value of the net investment (rate base) of the licensee and the required rate of return sufficient to provide for the requirements of consumers and acquire new investments at competitive costs. Working capital component of rate base to be determined by OUR.

for a tariff review can be made no sooner than once in every two years and must be supported with data and information determined by OUR. Proposed rate schedules have to demonstrate that rates will generate the revenue requirement for the test year¹³⁴. A rate review proceeding is then initiated upon acceptance of the rate filing, the format and procedure of such proceedings at the discretion of OUR. In the absence of an order from OUR, licensees are informed upon the expiry of 90 days whether their tariff review application has been rejected, approved or modified. If an order rejecting or modifying any portion of the proposed rates has been issued, licensees may refer the matter to the Appeal Tribunal.

6.5 Private investment in the water and sanitation sector: An overview

6.5.1 Private utilities

There are three recognised private water service providers in Jamaica, namely Runaway Bay Water Company (RBWC), Four Rivers Development Company (FRDC) and Dairy Spring Ltd. (DSL), all of which serve the St. Ann¹³⁵ area. The oldest and largest of these is RBWC which first began operations in 1958 to provide water primarily to the Jamaica-Jamaica Hotel and golf course in Cardiff Hall. Economic and political instability in the 1970s however, witnessed the flight of several private entrepreneurs including those at the Jamaica-Jamaica Hotel. As a result, the hotel and associated developments in Cardiff Hall were taken over by government through its National Hotels and Properties initiative and given to UDC to operate. Since 1977, RBWC has existed as a fully-owned subsidiary of UDC and has operated as a de facto water utility outside the regulatory provisions of the NWC Act¹³⁶.

RBWC operates two deep wells which supply water to 234 domestic and 46 commercial customers in the Cardiff Hall subdivision, Runaway Bay. The majority of RBWC's revenue however, is generated from bulk water sales to NWC for redistribution to the Runaway Bay area. Production figures for 2004 indicated that about 74% of RBWC's water sales were to NWC. Financial data for the same period indicated an operating profit margin of 39% (Table 6.7).

¹³⁴ The latest 12 months of operation for which there are audited accounts.

¹³⁵ St. Ann is a major tourist destination located in the northern part of Jamaica.

¹³⁶ RBWC basically has a business relationship with NWC. As RBWC's largest customer, NWC is allowed to independently take water quality samples and verify meter readings. Water quality samples are sent to NWC's laboratory for analysis.

Table 6.7 Financial and operational data for RBWC and DSL (2004)

Parameter	RBWC	DSL
Working ratio	0.6	0.01
Operating profit margin	39%	99%
Collection efficiency	97%	95%
Water rates	Same as NWC	\$33.00 per m ³
Employee cost/total cost	37%	1%
Production (Mm ³)	2.2	0.8
Consumption (Mm ³)	1.9	0.6
UFW	13%	66%

Source: HCL (2004); White (2005); author's calculations

In 2002, RBWC's licence application to OUR was suspended as OUR awaited amendments to the NWC Act which would remove certain conflicts in the regulatory and service provider functions of NWC. Prolonged delays in these amendments taking effect and strong lobbying by RBWC and OUR for government to commit to its PSP policy resulted in RBWC being granted a 20-year utility service provider licence by OUR in February 2005 upon the instructions of MOWH. Up to December 2004, water rates levied by RBWC were identical to those charged by NWC. The rates have however remained fixed at NWC's December 2004 prices as RBWC could not justify an increase as afforded NWC effective January 2005. Effective April 1, 2004, the bulk water tariff applied to water bought by NWC was negotiated to J\$15.40 per cubic metre. With RBWC now under the regulatory purview of OUR, this bulk water rate in addition to RBWC's domestic and commercial rates will in future be determined by OUR. RBWC is headed by an Operations Manager supported by 16 full-time and 6 part-time employees. Technical audits are produced on a quarterly basis by an independent water resources consultant and the relevant sections submitted to OUR, WRA and MOH.

FRDC began operations in August 1969 following planning approval by the St. Ann Parish Council for the subdivision of the Shaw Park Estate¹³⁷. In the 1980s, water supply contracts were also established between some landowners within the original subdivision and NWC, albeit for a minor portion of their water supply requirements. For all intents and purposes however, FRDC remained the main water provider for the subdivision. The commercial potential of the subdivision however, peaked NWC's interest in becoming the main water provider to the subdivision. FRDC was subsequently warned by NWC that it was in breach of Section 27 of the NWC Act and was advised to immediately discontinue supply. The matter was brought to the attention of OUR in July 1999 by way of a licence application and supporting evidence justifying FRDC's legal right and obligation to operate as a water utility.

¹³⁷ Sales agreements for the lots required FRDC to provide a reliable water supply.

Several issues were highlighted by FRDC to support its case. Firstly, planning approval by the parish council had not made any requirements for subsequent transfer of the water supply, and in so doing had intended FRDC to indefinitely supply the subdivision. Secondly, there were no provisions in the NWC Act for the rationalisation of existing private water supply systems thereby negating NWC's claim of rights to supply water to the subdivision. It was pointed out that NWC had not previously pursued a policy of licensing privately owned water supply systems and to enforce the NWC Act against FRDC alone could be construed as discriminatory. In addition, FRDC's termination of supply to the subdivision would cause them to be in breach of sales agreements with the subdivision landowners. Lastly, efforts by NWC to have FRDC surrender its historic water supply area was argued to be in direct conflict with the Water Sector Policy which sought to encourage PSP in the water sector. Consequent to FRDC's submission and discussions between FRDC, OUR, WRA and NWC, FRDC was granted a 10-year non-exclusive water service provider licence by NWC.

DSL began operations in November 2001 as a limited liability water only utility company. Its founders are the only two shareholders in the company with a share capital of J\$1,000 divided into 1,000 shares using a 600:400 ratio. DSL operates a gravity-based system which harnesses water from the Shaw Park Dairy Spring to serve sections of Shaw Park and Ocho Rios. The service area and in fact the source are not new to private water provision. Previous to DSL, a 25-year agreement dated November 1976 between UDC and the spring landowners (FRDC), allowed UDC to divert 909 cubic metres daily from the spring. The water was used initially to facilitate UDC's construction of the Ocho Rios commercial area and subsequently to provide domestic water to the new waterfront development. In March 2001, UDC advised FRDC that it did not intend on renewing the lease agreement and that arrangements should be made to service existing customers on or before November 2001. The owners of DSL became aware of this business opportunity through their business relationship with FRDC and entered into a 25-year agreement with FRDC for sole access to the spring discharge.

DSL currently supplies six commercial customers (all hotels) with approximately 0.55 million cubic metres of water annually (Table 6.7). There are plans however to expand the customer base to a maximum of 10 when the system is fully operational. Operational costs are very low compared to revenue. Electricity costs are low as the system is gravity-driven. Although the company is registered as having four employees – a managing director, systems supervisor, systems operator and customer service/accounting officer, there is essentially only one member of staff. Professional services such as management, engineering and design are provided by the owners

through their water resources consultancy business. As the business is seen as a 'pension plan' for the owners, professional services are not factored in the operating expenses. System expansion is planned on a phased basis using cash flow generated from the business, so there are no bank charges or loan interests to maintain. These technical, operational and professional simplicities and/or efficiencies have therefore realised a handsome operating profit margin of 99% for 2004.

Prior to start-up, DSL made applications and received approvals from WRA, NEPA and MOH. WRA has issued DSL a 5-year licence to abstract 3,409 cubic metres per day from the spring while an environmental permit and water quality certification have been issued by NEPA and MOH respectively. DSL operates under a 10-year non-exclusive water service provider licence issued by NWC.

6.5.2 BOT arrangements

The Rural Water Programme¹³⁸ initiated in 2002 has also realised PSP in rural community-based water development projects. Specific aims of the programme are to encourage private initiative¹³⁹ in providing small-scale water and sanitation services¹⁴⁰ using the build-operate (BO) model and to support autonomous, legally-constituted community water organisations (CWO) to provide these services. Beneficiary communities through CWOs may choose to select a private firm to build the system and maintain responsibility for its operation and maintenance for at least five years. A schematic of the build-operate model used is shown in Figure 6.1.

The project provides 90% of the capital cost with 10% required from the community in cash, kind or labour. As a condition for first disbursement for the initiation of works, contractors must either provide a bank guarantee equal to 30% of total construction costs or complete 40% of construction with non-programme resources. Communities must be

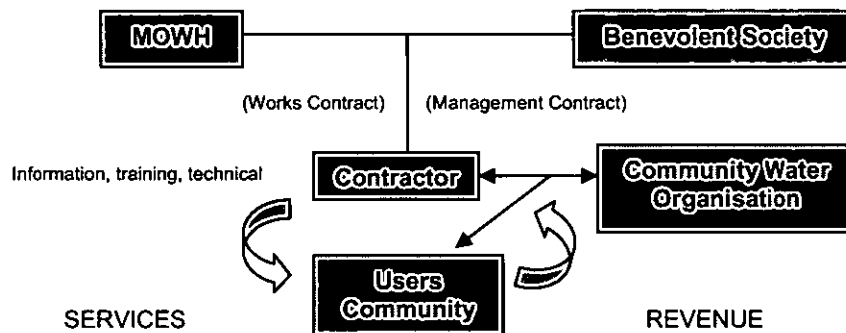
¹³⁸ Programme is a 4-year joint venture between GOJ and IDB aimed at improving sanitary and health conditions in Jamaica by increasing coverage of potable water and sanitation services in poor rural communities. The total cost of the programme is US\$12.5 million with US\$10.0 million in IDB financing and US\$2.5 million in government counterpart financing. Eligible communities must be within the lowest poverty quartile as defined in the Jamaica Poverty Map, located in a rural area, form a CWO and have a total population less than 6,000. In addition, projects must have an economic internal rate of return of 12% or more, i.e. average cost per connection is lower than US\$1,600 (GOJ and IDB, 2001).

¹³⁹ Activities for PSP divided as follows: (a) promoting the initiative among the Jamaican private sector; (b) providing technical, legal and financial analyses to demonstrate PSP feasibility; (c) preparing terms of reference for contractors' selection and the design of BO contracts; and designing and implementing supervision schemes for BO contracts (GOJ and IDB, 2001).

¹⁴⁰ Eligible project activities for water systems include (a) well prospecting, drilling and development; (b) catchment tanks and reservoirs; (c) distribution lines and connections; (d) standpipes and valves for public access (e) pumps (f) individual treated-water solutions such as absorbent wells; and treatment facilities. Eligible project activities for individual sanitation facilities include soak-aways, absorption pits, septic tanks, cesspools and tile fields (GOJ and IDB, 2001).

willing and able to pay tariffs¹⁴¹ calculated as the sum of operating expenses, maintenance costs, depreciation of short-term capital assets, cost of new investments related to system expansion and administration fee in the event that operation and maintenance of the system is contracted out. Tariff rate proposals will be submitted to OUR for review and approval. Upon completion, a project handover certificate has to be signed by WRA with regulation and monitoring to be conducted by OUR and MOH respectively.

Figure 6.1 Basic business model of the RWP's build-operate contract



Source: GOJ and IDB (2001)

During the early stages of the project, private sector response was very poor with only one contractor responding to the calls for tender¹⁴². To counteract this, a 2-day BO workshop¹⁴³ was sponsored by MOWH in September 2003 to familiarise local private interests with the 'new' *modus operandi* in the sector before the projects were re-tendered. In September 2004, Cabinet approved two BOT contracts valued at US\$2.4 million and US\$3.4 million, both of which were awarded to the same contractor. The contracts provided for the operation and maintenance of both systems for five years or more, pending the readiness of the respective benevolent societies to take over the schemes. The approval of two other projects is pending. Similarly structured projects are also financed by JSIF where community contribution is 25% of the project cost.

¹⁴¹ A step or sliding tariff rate will be charged wherein basic consumption is charged a base rate and incremental usage above this base consumption level is charged an incrementally higher level. The base water requirement assumes one shower per family member per day, laundry washing by hand, a flush toilet, house cleaning, cooking and watering of a small number of ornamental flowers or trees, i.e. about 0.08 m³/person/day. Willingness-to-pay to be reflected and embodied in the Memorandum of Understanding that will be signed with the communities during project preparation (GOJ and IDB, 2001).

¹⁴² Invitation to tender was open to tax compliant contractors from IDB's member countries who were registered with Jamaica's National Contracts Committee in Grade 2 and above in the pipe laying category and Grade 4 and above in the electrical works, mechanical works and civil engineering categories. Government agencies such as NWC could only be invited to submit bids in the event that a private sector tendering process for build-operators failed to produce a satisfactory BO bid (GOJ and IDB, 2001).

¹⁴³ The focus of the seminar was to highlight global trends and experiences in community and PSP in small-scale water and sanitation services delivery and using case studies, highlight the challenges, benefits and application of the build-operate model to rural systems.

Inadequacies in centralised sanitation coverage and the introduction of stringent environmental standards for planned development have realised more instances of private investment in sanitation than in water. In several instances, the model used for PSP is a build-transfer one in which private developers finance the construction of a sewage treatment plant in order to obtain planning permission for subdivision development. Once commissioned, private developers are obliged to operate the treatment plant over a 6 to 18-month maintenance period, after which the plant and customers are transferred to NWC.

The BO model has also resulted in the formation of two sewage utility companies – Can-Cara Environments Ltd. (CCEL) and Rose Hall Utility Company (RHUC). Both utilities were granted 20-year sewerage services licences by OUR in 2004. In the case of CCEL, the proposal is to provide tertiary level treatment using a 3.2 million cubic metres per day pond system in support of housing developments being undertaken in western Spanish Town (St. Catherine) by Can-Cara Developments Ltd¹⁴⁴. The proposal by RHUC is to provide sewerage services to the Rose Hall Estate development in addition to existing hotels, resorts and commercial establishments in the tourist city of Montego Bay (St. James) using a 1,590 cubic metres per day extended aeration system.

6.6 Criteria for private investment in water and sanitation

6.6.1 Perception of private service providers

Several factors emerged as important reasons for respondents' interest in the sector. Most important and common to all was the 'promise' of reasonable returns on their investment which was strongly linked to their confidence in the 'guaranteed' success of their business ventures (Box 6.1). CCEL for example, capitalised on NWC's inability to extend sewerage services to new housing developments in western Spanish Town. DSL's commercial customer base and low operating costs realised handsome profits (operating profit margin of 99% reported in 2004). In the case of Company x¹⁴⁵, the option of short-term equity participation (expected turnaround within 2/3 years) and payment in US dollars were major incentives.

¹⁴⁴ Project known as the Western Spanish Town Regional Wastewater Project. CCEL's plan is to provide sewerage services to only new housing developments in the first phase (including 8 to 10 developers who have committed to become clients of CCEL) and then to extend this service to 'old' Spanish Town. CCEL also proposes to incorporate NWC's malfunctioning treatment plants into its treatment system and charge NWC a volumetric rate for sewage treatment.

¹⁴⁵ International service operator.

Box 6.1 Importance of having a ‘guaranteed to succeed’ project (Jamaica)

For DSL

- The system was already operable with a dedicated commercial customer base.
- Management was able to replicate RBWC’s commercial success which it had observed while providing engineering management services.
- The timing of the venture was opportune in that it had the full backing of government’s pro-PSP policy as one of the first private proposals since the establishment of the Water Sector Policy.
- The simplicity of the system resulted in very low operating costs and high operating profit margins.

For CCEL

- Was established to support new housing developments by its parent company.
- Several developments were on hold due to a lack of adequate sewerage services – was guaranteed the business of these pending developments.

For Company x

- Potential for the project to realise a quick return on investment within 2/3 years
- Paid in US dollars
- Government’s reputation of honouring financial commitments

The policy and regulatory frameworks were also instrumental in encouraging and enabling investment. Frequent mention was made of the Water Sector Policy’s promotion of PSP and the support of institutions like MOWH and OUR in championing the existence and legitimacy of private investors/operators. DSL for example, described OUR as “*very cooperative*” and MOWH as “*instrumental in getting the NWC and OUR together*” to sort out licensing issues. The commitment of these institutions was especially lauded when they in the ‘spirit’ of the Water Sector Policy, overruled NWC’s regulatory powers which at times tried to hinder the entry of new service providers.

Besides the obvious drivers, personal aspiration also emerged as an important reason for investment. As explained by Company x’s Project Manager, “*If we succeed in this project, my company can say a big thank you to me. I want to stay here, I like this country. If they send me to Afghanistan, etc. I will just do my project and say bye-bye.*” This desire to stay and enjoy the ‘comforts’ of Jamaica had resulted in Company x actively generating new investment opportunities in the sector. Company x’s Project Manager was also keen for recognition in the company which he felt was possible if he was able to continuously generate successful projects.

Other factors that impacted on investors’ experiences included:

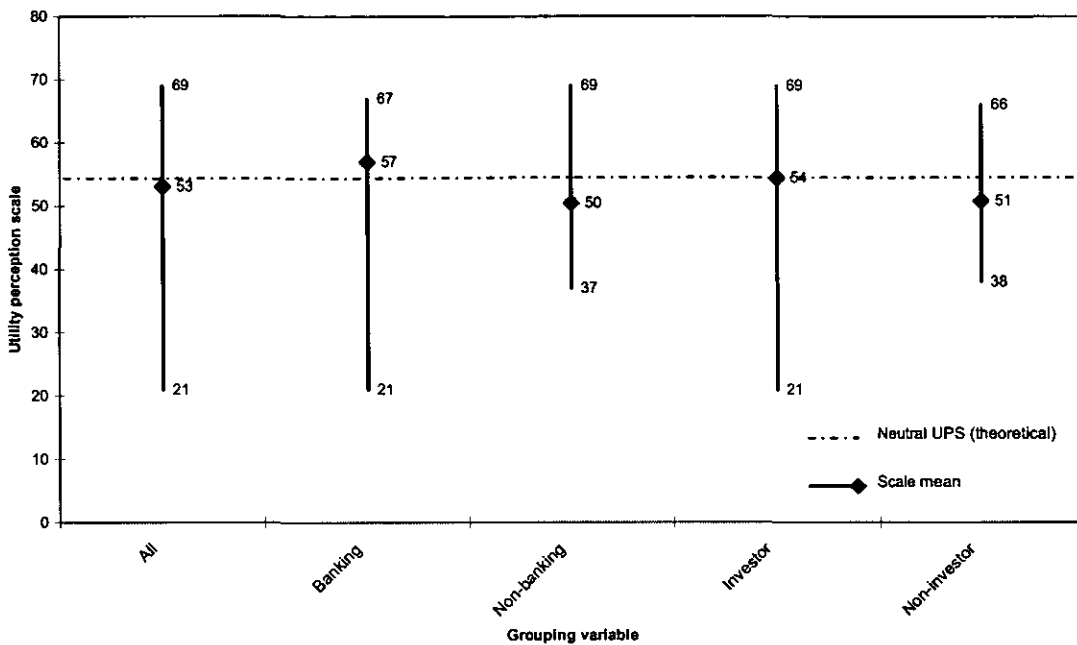
- **Jamaica’s high interest rate regime.** CCEL for example could not afford to borrow from local commercial banks at rates of 20-25%.
- **Jamaica’s unstable economy.** According to Company x, “*You would think that getting paid in US dollars means I have more money in my pocket. It’s not true. Labour prices have increased by 48% in the last 4 years, so already I am paying more.*”

- **Government’s reputation of honouring financial commitments.** *“To date the Jamaican government has been putting a lot of money towards external debt repayment. This has saved Jamaica because as soon as you stop paying one of the banks, in 5 minutes all the world knows and the door closes very quickly.”*
- **Regulatory bureaucracy.** For example no licence template existed prior to CCEL’s application to OUR which resulted in lengthy delays and increased costs.
- **The quality of NWC’s management.** According to Company x, *“We feel that there is a new spirit in the NWC and we like it.”*
- Establishing good working relations with NWC.
- Poor coordination and inadequate long-term investment planning.

6.6.2 Perception of local financial institutions

Local financial institutions were asked to rate various factors that influenced their perception of investment prospects in the water and sanitation sector to identify their investment criteria and priorities. Investors’ assessment of the utility was obtained from the UPS. Most financial institutions had a relatively neutral to slightly positive attitude towards NWC with 70.3% tallying over 50 out of a possible 90 on the UPS (Figure 6.2; Appendix 6: Table A8). When assessed within grouping categories, there was a significant difference ($p=0.019$) in the mean ranking of the UPS between banking and non-banking institutions according to the Mann-Whitney test (Appendix 6: Table A9). Non-banking financial institutions (43.8%) were found to have a relatively lower perception of the NWC (UPS<50) compared to banking financial institutions (9.1%) (Appendix 6: Table A8). This marked difference in perception was possibly a result of banking institutions being heavily involved in infrastructure financing (91%) and by extension possibly having more ‘business contact’ with the NWC (recall that loans were the most common means of infrastructure financing in Jamaica). No significant difference in UPS ($p=0.204$) was observed based on investment activity (Appendix 6: Table A10). It should be noted however that non-investors (40%) had a relatively lower perception of the NWC (UPS<50) compared to investors (23.6%).

Figure 6.2 Utility perception scale range for Jamaican financial institutions



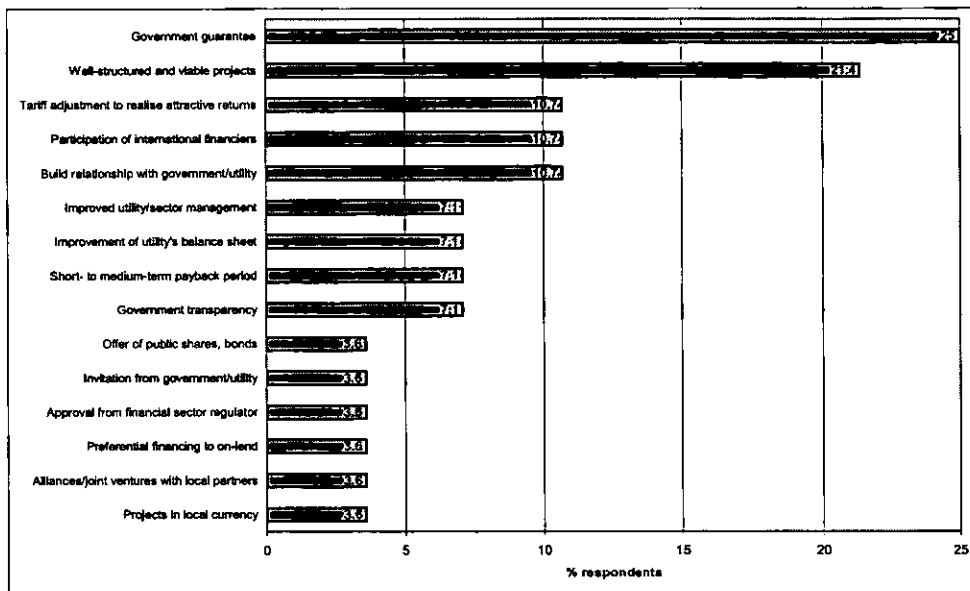
In rating factors that would influence the investment decision in the sector, respondents had a slightly higher regard for institutional factors than for economic and financial factors (Appendix 6: Figure A2). Good capital investment planning, supportive legislation for private investment and institutional reform featured highly among institutional factors while credit enhancement mechanisms, bonds issues and infrastructure investment funds featured highly among economic and financial factors (Appendix 6: Table A16).

Respondents' perceptions of investment prospects in the sector were mixed with 32.2% considering them poor (doubtful + poor), 25% considering them acceptable and 42.8% considering them good (good + excellent) (Appendix 6: Table A11). There was no significant difference ($p > 0.05$) in respondents' perceptions of investment prospects in the sector by organisation category or investment activity (Appendix 6: Table A12; Table A13). A significant positive relationship ($p = 0.018$) was observed between how the NWC was perceived and respondents' perception of investment prospects in the sector (Appendix 6: Table A14). Approximately 90% of respondents with a UPS in the 51-70 range considered investment prospects in the sector to be acceptable, good or excellent (Appendix 6: Table A15). Conversely, respondents who scored between 20 and 40 on the UPS were doubtful about investment prospects in the sector. These findings indicate that there is a tendency for respondents' perception of investment prospects in the sector to improve as their perception of the NWC also improves.

Finally, respondents were asked to indicate what it would take for their organisation to become involved (invest) in the local water and sanitation sector. The most frequently

mentioned requirements were the provision of government guarantees (25%) and the availability of well-structured viable projects (21.4%) (Figure 6.3). Other important requirements included tariff adjustments to realise attractive returns (10.7%), the participation of international financiers (10.7%) and building better relationships with government and NWC (10.7%).

Figure 6.3 Requirements to become involved in the sector (Jamaica)



6.6.3 Perception of water sector officials

Respondents were very aware of factors that attracted and detracted private investment in the sector. Return on investment, a sound regulatory framework, willingness to pay, provision of government guarantees, a stable economy, transparency and a good social environment were among the most commonly listed determinants for attracting private investment. With respect to the local environment, most respondents were of the opinion that much had been done to create an environment conducive to private investment. As expressed by MOWH's Chief Technical Director, *"In terms of legislation and institutional development, we have done all that is required of us to have private sector investment a reality."* Credit was primarily given to the regulatory environment for bringing some measure of predictability to the sector. Respondents from the Ministry were however disappointed with the level of private sector interest particularly that of foreign investors, which they felt was not commensurate with efforts made to establish a pro-private environment in the sector.

Low willingness-to-pay, inadequate data, poor long-term investment planning, bureaucracy and prohibitive macroeconomic conditions were identified as major deterrents to private investment in the local water and sanitation sector. Frequent mention was made of Jamaica's high interest rate regime and the negative effect this had on attracting private investment to the sector.

6.7 Scope and strategy for private investment in water and sanitation

6.7.1 Perception of private service providers

Both DSL and CCEL were in strong favour of local private investment, especially the involvement of professionals already active in the sector (recall that both have previous experience in the sector, albeit not in an investment capacity). More specifically, opportunities for private investment were believed to exist in efficiently-operated small water supply systems and sewerage systems in areas unserved and/or underserved by NWC. PPPs with NWC were also considered viable options for increased local private investment, although in DSL's case, previous 'bad' experiences with NWC did not endear management to the prospect of collaborating with the utility. Both DSL and CCEL were also supportive of service providers getting involved in simultaneous complementary investments when and if the opportunity presented itself. For DSL, bottled water appeared to be a viable option given the source's good water quality. Wastewater reuse for irrigation and aquifer recharge was being explored by CCEL. The view therefore, was that private providers did not have to limit the scope of their operations to mere service provision but as true entrepreneurs, could diversify into related business ventures.

For Company x, internationally sponsored BOTs were not considered viable for the sector in general and developing countries like Jamaica in particular as foreign investors were seen as having limited control over the local environment with respect to tariffs and revenue recovery. *"To make BOT in water we think is not feasible. We are not Jamaicans - we are not in our country. Many people have lost money because you are not allowed to fix the price of water."* As a result, Company x like so many other international companies had reduced its range of activities in the sector, opting to pursue a specialisation strategy specifically linking leak detection with capital investment and reaping the efficiency gains from reducing UFW. This approach was considered viable as it ensured a relatively fast return on investment and also improved efficiency in the local network. A more facilitative role in terms of providing technical expertise to solve local problems was seen as the best PSP option for large international companies.

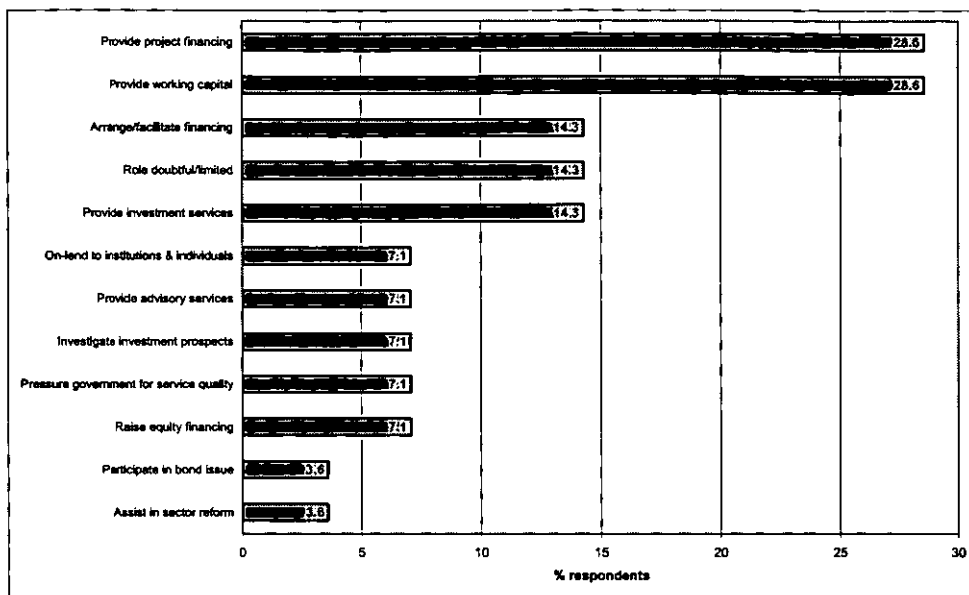
Based on their experiences, both DSL and CCEL had some suggestions to encourage private investment given the local context.

- **The need to ‘sell’ the idea that investing in the sector can be financially rewarding**, even for small rural water supply systems. DSL for example with the encouragement of OUR, had developed a concept paper to convince potential investors about investment opportunities in efficiently-run discrete rural water supply systems.
- **The need to adequately develop the regulatory framework before engaging the private sector.** Being among the first licensed private utilities in Jamaica, the regulatory framework applicable to private service providers essentially evolved in tandem with CCEL’s licence application as there was *“no blueprint to follow.”* This resulted in lengthy and costly delays as *“at each step of the way, it had to be discussed and argued before we could determine which way to go which meant that even more pressure was put on CCEL, diverting us from our original mission.”*
- **The need to link sewerage treatment to water supply to ‘guarantee’ bill payment.** CCEL had applied to OUR to operate as a water and sewage utility but was only granted the sewerage part of the licence. The exclusion of water supply from its licence was believed to affect its success in sourcing financing due to concerns about being able to collect sewerage rates only.
- **For a change in attitude towards private investors** who should not be maligned or begrudged for their profits as this could be off-putting. According to CCEL’s Project Manager, *“The attitude here [Jamaica] is if we give you \$x, the next thing is you buy Mercedes Benz. That is none of their business.”* The focus instead should be on service delivery.
- **The need for better long-term, prioritised investment project planning.**

6.7.2 Perception of local financial institutions

When asked to rate the investment prospects of the sector based on the use of different operational modes for private investment, respondents were more in favour of short-term management/service contracts than for longer-term arrangements such as concessions and BOTs, probably reflecting their lack of experience in long-term financing in the sector (Appendix 6: Figure A3). When asked to indicate their possible role in the sector, the most frequently mentioned roles were project financing (28.6%) and providing working capital in support of the day-to-day operation of the NWC (28.6%) (Figure 6.4).

Figure 6.4 Role of financial institutions in the sector (Jamaica)



6.7.3 Perception of water sector officials

Respondents, particularly those from NWC were unanimous in their approval of the family of BOT-type projects as *“the most convenient way of having private sector investment.”* The general attitude to involving private investors was for them to *“come in, cooperate with the NWC and make the investments to fix the system”* thereby leaving the day-to-day management and operation of the sector to NWC. Local investors were considered the most practical option for private investment to allay fears of foreign ownership, be more responsive to local needs and conditions (especially in rural communities) and provide local currency financing. As put by one respondent, *“Private sector with a big ‘P’ and ‘S’ won’t work. We have to look at private sector in terms of small community entrepreneurs.”* The general opinion was that local financial institutions had *“tons of money”* which could be channelled to the sector if they were offered incentives such as government guarantees and presented with viable projects. The reality of coaxing local financiers to invest in the sector was however doubtful given the availability of ‘hassle free’ alternative investment opportunities. According to one respondent, *“Locally if you can get 30% return on government paper at zero risk, why invest in the water supply sub-sector with a return of 10% and lots of hassle to realise that return in the first instance?”*

In terms of the strategy to encourage private investment in the sector, the following points were highlighted by the respondents:

- ***The need for a more proactive strategy to attract and engage ‘good’ private investment.*** Respondents commented that most of the proposals brought to NWC were unsolicited, poorly planned and exploitative. Investors were accused of “cherry-picking,” “get the easy money and run,” “not bringing new capital to inject into the sector” and “a lot of talk but no action when time to put their money where their mouth is.” This disappointment respondents believed could be minimised if a more proactive approach was adopted instead of merely reacting to investors’ proposals.
- ***The need for a clearly defined strategy to assign responsibility, minimise ambiguity and encourage transparency.*** Although there was acceptance of collective responsibility for failing to implement a long-term plan to attract private investment, there was a tendency for respondents to shift blame between government/ministry and NWC depending on their affiliation. Respondents from MOWH for example, were of the opinion that the ministry’s commitment to private investment was not matched by NWC and in some cases was met with resistance. Conversely, respondents affiliated with NWC believed that government should do more to promote private investment beyond mere policy-setting. Respondents therefore believed that there was no apparent ‘ownership’ of the private investment strategy as neither group (government/NWC) wanted to be identified and labelled as ‘the one’ that privatised the water sector. With respect to clarity of the strategy, respondents felt that there was still some hesitation to explicitly commit to a private investment strategy due to “*the negative connotations of selling off your water supply facilities*” and admitted that there was a lot of “*misunderstanding about having private participation as to privatising the water sector*” which had the potential to affect public acceptance of private investment in the sector.
- ***The need for a progressive strategy*** whereby institutions like OUR described as “*on a learning curve with respect to dealing with private investors in the sector*” can systematically obtain the necessary experience and wherewithal to effectively contribute to a private investment strategy.
- ***The need for an adaptive strategy*** whereby elements such as the regulatory framework are flexible enough to apply to various types of investors and conditions such as the ‘simplified’ regulatory framework for private service providers.
- ***The need for the support of other agencies better equipped to develop and effect a private investment strategy for the sector instead of relying too much on NWC.*** Respondents admitted that NWC was probably not the best institution to effect the strategy for two main reasons. Firstly, there was a conflict of interest as NWC would have to act in its best interest which would rule out encouraging competition. According to NWC’s Vice President, Corporate and Strategic

Planning, “*Certain things that would impact the management of NWC or could be a potential risk to the management of NWC would not be pursued by the management of NWC.*” Secondly, NWC’s busy schedule of dealing with day-to-day operational matters did not leave it with much time or opportunity to actively promote private investment. Instead, the utility was more concerned with focusing on “*low hanging fruits to improve efficiency*” rather than putting “*much effort on promotion aside from packaging projects.*”

- ***The need to purposely develop and promote ‘win-win’ projects*** which respondents felt would result in a more positive response from private investors.
- ***The need to educate potential investors (especially first-time investors) about their potential role in the sector and investment models applicable to the sector.*** Referring to the poor private sector response to BO community-managed projects for rural water supply (see Section 6.5.2), respondents commented on the effectiveness of a 2-day workshop on private investment in the sector to potential contractors.
- ***The need to educate the general public about private investment in the sector and sensitise them to issues such as the importance of paying for services.***

6.8 Small size

6.8.1 Effect of small size

Water sector officials were asked to indicate the extent to which they thought small size affected the Caribbean’s ability to attract private investment to the sector. Most respondents (78%) felt that size was an important issue, more so in the smaller Caribbean islands than in Jamaica. Factors such as limited professional/technical capacity, high transaction costs, high borrowing costs and a lack of local financing were among those identified as the main effects of small size (Table 6.8). Small size was also believed to affect the calibre of investors in the sector. Respondents opined that because the Caribbean was unable in a lot of cases to offer the critical mass often sought after by investors, the region was at a disadvantage of not being able to “*attract the serious private investor.*” According to one respondent, “*You don’t get the attention of the big people in the business. You don’t get the kind of interest from the strong technical people that you would want.*” Finally, respondents also believed that small size contributed to increased stakeholder interference (lack of institutional independence) and conflict due to the ‘intimacy’ and familiarity of the various actors.

Table 6.8 Small size effects (Jamaica)

Size an issue?	Main reasons given
YES (78%)	<ul style="list-style-type: none"> • Scarcity of trained professionals • Specialist services expensive (e.g. regulation) • Cannot attract 'serious' investors • Have to look 'outside' for investment dollars • Bundling of institutional responsibilities • High transaction costs • Higher borrowing costs • More frequent personality conflicts • Difficult to manage O&M costs for small systems • Difficult to maintain quality control of small systems
NO (22%)	<ul style="list-style-type: none"> • Macroeconomic performance more important • Does not matter as long as people can make money • Just need to target the right type of investor • Concessional funds available from development agencies

Respondents who did not consider small size to affect investment prospects in the sector were of the general opinion that at the end of the day, investors were not particularly concerned about size as long as the investment opportunity and environment were conducive to them making money. Small states they reasoned, because of their special circumstances, would always receive special consideration from international development organisations in the form of concessional loans/grants and as such private investment did not have to feature as an important source of financing. Relative to other determinants such as macroeconomic stability, small size was therefore not considered to be a significant deterrent to private investment in the sector. What was considered more important was the type of investor being targeted. Local investors for example were believed to be best suited to small-scale investments in the sector.

The 'suitability' of local investors to small-scale investments was also borne out by the private service providers interviewed. Neither DSL nor CCEL were averse to small-scale investment opportunities in the sector. In fact, they were both advocates of local entrepreneurs getting involved in small discrete rural water supply systems which they believed had the potential to be profitable ventures if operated efficiently.

6.8.2 Response strategies to address size constraints

6.8.2.1 *Regional cooperation*

Water sector officials were asked to indicate the extent to which they thought regional cooperation could improve investment opportunities in the Caribbean water and sanitation sector. Respondents were not overly enthusiastic about the prospects for regional cooperation in the sector, claiming that each island's sector was unique thereby requiring discrete approaches. As put by one respondent, "No two utilities are alike and

no two utilities' success is determined by the same factors.” There was also a belief that in the final analysis, what mattered most was a country’s macroeconomic environment rather than that of the region and as such, countries would only benefit marginally from regional cooperation in the sector. The most feasible opportunities for regional cooperation were identified as the sharing of professional expertise to address capacity constraints (83% of respondents) and the development of regional benchmarks to facilitate like-for-like comparison among utilities so that various aspects of utility operation could be easily identified and assessed (67% of respondents) (Table 6.9). Institutions such as CWWA and OOCUR with their annual conference and networking opportunities and CBWMP with its focus on certification were identified as organisations suitably placed to carry out a regional mandate in the sector. Regulation and investment sourcing were not considered suitable issues for a regional approach as these issues were believed to be very site-specific.

Table 6.9 Scope for regional cooperation in the sector (Jamaica)

Scope	Details
Professional expertise (83%)	<ul style="list-style-type: none"> • Sharing experiences and expertise (e.g. at CWWA and OOCUR conferences) • Transferability of services so that investors have access to a pool of professionals • Regional learning institutions
Standardisation (67%)	<ul style="list-style-type: none"> • Through existing institutions such as CBWMP • Develop benchmarks for the Caribbean so can rank utilities • Collaboration for consistency – establish parameters so that information provided to investors is consistent
Regulation (33%)	<ul style="list-style-type: none"> • Help set up regulatory framework • OOCUR provides forum for the exchange of ideas/experiences
Investment sourcing (25%)	<ul style="list-style-type: none"> • CARICOM to provide one voice on behalf of the Caribbean • Caribbean Development Bank to serve as an avenue for capital flows from other lending institutions

Several challenges to a regional approach in the sector were highlighted. These included:

- **Concerns that cooperating with smaller ‘less developed’ islands would retard progress (big island, small island mentality).** As the largest Caribbean island with well established institutions and a cadre of highly skilled industry professionals, respondents generally felt that Jamaica had more to offer than to gain from a regional approach.
- **Ensuring that institutions are ‘accountable’ to the region.** Although respondents recognised the contribution of regional organisations such as CEHI and CBWMP, there was a general feeling that some organisations did not have a regional mandate but instead operated either as ‘private’ entities or served only a

select group of countries (particularly the more closely-knit islands of the Eastern Caribbean). The Asian region was identified as a good working model of regional accountability whereby regional organisations were seen to truly represent member countries by dealing with issues important to the region and ensuring that the region's position/issues were adequately presented to the international community.

- **The need for more formal collaboration** (i.e. getting politicians and policy-makers on board) rather than individual attempts at cooperation.
- Diversity in politics, level of sector development and institutions.
- Difficulty in getting the support of politicians and policy-makers.
- Tendency for each island to “*feather its own nest,*” insularity, jealousy and inter-island rivalry.
- The large geographical spread of the Caribbean islands which would make cooperation cumbersome.
- Concerns about encroachment on sovereignty.

6.8.2.2 Other response strategies

When asked to suggest strategies to improve small-scale investment opportunities in the sector, water sector officials proposed:

- Pooling small projects into larger more viable projects that would better appeal to private investors. This strategy they highlighted was used when approaching multilateral organisations such as the IDB who “*are interested in packages.*”
- Increased community involvement especially in the operation of small-scale rural supplies which might not naturally appeal to private investors.
- Using limited financial resources to leverage more financing.

Local financial institutions were also highly supportive of ‘project bundling’ as a means of responding to small size issues and improving the investment prospects of the sector (Appendix 6: Figure A4). Respondents were least supportive of the formation of multi-utilities to offset disadvantages from insufficient size.

6.9 Chapter summary

This chapter presented the Jamaican case study which examined the operating environment for private investment in the water and sanitation sector and the perceptions of public and private sector actors to criteria for private investment, scope and strategy

for private investment and size-related response strategies to improve conditions for private investment in the sector. Findings from documents, survey questionnaires and semi-structured interviews were systematically presented for further discussion within the context of the literature in the cross-case analysis (Chapter 10).

CHAPTER 7 CASE STUDY: BARBADOS

7.1 Chapter introduction

This chapter examines the phenomenon of private investment in the Barbadian water and sanitation sector using survey, interview and document data to determine the operating environment for private investment, criteria for investment decision-making and scope and strategy for private investment in the sector. The potential for various size-related response strategies such as regional cooperation to improve investment prospects in the sector is also examined.

7.2 General information

Barbados is the most easterly of the chain of Lesser Antilles Caribbean islands extending over 430 sq. km, mostly over flat terrain (Figure 5.1). Given the country's small size, it is difficult to define areas as urban or rural. Approximately 50% of its 271,600 inhabitants reside in the southern and western parishes which in addition to the capital Bridgetown comprise the major areas for tourism and commercial development. Of 232 countries surveyed in the CIA World Factbook, Barbados is ranked 207th in terms of area, 181st in terms of population, 159th in terms of total GDP and 59th in terms of GDP per capita (CIA, 2005).

7.3 Status of the water and sanitation sector

The Barbadian government became involved in water supply provision in 1895 as the Barbados Waterworks Department, having bought the assets of two private companies – the Bridgetown Waterworks Company and the Barbados Water Supply Company, both of which had previously operated as joint stock companies guaranteed an annual government subsidy to supply water to Bridgetown and 'rural' Barbados respectively. Provisions for the collection and treatment of municipal sewage are a relatively recent development (1970s), brought on by increased levels of beach and marine pollution in the 1960s and the introduction of statutory requirements for sewage disposal.

Since 1980, the Barbados Water Authority (BWA) has been responsible for providing water supply and sewerage services to the Barbadian population. Approximately 98% of Barbadian households receive water from BWA, the majority of which have piped water supply (Table 7.1). In addition to domestic customers, BWA also provides water to

commercial, hotel and government customers who account for 39% of BWA's metered supply. In total, about 72% of the island's annual water abstraction goes towards public water supply. Private water supply accounts for approximately 28% of total water abstraction and is provided for golf course and agricultural irrigation and industrial use¹⁴⁶ (Table 7.2). Centralised sewerage services are provided by BWA to 6% of Barbadian households from two sewerage treatment plants serving central Bridgetown and the south coast. The majority of the population relies on on-site disposal systems such as septic systems (81.8%) and pit latrines (16.6%) (Table 7.1). Private package wastewater treatment plants traditionally serve tourist-related establishments such as hotels.

Table 7.1 Water and sanitation coverage in Barbados (2000)

Source of water	Total (%)	Type of toilet facilities	Total (%)
Piped into dwelling	91.5	WC linked to sewer	0.5 ¹⁴⁷
Piped into yard	5.6	WC not linked to sewer	81.8
Standpipe	0.8	Pit	16.6
Stream/spring/well	0.0	Other	0.5
Friend/relative's pipe	1.9	No toilet facilities	0.6
Other	0.2		

NOTE: Adjusted for non-response

Source: BSS (2002)

Table 7.2 Public/private distribution of water supply in Barbados (2000)

Type of customer	Total (%)
Public supply (BWA)	
Domestic	60.9
Commercial	18.3
Hotel	9.7
Government	8.2
Statutory corporation	1.4
Ships	1.5
Private supply	
Golf course irrigation	14.0
BADMC ^a & GOB ^b irrigation	22.6
Private irrigation	51.9
Industry	11.5

^aBarbados Agricultural Development and Marketing Corporation

^bGovernment of Barbados

Source: BWA (2000)

Although water and sanitation coverage is good, the sector is vulnerable on several fronts. Barbados is ranked among the top 15 countries in the world in terms of water scarcity with a per capita water availability of about 390 cubic metres per year. Nitrate contamination and saline intrusion are major threats to water quality due to the highly

¹⁴⁶ For example, DesalCo (Barbados) Ltd., a member of the Consolidated Water Company, operates a 5,000 m³/d seawater desalination plant for the Sandy Lane Hotel and Golf Club in St. James.

¹⁴⁷ Since the 2000 population census, the commissioning of the South Coast Sewerage Treatment Plant in 2003 has expanded centralised sewerage services to about 5.5% of Barbadian households.

permeable nature of the coral limestone aquifer and low water table elevations. The country's high population density (ranked 8th in the world) and significant annual tourist population of up to 500,000 place additional stress on limited and fragile resources. With up to 90% of freshwater resources already committed, further economic development particularly in the tourism sector is constrained by the unavailability of freshwater. Wastewater discharge is also an important concern, not only from a public health standpoint, but also due to its impact on tourism, the country's number one economic generator. Institutional constraints related to fragmented institutional responsibility and manpower limitations in terms of adequately trained persons to address issues important to the sector are real challenges. Investment needs in the region of BBD\$500 million to improve both water supply and wastewater management and service provision represent an additional constraint to the sector.

7.3.1 Status of the public water utility

Up to the early 1990s, BWA's financial position was considered healthy to the extent that revenues were sufficient to cover recurrent expenditure. Since 1996-97 to 2003-04 however, BWA's operating expenses have increased by about 50% with salaries and the purchase of desalinated water since February 2000 representing the most significant increases over the period. Financial and operational data for 2003 indicate that salaries, electricity and desalinated water represented 36%, 20% and 14% of operating expenses respectively (Table 7.3). Other contributing factors to BWA's operating profit margin of -38% include a high UFW of 60%, a long history of high receivables (collection efficiency of 65.3% with about 60% of receivables over 6 months in arrears), unchanged water rates since October 1991, introduction of island-wide 24-hour service provision¹⁴⁸ and restrictions to charge a 15% value added tax on services. As at 2004, BWA had a debt portfolio of BBD\$99.5 million with interest rates ranging between 6.9% and 7.15%. Plans to refinance this debt in addition to an interim rate adjustment are expected to result in a significant turnaround in BWA's financial position.

¹⁴⁸ Includes distribution, revenue collection, transport and information systems.

Table 7.3 Financial and operational data for BWA (2003)

Parameter	Value
Working ratio	1.2
Operating ratio	1.5
Debt service ratio	31%
Gross operating margin	-21%
Operating profit margin	-38%
Sales growth	0.5%
Collection efficiency	65%
Staff per 1000 connections	9
Employee cost/total cost	36%
Desalinated water/total cost	14%
Production (Mm ³)	59.8
Consumption (Mm ³)	23.9
UFW	60%

Source: BWA (2000; 2004a) and author's calculations

7.3.2 Sources of financing

The sector is financed mainly through government subventions, revenue generated by BWA and loans facilitated by government. Local financing through short- and long-term loans to support BWA's in-house project commitments is provided primarily by the Barbados National Bank which has a long-standing business relationship with BWA¹⁴⁹. Major capital works particularly in sanitation, are co-financed by government and various multilateral and bilateral sources such as the Canadian International Development Agency, Inter-American Development Bank, Caribbean Development Bank and the European Investment Bank. Barbados' high GDP per capita has however resulted in less opportunity for government to borrow on concessional terms from multilateral and bilateral sources. Consequently, financing is increasingly being sourced on the international commercial market. More recently, there has been some private sector investment in the sector through a BOT arrangement and local currency bond issue (see Section 7.5). The level of private investment in the sector is expected to increase due to government encouragement for private capital in water augmentation options such as seawater desalination and wastewater reuse.

7.3.3 Projects for financing

Several capital projects have been planned for the 2004/05 fiscal year to improve the overall capability of BWA to provide expanded and improved water supply and wastewater infrastructure to meet current and future water and wastewater treatment

¹⁴⁹ Originally the 'government's bank' but has since been divested to the private sector.

demands. A list of these projects is presented in Appendix 7. As shown in Table 7.4, the majority of projects are valued at less than US\$1 million.

Table 7.4 Capital expenditure for 2004/05 (BWA)

Project cost	Number of projects
Less than US\$1 million	8
US\$1.1 to US\$10 million	4

Source: BWA (2004a)

7.4 Overview of the operating environment

7.4.1 Macroeconomic environment

The Barbadian economy is supported by a long tradition of political and social stability. Following economic expansion of the manufacturing and tourism sectors in the mid-1990s, Barbados now has the demographic profile of a developed country with a per capita GDP of about US\$9,925. Offshore finance and information services are also important foreign exchange earners as the island has become a preferred low tax destination for information technology, manufacturing and financial businesses. Barbados also boasts a well-developed banking and insurance industry.

Barbados has a conservative monetary policy. Since July 1975, government has adopted a policy of pegging the Barbadian dollar to the US dollar at a rate of BBD\$2 per US dollar, which is still in effect. This policy has served the country well. Inflation has remained in the 2-3% range over several years and was reported as 1.5% for the 2003 fiscal year. Countercyclical policies introduced in the 2001 downturn¹⁵⁰ have however resulted in total public debt rising to 83.8% of GDP in 2003. There are also concerns about economic vulnerability from exposure to external shocks especially from major North American and European markets and the need for diversification due to high dependence on the tourism industry. Nevertheless, government's macroeconomic management is highly regarded resulting in a long-term stable sovereign US credit rating of BBB+. A summary of these and other economic indicators is shown in Table 7.5.

The Central Bank of Barbados forecasts continued economic performance based largely on increased activity in the tourism sector which is projected to increase by 5% if efforts continue with the 'Best of Barbados' marketing programme and there is sustained

¹⁵⁰ Reflecting the global slowdown and impact of the September 11 events on the tourism sector.

economic recovery in key target markets. In addition, the economy is expected to benefit from the pending liberalisation of the telecommunications market.

Table 7.5 Economic indicators for Barbados (2003)

Parameter	Value
GDP per capita	US\$9,925
GDP – real growth rate	2.2%
GDP – services	74.2%
GDP – industry	20.0%
GDP – agriculture and mining	5.8%
Inflation rate	1.5%
Public debt (of GDP) ¹⁵¹	83.8%
Exchange rate – BBD\$ per US\$	2.00
Average lending rate	8.3%
Sovereign credit rating – local	A-/stable/A-2 ^a
Sovereign credit rating – foreign	BBB+/stable/A-2 ^a

^aAs at August 5, 2004

Source: CBB (2004a); IMF (2004); (Standard & Poor's, 2005)

7.4.2 Institutional arrangements

The Ministry of Energy and Public Utilities (MOEPU)¹⁵² is the policy ministry in charge of water and sanitation services with direct responsibility for BWA, the statutory organisation responsible for providing potable water and sewerage services to 98% and 6% of the Barbadian population respectively. BWA also has overall responsibility for the development, management and assessment of the island's water resources and monitoring water quality. The multiple roles of BWA have therefore resulted in it functioning as service provider, regulator and manager of the water and sanitation sector.

BWA is organised into seven divisions, the principal one being the Engineering Division responsible for water production and distribution as well as the operation of sewerage facilities. Construction of new works, maintenance and replacement of parts of the distribution system are carried out by the Capital Works Division. Historically, BWA has done most of its work in-house which has contributed to an employee ratio of 9 persons per 1,000 customers, considered to be much higher than the industry norm¹⁵³. Despite relatively high staffing levels, there is a paucity of persons at the senior management level resulting in the merging of important job functions. For example, there is no

¹⁵¹ The main beneficiaries of government's guaranteed debt were the Barbados Tourism Authority, Barbados Tourism Investment Inc., BWA, Barbados Agricultural Management Company and the National Housing Corporation.

¹⁵² MOEPU took over policy responsibilities from the Ministry of Public Works in 2003. In addition to water and BWA, other sector responsibilities for MOEPU are energy and natural resources, public utilities, quarrying and mining, telecommunications, the National Petroleum Corporation, the Barbados National Oil Company and the Transport Board. There is however no identifiable division or individual within the Ministry with specific responsibility for the sector. This role is assumed by BWA's General Manager, government's policy spokesperson for the sector.

¹⁵³ Most literature speak of efficient water utilities having 3 or 4 employees per 1,000 customers.

dedicated planning unit, the duties of which have been incorporated within the portfolio of the Engineering and Capital Works Divisions.

Besides BWA, water quality monitoring is also carried out by the Public Health Inspectorate of the Ministry of Health (MOH) while monitoring of sewage effluent is conducted by the Environmental Protection Department (EPD)¹⁵⁴ of the Ministry of Housing, Lands and the Environment. The Town and Country Planning Department oversees the enforcement of the Groundwater Zoning Policy (see Section 7.4.3) by regulating development. In theory, the Fair Trading Commission (FTC)¹⁵⁵ attached to the Ministry of Commerce, Consumer Affairs and Business Development is responsible for the economic regulation of BWA. This is not the case however with FTC's role relegated to that of 'liaison' between BWA and its customers through enforcement of its Consumer Protection Act. The Ministry of Finance and Economic Affairs oversees all government projects with foreign funding and liaises with international donors. In addition, it influences subsidies directed to the sector through its budgetary responsibilities and provides government guarantees for water and sanitation projects. Table 7.6 summarises the various stakeholders in the water and sanitation sector.

Table 7.6 Institutions involved in the Barbadian water and sanitation sector

Focus	Institution
Policy	<ul style="list-style-type: none"> • Ministry of Energy and Public Utilities
Regulation	<ul style="list-style-type: none"> • Barbados Water Authority • Ministry of Health • Ministry of Housing, Lands and the Environment • Fair Trading Commission • Town and Country Planning Department
Service provision	<ul style="list-style-type: none"> • Barbados Water Authority
Finance/planning	<ul style="list-style-type: none"> • Ministry of Finance and Economic Affairs

7.4.3 Policy framework

The most current national strategies and policies for the water and sanitation sector are contained in a draft policy document (BWA, 2002), the product of a collaborative effort in 1997 between BWA and EED of the then Ministry of Health and Environment. The Water Resource Management Policy which was updated in 2002, albeit still in draft form, is heavily influenced by concerns about water scarcity and adopts an IWRM approach in

¹⁵⁴ Formerly the Environmental Engineering Division (EED).

¹⁵⁵ The Utility Regulation Department headed by the Director of Utility Regulation is one of five operational departments within FTC. The department is largely responsible for providing inputs to the regulatory function of FTC – providing advice on rate applications, monitoring the quality of services provided by utilities and investigating utility customer complaints.

developing a framework for water resource development and management in Barbados. The main objective of the policy is to ensure that water is recognised as a critical national resource with the potential to negatively impact on the economic, social and political fabric of Barbados if not properly managed, developed and utilised. In this regard, the policy framework intends to:

- (a) facilitate an integrated approach to water resource management;
- (b) identify and recommend a legal framework within which water resource management activities need to be pursued; and
- (c) identify and recommend an appropriate institutional framework that will allow for efficient management, regulation and enforcement of activities and policies.

Critical aspects of the proposed policy include wastewater reuse for groundwater recharge, irrigation and industrial cooling purposes, use of desalinated water to augment potable water supply, reduction in UFW and water conservation via structural measures, behavioural changes, tariff structures and water reuse. The policy also advocates the development of a water allocation and categorisation framework¹⁵⁶ concurrent with other supply and demand strategies. Institutional responsibilities and capacities to implement the policy are also addressed, calling for the separation of operational and regulatory functions of BWA. This would include FTC assuming economic and service regulation duties and the formation of a Water Resources Management Agency (WRMA)¹⁵⁷ under the Ministry of Housing, Lands and the Environment as custodian of the island's water resources. Water quality standards and public health protection and regulation would become the sole purview of EPD¹⁵⁸. With this separation of responsibilities, BWA would interact with WRMA primarily as a water user but still have responsibility for water and sewerage services provision for the entire island, demand analysis, forecasting and management and water quality monitoring of its water sources and distribution network.

In keeping with the water-scarcity focus, government has recently decided that subject to feasibility, all existing sewerage schemes should be retrofitted and new sewerage facilities designed to treat wastewater for reuse for non-drinking purposes. To satisfy increasing household and tourist demands and meet the requirements of new

¹⁵⁶ Proposal is to establish six categories of water use, ranked so that only categories I to V would have access to renewable water resources, with only categories I and II requiring potable water.

¹⁵⁷ Duties would include (a) water resources assessment and management; (b) prescribing, enforcing and implementing water quality monitoring programmes; (c) licensing, monitoring and controlling water abstraction; (d) reviewing and updating the water sector policy every 5 years; (e) identifying and assessing alternative water sources; and (f) serving as a repository for water-related data.

¹⁵⁸ Duties would include (a) setting water and industrial effluent standards; (b) monitoring and ensuring compliance to these standards via surveillance monitoring; (c) enforcing zoning policy; (d) serving as the public water supply and treatment watchdog; and (e) developing, implementing and maintaining recharge schemes.

investments, government is also advocating increased desalination capacity using BOT-type arrangements. Government is also actively considering the introduction of a more supportive legal framework for the sector including new measures to provide clear authority for BWA to enter into private partnerships in order to carry out its investment portfolio. Steps to create conditions suitable to attract “*novel financing structures*” include strengthening BWA and developing FTC as a regulator of water and sewerage services in the context of a wider regulatory framework for the sector. Technical cooperation assistance provided by IDB is ongoing to effect these changes.

As previously mentioned, the Water Resource Management Policy is still in draft form. Until effective, development of the sector particularly sewage disposal, is guided by the Groundwater Protection Zoning Policy (GOB, 1963) which delineates the island into five groundwater protection zones to guard against bacteriological contamination of public water supply sources. The most stringent restrictions are in Zone I which is located immediately around all existing and potential public water supply sources. Zones II to IV provide progressively less stringent controls. Although effective, this policy is not supported by legislation¹⁵⁹ which has resulted in poor enforcement.

To date, government has not formally adopted a policy pertaining to public and private groundwater rights¹⁶⁰ and recourse has had to be sought from English Common Law when these issues have arisen. Neither are there formally adopted standards or guidelines for the sector. World Health Organisation drinking water guidelines, British water industry standards, American Water Works Association standards and codes of practice and US Environmental Protection Agency regulations of standards have been utilised as needed. Environmental standards including water and wastewater standards specific to Barbados are pending the work of EPD and the Barbados National Standards Institute. The pricing policy adopted for water rates using a block tariff structure is intended to ensure that the basic needs of the poor are met at minimal cost. Water bills for the indigent and aged poor are currently covered by the Welfare Department in the Ministry of Social Transformation.

Since the late 1990s, the process of policy formulation has generally been conducted through the work of a committee of experts and stakeholders in an effort to involve all major stakeholders in the decision-making process. This has taken the form of public consultations, interactions at workshops and town meetings. In addition, BWA as the

¹⁵⁹ The prohibition of new development in Zone I has however been incorporated into the Development Order under the Town and Country Planning Act (Ministry of Finance and Economic Affairs).

¹⁶⁰ The Three Houses and Porey's Spring Acts for example (see Section 7.4.4), are to be repealed to bring ownership of all water resources in Barbados under the Crown. This would require a review of the constitutional and property rights for legislating ownership of water in the Crown.

main stakeholder in the sector actively participates in the work of related programmes such as the National Commission on Sustainable Development, providing information on water resources and recommendations for conservation activities.

7.4.4 Legislative framework

The BWA Act (GOB, 1980) is the guiding legislation for water supply¹⁶¹ and sewerage services in Barbados save for two main spring sources that fall under the Three Houses Act (GOB, 1713) and the Porey's Spring Act (GOB, 1864)¹⁶². The all-encompassing functions of BWA as service provider and regulator as defined in Section 5 of the BWA Act include:

- (a) managing, allocating and monitoring the water resources of Barbados;
- (b) constructing, maintaining and operating schemes for water resource development and the supply of water and sewerage services;
- (c) reviewing the quality, reliability and availability of water supply and sewerage services and the rates to be charged for these services;
- (d) controlling and regulating the production, treatment, storage, transmission, distribution and use of water for public purposes; and
- (e) controlling and regulating sewage disposal by other operators.

The scope of BWA's regulatory responsibilities is embodied in subsidiary legislation made by BWA's Board and approved by Cabinet under Section 28 of the BWA Act. Rates for domestic water supply and the provision of sewerage services are detailed in the BWA (Water and Sewerage Rates) Regulations (GOB, 1982b). The BWA (Water Services) Regulations (GOB, 1982a) and BWA (Sewerage) Regulations (GOB, 1982c) set out specific duties, powers and expectations of BWA regarding the provision of water supply and sewerage services. Consideration of private facilities is limited to the construction of private sewers which need to comply with requirements of 'general systems', particularly if BWA considers the proposed system likely to form part of a general sewerage system.

¹⁶¹ In addition to providing potable water for domestic purposes, BWA is also responsible for supplying water for some agricultural, industrial and commercial purposes.

¹⁶² The Three Houses and Porey's Spring Acts empowered the vestry (local government system up to 1969) of St. Philip and St. Thomas respectively to construct and maintain systems for collecting and delivering water and if they saw fit to charge rates for water delivered from the springs. Riparian landowners are now in charge of both sources.

Provisions for the control and use of surface and groundwater sources of water supply are addressed in the Underground Water Control Act (GOB, 1953)¹⁶³. Initially, the Act provided for the establishment of a Barbados Water Control Board¹⁶⁴ with powers to control and regulate the development and use of groundwater resources through licensing and the provision of necessary regulations. BWA has however assumed authority of the Water Control Board through the BWA Act. Monitoring of marine bacteriological pollution and guidelines for public and private sewage effluent disposal are provided in the Health Services (Disposal of Offensive Matter) Regulations (GOB, 1969). These are enforced by EPD assisted by the Public Health Inspectorate and the Town and Country Planning Department. Significant assistance in the enforcement of these regulations is provided through the Groundwater Protection Zoning Policy (GOB, 1963) administered by BWA.

Regulatory provisions for utility services are assumed by FTC pursuant to the FTC Act (GOB, 2000b) and subsequent enforcement of the provisions of the Utilities Regulation Act (GOB, 2000a) and the Consumer Protection Act (GOB, 2003a). FTC's regulatory powers however are restricted to electricity and telecommunication services, even though the scope of the Utilities Regulation Act also provides for the regulation of water, sewerage and natural gas services. In August 1998, Cabinet decided on a number of amendments to the BWA Act to give FTC legal authority to regulate BWA. These included:

- (a) amendment of Section 2 to include a definition of the FTC;
- (b) amendment of Section 28(1) to reflect FTC's authority to regulate BWA;
- (c) amendment of Section 28(2k) to allow BWA to continue to exempt certain classes of persons from payment of rates and charges for water supply and sewerage services subject to the approval of FTC;
- (d) amendment of Section 28(3) to give FTC power to make regulation for BWA; and
- (e) amendment of Section 29 to make reference to FTC instead of the "Board".

Drafting instructions have been submitted to the Attorney General to effect these changes to the BWA Act. When effective, FTC under the Utilities Regulation Act will

¹⁶³ Provisions of the Underground Water Control Act have been extended to apply *mutatis mutandis* to the control of surface waters.

¹⁶⁴ Official membership of the Barbados Water Control Board originally represented agricultural, waterworks, health, physical planning and private sector interests.

establish the principles for setting rates, set and review rates, determine and monitor standards of services, hear customer complaints concerning billings and standards of service supplied by BWA and educate and assist customers in settling complaints with BWA. Further instructions regarding rate review applications, information to support these applications and procedures for rate determination hearings will also apply according to the Utilities Regulation (Procedural) Rules (GOB, 2003b).

7.4.5 Regulatory framework

There is no 'established' regulatory framework for the Barbadian water and sanitation sector due to a history of self-regulation by BWA. BWA is dependent on MOEPU which has the final decision in important issues related to BWA and the sector. BWA proposes its own tariff adjustment for final approval by Cabinet and is also responsible for monitoring its own water quality with some assistance from MOH.

As mentioned in Section 7.4.3, part of government's intended policy for the sector will include establishing a regulatory framework with clear delegation of institutional responsibilities. Priority will be given to:

- (a) the formation of a separate institution in charge of water resources and sewage discharge issues;
- (b) defining which institution(s) will regulate quality of service standards;
- (c) the separation of economic regulation from service provision; and
- (d) ensuring that there is no overlap of responsibilities between institutions and that there are mechanisms for coordinating policies from different government bodies.

Under the new regime, economic and service quality standards regulation will be taken over by FTC through a Ministerial Order designating BWA as a regulated service provider. The sector-specific regulatory capabilities of FTC will be developed against a background of severe water constraints, the inefficient and unsustainable financial position of BWA, the need to finance sewerage coverage and the lack of an appropriate regulatory framework to address water and sanitation issues. Besides regulation of public service provision, FTC's role will also be examined under different forms of private sector contractual arrangements. Tariffs will be determined by FTC to include costs that would be incurred if the service was provided in a competitive market - that is operating and maintenance costs plus a return on capital. To facilitate this, reporting requirements

will include information on physical assets and information on required investments to comply with targets for service expansion and quality of service. In September 2000, BWA's Board of Directors engaged a consultant to make BWA 'FTC ready'. Disappointed with the progress of that approach and subsequent to numerous studies under an IDB technical assistance programme, in July 2004, BWA's Board of Directors agreed to the creation of a regulatory unit¹⁶⁵ primarily to prepare BWA for a rate hearing before FTC.

Until enacted, BWA continues to dictate the 'regulatory pace' for the sector. Effective January 1, 2005, BWA introduced new rates and tariff structures¹⁶⁶ consisting of four domestic bands, a commercial band and a ship's band, based on a concept of affordability and conservation (Table 7.7). Sewage tariffs charged to domestic and commercial customers are calculated at one-third and two-thirds of their water bills respectively. Tariffs are not adjusted by inflation. The new rates represent a 0-44.3% increase over previous rates which had been in effect since October 1991. The previous tariff structure was a two-block system for metered domestic customers – up to 34 cubic metres and over 34 cubic metres¹⁶⁷. Tariffs for unmetered customers (about 15% of BWA's supply) were determined based on the annual rent value for the property and the number of taps. The basis for a change in the tariff structure was informed by economic analyses which indicated that the previous tariff did not constrain demand and hence was not suitable for consumption management purposes.

There is no formal system for water and sewage effluent quality monitoring and reporting. Monthly sampling and analysis of BWA's water supply and sewage effluent from the Bridgetown and South Coast sewerage treatment plants are conducted by MOH and EPD. In addition, water samples independently collected by BWA are sent to MOH for laboratory analysis. By this arrangement, MOH unofficially assumes the role of 'environmental quality watch-dog' over BWA.

¹⁶⁵ Six-member team to include (a) manager/head expected to lead the regulatory process, address all economic regulatory issues such as rate applications and rate hearings, interface with FTC and provide recommendations and advice on organisational policies and procedures impacted by the regulatory environment; (b) management accountant responsible for ensuring that the necessary accounting systems are in place, that information is being properly kept for submission to FTC and to liaise with external consultants engaged in studies as part of the regulatory preparations; (c) two regulatory research officers expected to assist the manager/head in research and report on matters relating to regulatory compliance, tariff structure, accounts, economics, engineering, information technology and the database aspects of BWA's operations; and (d) legal expert to provide legal support primarily for the regulatory function of BWA and to interface with FTC, external consultants, external counsel and BWA's customers. Proposal is for the manager/head and management accountant to be consultants hired on a contract for services basis while other posts are permanent positions within BWA.

¹⁶⁶ Interim rate adjustment agreed by Cabinet to satisfy Section 6.06 of the loan agreement between GOB and IDB for the South Coast Sewerage Project. This section states *inter alia* that revenues from rates for water and sewerage services should be sufficient to cover all operating cost of the systems, including those related to administration, operation, maintenance and depreciation on revalued assets.

¹⁶⁷ Also included a minimum charge of BBD\$20 for consumption up to 13 cubic metres.

Table 7.7 BWA's water rates as at January 1, 2005

Category	Rates (BBD\$) ^a	Increase (%)
Domestic		
0 – 8 m ³	1.55	0
9 – 20 m ³	1.94	0 – 15.9
21 – 40 m ³	2.91	18.4 – 32.1
>40 m ³	4.86	33.3 – 42.7
Commercial	2.91	37.3
Ships	5.05	44.3

^aRates per cubic metre

Source: BWA (2005)

7.5 Private investment in the water and sanitation sector: An overview

7.5.1 BOT arrangements

Since the 1990s, desalination has featured highly as a viable alternative to supplementing Barbados' scarce water resources, but with a view of BWA operation and management. During 1994 and 1995, Barbados experienced what was described as a 1-in-150-year drought which saw over 3,000 households regularly without water. The drought also posed a threat to the island's economy heavily dependent on tourism. On August 1, 1995, the day after supplies failed most of Bridgetown including the town's hospital, government acted to review the future of water provision. This culminated in the signing of a water supply agreement in November 1998 between BWA and Ionics Freshwater Ltd. (IFL), a joint venture company between Ionics Inc.¹⁶⁸ and its local partner, William Industries Inc.¹⁶⁹

Dubbed the largest of its kind in the Caribbean, the 30,000 cubic metre per day brackish water reverse osmosis desalination plant at Spring Garden, St. Michael was built under a 15-year BOT contract¹⁷⁰ with BWA reserving the right to purchase and take possession of the plant at any time or to extend the contract for an additional five years. IFL was granted an irrevocable licence to use, occupy and have access to the plant site at no cost. In addition, BWA pledged to "use its best efforts to assist the contractor to obtain all licences, permits and approvals required under the laws of Barbados to construct and operate the plant."

¹⁶⁸ International company specialising in the supply of desalinated water to municipal and industrial clients throughout the Caribbean and the US under BOO schemes.

¹⁶⁹ Diversified Barbados-based company doing business throughout the Caribbean. Scope includes investments in manufacturing, electrical contracting, steel, hardware and lumber supply, equipment rental, farming, tourism and real estate development.

¹⁷⁰ The contract comprised detailed design, engineering, manufacture, site preparation, construction, installation, start-up and commissioning of the plant, followed by its operation and maintenance for a 15-year period. The project also included upgrading and extending the existing supply infrastructure to enable connection to the new plant, the construction of a reservoir at Cave Hill and the implementation of various associated water conservation measures. In addition, an education centre was established to serve as a resource for students and the island's tourist industry.

Commissioned in February 2000, the plant provides potable water to about 20% of the Barbadian population. Water is currently sold in bulk to BWA at BBD\$1.10 per cubic metre¹⁷¹, which represents a 37.5% increase over starting rates in 2000. All payment is made in Barbadian dollars¹⁷². Under the water supply agreement, cost elements of capital recovery¹⁷³ and interest remain fixed for the contract period. Cost elements of all other items are subject to an annual adjustment on each anniversary date of the commencement of the desalinated water delivery period. The percentage rate of IFL's profits however remains fixed throughout the contract period in relation to costs subject to escalation. The contract also makes provision for a minimum guaranteed delivery of 27,000 cubic metres per day. Failure on BWA's part to accept this guaranteed quantity of water results in BWA compensating IFL the cost equivalent to the difference between the guaranteed minimum and the actual quantity accepted. Late payments accrue interest at the rate of 1.5% per month until paid or offset.

Since inception, BWA has found the price of desalinated water expensive relative to the rate at which it sells water to its customers. Estimates for BWA's 2004/05 budget for example, indicate that the purchase of desalinated water will account for 13.7% of operating expenses. Two factors are believed to render the contract 'unattractive' to BWA. Firstly, BWA only accepts about 55% of the water produced by the plant, resulting in stand-by charges¹⁷⁴ for the unused 45%. In addition, an electricity conversion factor¹⁷⁵ of 1.111 is applied to calculate the appropriate electricity cost.

In light of these factors, BWA began exploring the scenario of exercising the buy-out option of the desalination contract and possibly operating the plant under a management contract. The proposal for a February 2005 buy-out at a cost of BBD\$19.5 million was supported by projected cash flow savings to BWA of BBD\$32.1 million in absolute value and BBD\$23.6 million in present value over the remaining 11 years of the contract. This was predicted to translate into monthly cash flow savings in excess of BBD\$240,000¹⁷⁶

¹⁷¹ Basic elements of the price of desalinated water delivered by IFL to BWA per cubic metre include (a) capital costs; (b) interest on capital costs; (c) water treatment chemical costs; (d) labour and labour allied costs; (e) consumables costs other than water treatment chemical costs and electricity costs; (f) general and administrative costs; (g) electricity costs; and (h) IFL's profit on items c through f.

¹⁷² Each payment is made up of two components. The Barbadian component includes items d and g while the US dollar component comprises items a, b, c, e, f and h (see footnote 171). An initial exchange rate of US\$1=BBD\$2.03875 is used as the base exchange rate.

¹⁷³ Capital costs of US\$28 million represent the financing, detailed design, detailed engineering, manufacture, delivery, construction, erection, bonding, insurance, commissioning, testing and labour through completion of the reliability and performance tests, interest during construction and all other items relevant to the capital cost of the complete plant through to its completion.

¹⁷⁴ Calculated as the product of the stand-by rate (total production rate less rates for chemicals and electricity) and the quantity of water not taken up to the plant capacity.

¹⁷⁵ Reflective of the operational efficiency of the plant.

¹⁷⁶ Cash flow savings to accrue from the removal of the capital cost factor and its replacement with a lower substituted capital repayment for the purchase of the plant, the removal of special operating conditions as a result of BWA owning the plant, the removal of the profit element related to chemicals, equipment consumables and labour,

(BWA, 2004b). Government has however rejected BWA's petition to buy-out the desalination plant. Government's commitment to the contract, fear of prolonged legal action and strong lobbying by IFL are suggested as primary reasons for this decision.

7.5.2 Public-private partnerships

Construction of a sewerage treatment plant to serve the western coast of Barbados has been on the books since the mid 1990s. The West Coast Sewerage Project now at the final design phase has been financed thus far by government subventions and foreign currency loans from multilateral funding sources. Government has however mandated BWA to complete the project under a PPP arrangement¹⁷⁷ citing a lack of in-house capacity and constrained financial resources as mitigating factors for involving the private sector. Conditionalities attached to IDB funding for the project may have also played a part in government's motivation to involve the private sector. In June 2002, government made a request to IDB to express its interest in financing the cost benefit analysis for the review of the outfall location in preparation for the project. In lieu of problems encountered during IDB's financing of the South Coast Sewerage Project¹⁷⁸, government had to agree on taking appropriate steps to address some of the major problems facing the sector before IDB would consider financing the project¹⁷⁹.

Private capital is also being sought for water augmentation options such as seawater desalination and/or the retrofitting of the Bridgetown and South Coast sewerage treatment plants to facilitate wastewater reuse for irrigation¹⁸⁰ and aquifer recharge. The approach being adopted is to hire consultancy services to prepare comprehensive procurement documentation to facilitate PPP arrangements for these intended projects. The changeover from manual to automatic meter reading is also being scheduled for a finance-design-supply-install-maintain public/private sector contractual agreement. Estimated at BBD\$21 million, the project will include the replacement of over 90,000

application of a reduced electricity conversion factor and the ability of BWA to only produce the required quantity of water.

¹⁷⁷ PSP options under consideration include traditional design and construction, operation and maintenance, lease-develop-operate, build-own-maintain and build-own-operate contracts.

¹⁷⁸ The South Coast Sewerage Project faced numerous setbacks which resulted in a 7-year delay in completion and a 90% cost overrun. In addition, there was non-compliance with certain conditions of the loan including the tariff clause, requirements of internal cash generation, collection efficiency targets and a revaluation of fixed assets and the transfer of project assets and liabilities to BWA. Structural problems that became self-evident during the execution of the project included the underperformance of BWA, the lack of a functioning regulator and weaknesses in the policy framework (IDB, 2004).

¹⁷⁹ In this regard, government informed IDB of its decision to have FTC regulate BWA, conduct a review of BWA's performance and explore the possibility of creating a WRMA responsible for sector policy thereby leaving BWA as the operating entity. Since then, government has formally requested IDB's financial support through a reimbursable technical cooperation for the financing of the following studies (a) institutional strengthening of BWA; (b) institutional strengthening of FTC; and (c) preparation of the West Coast Sewerage Project.

¹⁸⁰ Specifically for golf and polo courses.

meters. Finally, a 5-year BOOT agreement is also being sought for the provision of full supervisory control and data acquisition systems¹⁸¹ for BWA's potable water supply and sewerage systems.

7.5.3 Local capital market

Finally, as mentioned in Section 7.4.1, Barbados boasts a well-developed banking and insurance sector. In 2005, BWA went to the local capital market for the first time and secured the largest ever bond issue by a state-owned company. BWA's debt portfolio was refinanced through a 25-year fixed rate bond issue valued at BBD\$150 million. With debts in excess of BBD\$100 million, the intention is to improve BWA's cash flow and streamline operations in preparation for filing a rate application with the FTC.

7.6 Criteria for private investment in water and sanitation

7.6.1 Perception of private service providers

Respondents highlighted several factors that contributed to their investment decision:

- **The expected rate of return.** *“There is money to be made in the water and sanitation sector because of the inefficiencies that have existed for a long time in the utility.”* Respondents were optimistic about investment prospects in the Barbadian/Caribbean water and sanitation sector given the country's/region's economic dependence on tourism which besides being a water-demanding industry, also required increased focus on adequate wastewater treatment and disposal to safeguard coastal environmental quality.
- **The level of government support and commitment.** Augmenting the country's scarce water resources became a *“national priority”* following the devastating impact of the 1994-95 drought on the country's tourism sector. As such, IFL enjoyed widespread support from government, BWA and other major stakeholders.
- **The broadening scope of the Water Resource Management Policy.** The recent policy stipulation of brackish water as an important resource subject to similar treatment as freshwater (thereby preventing its use for desalination purposes), had improved investment prospects for wastewater reuse to supplement potable water supply.

¹⁸¹ SCADA applications to control distributed systems from a master location.

- **The presence of a strong partner.** IFL's local partner had been contemplating expanding beyond mainstream construction into the water sector since 1995. They were however aware of their inexperience in the sector. *"We teamed up with Ionics who has other operations in the Caribbean and probably has the most experience of anybody in BOT projects. We within the Williams Group as local partners had not had much experience with those."* In Ionics they found a strong internationally recognised partner with whom they felt guaranteed a *"winning project."* Williams Industries was also considered a *"legitimate partner"* with enough 'roots' in the local economy to reassure government of its commitment to the long-term success of the project. They were also considered essential in *"clearing regulatory and political roadblocks."*
- **The availability of local financing.** IFL was able to raise the financing for the project (non-recourse project financing with a limited recourse component for the first two years). The relative 'ease' with which this was done was attributed to Williams Industries' reputation in the local economy, government's guarantee of the project, BWA's reputation of paying its bills, the national priority given to the project and local financiers' knowledge of the necessity and importance of the project.
- **The presence of an adviser** to BWA empowered to make decisions and serve as the point of contact for the project. In the past, BWA's limited professional capacity had resulted in delays and with this being the first large-scale BOT in the sector, there was a concern that the project would 'suffer'. Having a consultant on board conversant in desalination PPPs was believed to facilitate the timely completion of the project. According to IFL's Director, *"He was very knowledgeable about desalination, he was very practical when it came to problem solving – not to take the 4 meetings, 5 directors and 3 chairmen board meetings 'we will get it done'. In his absence it would have been very problematic."*
- **The size of the project.** Dubbed the *"largest brackish RO [reverse osmosis] plant in the western hemisphere,"* the scale of the project was believed to match Ionics' experience in the sector and *"be worth the hassle."*

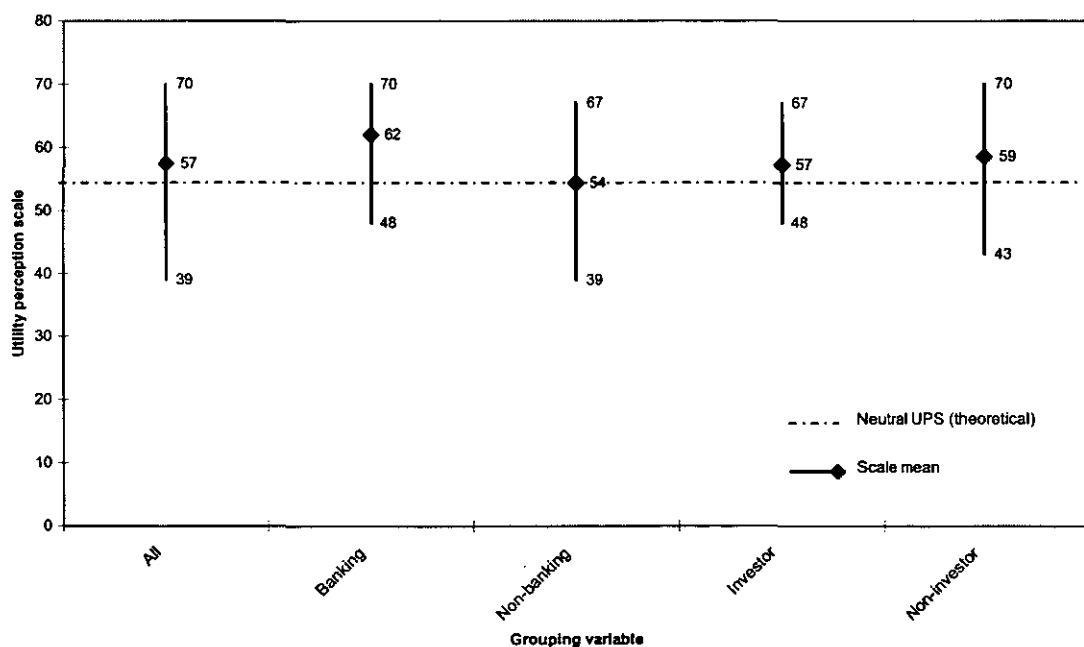
7.6.2 Perception of local financial institutions

Most respondents had a relatively positive attitude towards the BWA with 66.7% scoring greater than 50 on the UPS (Figure 7.1; Appendix 6: Table A8). No significant difference in the UPS was observed based on organisation category ($p=0.193$) or investment activity ($p=0.733$) (Appendix 6: Table A9: Table A10). An overwhelming majority (93.3%) considered investment prospects in the sector to be acceptable, good or excellent

(Appendix 6: Table A11). No significant difference in respondents' perception of investment prospects in the sector was observed based on organisation category ($p=0.267$) or investment activity ($p=0.705$) (Appendix 6: Table A12: Table A13). In addition, no significant relationship ($p>0.05$) between how the BWA was perceived and respondents' perception of investment prospects in the sector was apparent (Appendix 6: Table A14). The implication of these findings is that Barbadian financial institutions while consistent in their perception of investment prospects in the sector and of the BWA, are unlikely to make one viewpoint affect the other. At the time of the survey, the BWA was in the process of raising BBD\$150 million through a bond issue which had generated a lot of interest within the financial sector not because of the BWA per say, but mainly because the bond issue (which was the first of its kind for the sector) was guaranteed by the Barbadian government. As such, it is likely that respondents' perceptions of investment prospects in the sector (which were currently positive) may be totally unrelated to their perceptions of the BWA which coincidentally were also positive.

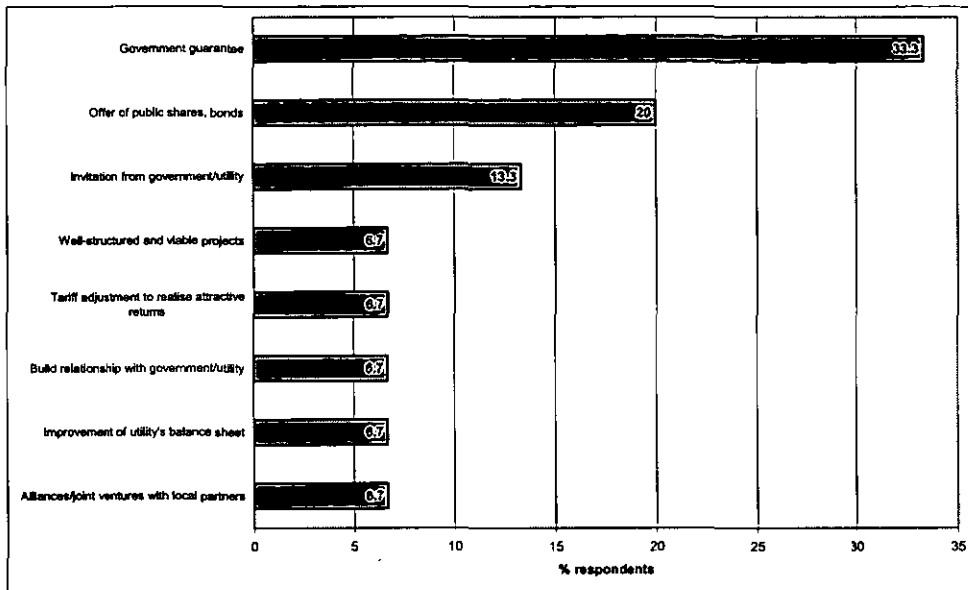
In rating factors that would influence the investment decision in the sector, respondents had a much higher regard for institutional factors than for economic and financial factors (Appendix 6: Figure A2). Good capital investment planning, institutional reform and the separation of roles featured highly among institutional factors while bond issues, credit enhancement mechanisms and infrastructure investment funds featured highly among economic and financial factors (Appendix 6: Table A16).

Figure 7.1 Utility perception scale range for Barbadian financial institutions



In terms of personal preferences to get involved in the sector, the most frequently mentioned requirements were the provision of government guarantees (33.3%), bond issues (20%) and invitations from the government and/or utility (13.3%) (Figure 7.2).

Figure 7.2 Requirements to become involved in the sector (Barbados)



7.6.3 Perception of water sector officials

Return on investment, minimal government interference, a stable macroeconomic environment, a sound regulatory framework, willingness-to-pay and a good social environment were repeatedly identified as factors necessary to attract private investment to the sector. Except for a stable economy, respondents felt that many of these investment-encouraging factors were missing in the local context. Respondents identified the weak regulatory purview of FTC (seen to result in undue government intervention in areas such as rate determination), the legislative framework and the existence of poorly-defined institutions as the most pressing issues in the sector likely to deter private investment. The social climate was also considered *“unfriendly and unacceptable”* to private investment. Overcoming a *“water should be free mindset”* after years of being accustomed to *“just turning on the tap and seeing water”* was seen as a massive challenge. Some respondents however took comfort in government's hands-on approach in the sector which they believed would overcome the negative impact of a culture of low willingness-to-pay and provide certain guarantees to potential investors.

7.7 Scope and strategy for private investment in water and sanitation

7.7.1 Perception of private service providers

Respondents were in favour of local private investment or at the very least, international private investment with a strong local partner. They were also of the opinion that there was enough money and expertise in the Caribbean to address the investment needs of the local water and sanitation sector. *“I don’t think we have to go outside the Caribbean to finance again. I think the time has past where someone from abroad has all the answers – there are guys like me floating around.”* Even though private investment in the sector was seen to *“favour big established companies like Ionics and Vivendi,”* opportunities were believed to exist for established local business entities, particularly construction companies described as *“second tier players.”* Under the existing operating environment, BOT-type arrangements were considered the most viable models for local private investment in the sector.

In terms of a private investment strategy, respondents recommended:

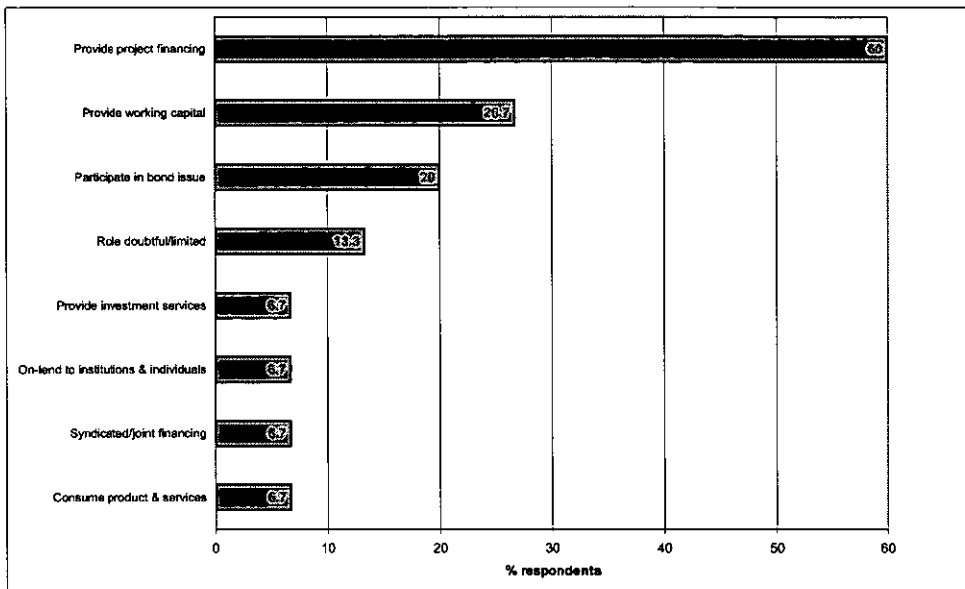
- The amalgamation of water utilities across the Eastern Caribbean or bundling of small projects to create viable entities to achieve economies of scale in project financing and delivery.
- The development of specific policy to encourage small private companies.
- The promotion of joint ventures between local and foreign partners.
- The promotion of investment opportunities for local investors in related areas such as the bottled water industry.
- That government be more responsive to investors’ needs especially where the drive for investment was being spearheaded by the private sector.
- That public officials be more embracing of private investment and stop frustrating investors’ efforts and begrudging them their profits.

7.7.2 Perception of local financial institutions

When asked to rate the investment prospects of the sector based on the use of different operational modes for private investment, respondents showed a slightly greater preference for joint ventures and BOTs (Appendix 6: Figure A3). Interviewees confirmed these preferences citing the success of the desalination BOT and the likelihood of government providing guarantees in PPPs as the basis for investors’ interest in similar

scenarios. When asked to indicate their possible role in the sector, respondents envisaged their role to be limited to mainly project financing (60%), providing working capital to BWA (26.7%) and participating in bond issues (20%) (Figure 7.3).

Figure 7.3 Role of financial institutions in the sector (Barbados)



7.7.3 Perception of water sector officials

Respondents' concerns about the possibility of private investment in the sector alienating sections of society from being able to afford basic services resulted in them placing greater emphasis on financing options that did not allow private investors to *"exploit people through rates."* As such, there was very little support for privatisation and concessions, described as *"too complex"* and *"inappropriate"* for the needs of the local sector. According to one respondent, *"I have not come across any concessions that have been deemed successful. Until we can find some examples that will give some confidence, I don't think concessions have any place in our water sector."* Alluding to Trinidad's experience under an interim operating arrangement (see Section 8.5), arrangements (such as concessions) where private investors were expected to operate under general civil service rules were not deemed viable. BOT-type arrangements similar to that with IFL were considered *"attractive"* with *"greater potential and applicability in our situation,"* mainly because they had the advantage of augmenting BWA's supply without impinging on BWA's statutory obligations to the sector. As put by one respondent, *"The options being pursued do not conflict with the existing situation,"* the existing situation referring to BWA's monopoly position in the sector.

With only one major private investment project to its credit, respondents were aware that for Barbados, private investment was a “*new concept*” and an “*untested area.*” Subject to government’s continued support for private investment, some respondents believed that opportunities existed for both small and large investors in the sector. Other respondents however considered the scope for private investment to be limited due to the already good service coverage available to most of the population. Respondents generally defined the scope for private investment according to the type of investor. The scope for local private investors was considered limited due to their inexperience in the sector and likelihood to “*keep away from investments in the sector.*” Foreign investors were expected to be more interested in distribution and management based on previous experience of such entities in other countries. Respondents did not see much scope for private investment in “*small incremental projects*” and were of the opinion that unless projects were of a scale similar to the desalination plant, private investors would not be attracted to the sector.

Respondents made the following suggestions to encourage private investment in the sector:

- ***The need to prioritise the private investment strategy.*** Respondents admitted that prior to the drought, they had never given private investment any serious thought because of a long tradition of public sector provision, universal water supply coverage, preferential treatment by government and government budgetary support. Barbados’ situation however of diminishing freshwater resources and the need to find alternate sources to augment existing supplies necessitated a more urgent and focused approach to securing financing options besides government.
- ***The need for a better planned and managed strategy.*** This recommendation was a result of respondents’ experience with the desalination BOT. With no previous BOT experience in the sector, BWA and other government entities hurriedly defined the project to secure the required investment in order to avoid further damage to the country’s tourism sector. According to one respondent, “*The pace of the project was so swift that we did not have all the things nailed down especially the hydrology of the area, so a number of assumptions were made. By the time we got to the actual contract signing, we had to negotiate a lot of things.*” While BWA was able to renegotiate some aspects of the contract, some items which had significant cost implications were non-negotiable and turned out to be very costly to BWA.
- ***The need to have the requisite in-house skills to effect the strategy.*** Even though an adviser was on hand during the BOT, some respondents felt that the

consultant was slightly biased in favour of the investor. As a result, the procurement of pro-BWA project advisory services (preferably resident within BWA) was seen as a prerequisite to future private investment arrangements.

7.8 Small size

7.8.1 Effect of small size

Water sector officials were unanimous in agreeing that small size affected the Caribbean's ability to attract private investment to the sector. The most important size-related issue for most respondents was that of limited professional capacity, more so in terms of the number of skilled persons available than their competence. This situation they opined often resulted in a few individuals "*spreading themselves thin*" by undertaking multiple roles. As put by one respondent, "*If you are an engineer, it does not matter if you are electrical or mechanical – you are an engineer, that's what counts.*" The provision of specialist services such as those required for utility regulation were believed to be most affected by small size. Small size was also considered to seriously limit Caribbean water utilities' bargaining power when sourcing investment, which resulted in government having to facilitate and underwrite most of the investment for the sector.

7.8.2 Response strategies to address size constraints

7.8.2.1 *Regional cooperation*

Water sector officials were very supportive of regional initiatives to improve the investment prospects of the sector. The most feasible opportunities for regional cooperation were identified as the sharing of professional expertise to address capacity constraints and the development of regional benchmarks using best practice guidelines from various Caribbean utilities. CWWA, CEHI and CBWMP were identified as existing regional institutions through which an expanded regional mandate for the sector could be fostered. To ensure cooperation at the policy-making level, respondents suggested the creation of a 'water desk' at CARICOM to focus on the investment needs of the sector throughout the region. Besides professional cooperation among regulatory agencies (e.g. during OOCUR conferences), there was little support for a regional approach to utility regulation which was believed to be site-specific.

When asked about possible challenges to regional cooperation in the sector, respondents highlighted the following:

- Diversity in the sector such as water-scarce islands (e.g. Barbados) versus water-rich islands (e.g. Dominica) which would result in different areas of interest and level of emphasis.
- Different levels of sector development which would also result in different interests.
- Insularity as each country would want to promote its projects/interests over others.
- Difficulty sharing information especially if this information would “show up” or embarrass specific utilities.
- Difficulty in getting/maintaining political support and commitment due to the sensitive nature of the sector.
- Possibility of cooperation being one-sided due to the dependence of smaller countries with fewer resources on larger more resourceful countries.

7.8.2.2 *Other response strategies*

Water sector officials suggested the following strategies to overcome small size disadvantages and improve investment prospects in the sector:

- Aggregating discrete service areas and offering as a single package to investors for a concession-type arrangement.
- Pooling small projects into larger more viable projects that would better appeal to private investors.

Local financial institutions were also highly supportive of ‘project bundling’ and merging small systems to overcome small size constraints and improve the investment prospects of the sector (Appendix 6: Figure A4).

7.9 Chapter summary

This chapter presented the Barbadian case study which examined the operating environment for private investment in the water and sanitation sector and the perceptions of public and private sector actors to criteria for private investment, scope and strategy for private investment and size-related response strategies to improve conditions for private investment in the sector. Findings from documents, survey questionnaires and semi-structured interviews were systematically presented for further discussion within the context of the literature in the cross-case analysis (Chapter 10).

CHAPTER 8 CASE STUDY: TRINIDAD AND TOBAGO

8.1 Chapter introduction

This chapter examines the phenomenon of private investment in the Trinidadian water and sanitation sector using survey, interview and document data to determine the operating environment for private investment, criteria for investment decision-making and scope and strategy for private investment in the sector. The potential for various size-related response strategies such as regional cooperation to improve investment prospects in the sector is also examined.

8.2 General information

The Republic of Trinidad and Tobago is situated at the southern end of the Caribbean chain of islands, just northeast of Venezuela (Figure 5.1). With a joint land mass of 5,128 sq. km, the twin-island state is home to approximately 1.26 million inhabitants, 70% of which reside in urban centres. Of 232 countries surveyed in the CIA World Factbook, Trinidad is ranked 177th in terms of area, 139th in terms of population, 130th in terms of total GDP and 75th in terms of GDP per capita (CIA, 2005).

8.3 Status of the water and sanitation sector

At the country's independence in 1962, public water supply was only available to about 12% of the population. Private water supply provided by major oil and sugar companies supplemented the public system, particularly to small housing estates affiliated with these organisations. 1962 marked key developments in sanitation with the beginning of major sewerage projects in the capital Port-of-Spain, San Fernando and Arima. Up until 1965, water and sanitation services were administered by seven autonomous agencies. The Port-of-Spain City Council, San Fernando Borough City Council, Arima Borough Council and County Councils operated discrete water supply systems in their respective administrative areas. Water supply outside municipal areas was the responsibility of the Central Water Distribution Authority. The Water Department and Sanitation Division, both within the Ministry of Public Utilities, were responsible for the development and operation of major water and sewerage systems respectively. The establishment of the Water and Sewerage Authority (WASA) in 1965 realised government's vision of consolidating the operations of the various entities and expanding service provision to the wider community.

Data from the 2000 population census indicate that approximately 81.5% of Trinidadian households receive water from WASA, the majority of which have piped water supply (Table 8.1). About 13% of households rely on private sources for water. Centralised sewerage services are provided to about 21.8% of Trinidadian households, two-thirds of which are customers of WASA. Most of the population relies on on-site disposal systems such as septic systems (50.7%) and pit latrines (27.0%).

Table 8.1 Water and sanitation coverage in Trinidad and Tobago (2000)

Source of water	Total (%)	Type of toilet facilities	Total (%)
Public source	81.5	WC linked to sewer	21.8
Piped into dwelling	60.9	WC not linked to sewer	50.7
Piped into yard	8.9	Pit	27.0
Standpipe	9.6	Other	0.1
Truck-borne	2.1	No toilet facilities	0.4
Private source	12.9		
Piped into dwelling	4.5		
Catchment	8.4		
Spring/river	1.5		
Other	4.1		

NOTE: Adjusted for non-response

Source: CSO (2002)

Despite reports of good coverage, water supply in Trinidad and Tobago has always suffered from an unequal demand/supply relationship which has resulted in a history of water scheduling¹⁸² and difference in service levels. WASA uses a measure of service called the Full Service Equivalent (FSE) as an indicator of water service continuity. The supply of water is segmented into five classes which form the basis for calculating the FSE¹⁸³ (Table 8.2). Water supply data for 2003 indicated that only 18% of the population received a continuous supply while 20% received less than 84 hours' service each week. Investment programmes undertaken by WASA are specifically geared towards reducing the number of customers in classes 4 and 5. This has been achieved to some extent through initiatives like the short-term investment plan credited for reducing the number of customers receiving water less than 48 hours per week to 3% and providing 57% of the population with continuous service.

In addition to inadequate coverage and service unreliability, a number of problems plague the Trinidadian water and sanitation sector. Only 2.9% of WASA's customers are metered, the majority of which are commercial and industrial consumers. Water rates

¹⁸² Refers to the planned restriction of flow to specific areas over specific periods of time.

¹⁸³ The FSE is calculated by dividing the number of population service hours for the supply period by the total number of population hours. The FSE is primarily affected by the dry and wet seasons. For example, when calculated as an average between February and June 2003, the FSE was 59%. In the wet season, the average for July to January 2003 was 71%.

have remained unchanged since 1993 and do not reflect actual consumption. This has resulted in what is considered higher than normal water usage and a conservative UFW estimate of 45%. Other problems include limited built-in redundancy in the delivery network and the absence of a water master plan for investment planning.

Table 8.2 Water supply service levels in Trinidad and Tobago (2003)

Class	Level of service	Population (%)	Factor	FSE ^a
1	168 hrs/wk (continuous)	18	1.00	0.18
2	120 to 168 hrs/wk	28	0.71	0.20
3	84 to 120 hrs/wk	33	0.50	0.17
4	48 to 84 hrs/wk	11	0.29	0.03
5	Less than 48 hrs/wk	9	0.00	0.00

^aFull service equivalent calculation for June 2003

Source: WASA (2003)

In the case of wastewater, there is the need to implement policy to rationalise over 200 non-WASA sewerage treatment package plants to meet industry standards. Privately owned sewerage facilities, especially those in housing developments are in a state of disrepair due to neglect and WASA's reluctance to incorporate them into the public sewerage system. Finally, increasing pollution from sewage and industrial effluents combined with soil erosion and unmitigated development, threaten potable water quality while increasing treatment costs. Long-term investment to 2020 to address most of these problems is estimated at TT\$26 billion. Of that amount, it is estimated that TT\$16.5 billion is needed for water, TT\$6.3 billion for wastewater and TT\$3.2 billion for institutional strengthening.

8.3.1 Status of the public water utility

The history of WASA's financial performance has been one of loss-making, high operating costs and low revenues. Since the late 1990s, WASA's financial performance and position has been characterised by heavy capital spending, continued operating shortfalls and a practice of using debt to finance operational deficits, new capital expenditure and refinance existing debts. Revenues are especially affected by WASA's customer profile, tariff structure and collection policy. Domestic customers account for 96.6% of WASA's customer base yet provide only 33.8% of annual revenue. Industrial and commercial customers on the other hand generate 37.6% of WASA's revenue while only accounting for 2.2% of the customer base. In addition, WASA has a poor collection policy with an average collection period of 14 months. An overview of WASA's financial and operational data is shown in Table 8.3.

Table 8.3 Financial and operational data for WASA (2002)

Parameter	Value
Working ratio	1.2
Operating ratio	2.1
Debt service ratio	50%
Gross operating margin	-50%
Operating profit margin	-131%
Sales growth	0.9%
Collection efficiency	68%
Staff per 1000 connections	11
Employee cost/total cost	45%
Desalinated water/total cost	15%
Production (Mm ³)	346.8
Consumption (Mm ³)	156.0
Unaccounted for water (UFW)	45% (est.)

Source: RIC (2004b; 2004c) and author's calculations

8.3.2 Sources of financing

The approach to financing in the sector has been influenced to a large extent by various managerial arrangements (see Section 8.5). Prior to WASA/sector management by a local private sector institutional strengthening team in 1992, the financing of major capital works was predominantly from government subventions or government guaranteed loans from various commercial, multilateral and bilateral sources. The typical financing mix during this period was multilateral/bilateral sources such as the World Bank, Inter-American Development Bank and European Union (79%), government (11%) and local commercial sources (10%). Under foreign private sector management (interim operating arrangement) during 1996-99, WASA was authorised to borrow on the local financial market to fund a number of development programmes. Since then, local commercial loans guaranteed by government are the principal sources of financing for the sector, made possible by the high liquidity position of several local financial institutions. While the long-term prognosis is for local commercial financing, foreign currency loans are expected to feature as a minor source of funding, contributing up to 9% of the sector's future financing needs.

8.3.3 Projects for financing

Several capital projects have been planned over three years (2004-06) to address the deteriorating state of WASA's infrastructure coupled with the need to provide a continuous water supply. A list of these projects is presented in Appendix 7. As shown in Table 8.4, the majority of projects are valued between US\$1 to 10 million.

Table 8.4 Capital expenditure for 2004-06 (WASA)

Project cost	Number of projects
Less than US\$1 million	2
US\$1.1 to US\$10 million	22
US\$10.1 to US\$50 million	5

Source: WASA (2004b)

8.4 Overview of the operating environment

8.4.1 Macroeconomic environment

Trinidad and Tobago is considered to have the most diversified and industrialised economy in the English-speaking Caribbean¹⁸⁴. There are large reserves of petroleum and natural gas and well-developed heavy industries in iron, steel, methanol, nitrogenous fertilisers and petroleum products. During the 1970s, high world oil prices created a rapid expansion of the local economy with real GDP growing by 72.5% between 1970 and 1977. These were the boom years during which much of the country's infrastructure was developed. Depressed oil prices coupled with high levels of public expenditure however, led to a prolonged period of economic contraction between 1988 and 1993.

Trinidad is now facing its third resource-driven economic boom after the one led by oil discoveries in 1974-75 and by natural gas in 1979-80. Growth in real GDP strengthened to 4.1% in 2003, mainly reflecting the strong output growth in the energy sector of 11.4% (Table 8.5). For the same period, the non-energy sector registered modest improvement contributing 68.6% to GDP. The environment that supported this performance was marked by lower interest rates and subdued inflation (3.8%) facilitated by an accommodative monetary and exchange rate policy. As the main recipient of foreign exchange through energy-related taxes and royalties, government is an important supplier of foreign exchange to the local market. This has resulted in an orderly foreign exchange market and a stable exchange rate. Government's policy since 1997 of pegging the Trinidadian dollar at TT\$6.30 to the US dollar has also contributed to the stable currency value of the Trinidadian dollar.

Trinidad's external position is expected to remain strong with higher export volumes of liquefied natural gas and other petrochemicals and continued buoyant energy prices. Improved fiscal and external positions have resulted in a long-term positive sovereign US

¹⁸⁴ Trinidad's economy can be divided into two separate, mostly independent sectors – the gas and oil sector and the rest of the economy. The strength of the energy sector is reflected in the fact that Trinidad is the most important world provider of ammonia and methanol, and is also the largest supplier of liquefied natural gas to the US. In this dual economy, the energy sector is a source of self-financed investment and fiscal revenues.

credit rating of BBB+. In 2002, government initiated its 'Vision 2020' programme to transform Trinidad to developed country status by 2020. Vision 2020 is expected to bring about a period of accelerated economic growth and focused strategic planning by both government and the private sector to establish Trinidad and Tobago as the economic centre of the Caribbean.

Table 8.5 Economic indicators for Trinidad and Tobago (2003)

Parameter	Value
GDP per capita	US\$8,400
GDP – real growth rate	4.1%
GDP – energy	31.4%
GDP – non-energy	68.6%
Inflation rate	3.8%
Public debt (of GDP)	54.4%
Exchange rate – TT\$ per US\$	6.26
Average lending rate	11.3%
Sovereign credit rating – local	A/Positive/A-1 ^a
Sovereign credit rating – foreign	BBB+/Positive/A-2 ^a

^aAs at June 16, 2004

Source: CBTT (2004a; 2004b); Standard & Poor's (2005)

8.4.2 Institutional arrangements

The Ministry of Public Utilities and the Environment (MOPUE) is the policy ministry in charge of water and sanitation services with direct responsibility for WASA. WASA is the statutory organisation responsible for the provision of water and sewerage services to about 81.5% and 15% of the Trinidadian population respectively. WASA through its Water Resources Agency is also responsible for water resources management, although since 2001, this function has been 'transferred' to the Water Resources Management Unit (WRMU), a part-time team seconded from WASA to the MOPUE. WASA's water supply is supplemented by a BOT arrangement with the Desalination Company of Trinidad and Tobago while additional sewerage services are provided by the National Housing Authority, private housing developments, hotels and industries.

The MOPUE is also line ministry to the Regulated Industries Commission (RIC) and Environmental Management Authority (EMA), two statutory organisations involved in the regulation of the sector. RIC is the economic regulator responsible for granting licences to service providers, rate-structuring, monitoring and enforcing service quality standards. EMA is responsible for environmental protection and conservation, including monitoring and enforcing water pollution and trade effluent levels. Water quality monitoring and enforcement is conducted by the Ministry of Health (MOH).

The Ministry of Finance (MOF) has overall responsibility for all financial matters pertaining to WASA. All capital expenditure projects undertaken by WASA have to be approved by MOF as it either provides direct funding through the annual budget or provides government's guarantee for loans sourced from the commercial banking sector. MOF also works in conjunction with the Ministry of Planning and Development and MOPUE when it is necessary to secure funding for WASA from international agencies. Table 8.6 summarises the various stakeholders in the water and sanitation sector, the duties of which are expanded in ensuing sections.

Table 8.6 Institutions involved in the Trinidadian water and sanitation sector

Focus	Institution
Policy	<ul style="list-style-type: none"> Ministry of Public Utilities and the Environment
Regulation	<ul style="list-style-type: none"> Water and Sewerage Authority Regulated Industries Commission Environmental Management Authority Water Resources Management Unit Ministry of Health
Service provision	<ul style="list-style-type: none"> Water and Sewerage Authority Ministry of Local Government National Housing Authority Private housing developers
Finance/planning	<ul style="list-style-type: none"> Ministry of Finance Ministry of Planning and Development

Reform of the water and sanitation sector, particularly the reorganisation of WASA is part of government's Vision 2020 programme to address challenges facing the sector. The suggestion is to disaggregate WASA into six functional components to which 'appropriate' management models will be applied (Table 8.7). The proposed model for the sector is shown in Figure 8.1. Essentially, WASA is to be transformed from a public utility into an industry which consists of:

- (a) a corporatised utility responsible for water supply and wastewater services. Primary ownership and control to remain with government, however the utility will function like a private commercial company;
- (b) a division or subsidiary of the corporatised utility to carry out wastewater services;
- (c) private water producers contracted to the new utility by concessions and BOO/BOT/BOOT arrangements;
- (d) contractors who carry out some of the ancillary services of the enterprise through lease contracts;
- (e) private wastewater service providers franchised by the corporatised utility to treat wastewater in various geographical areas; and

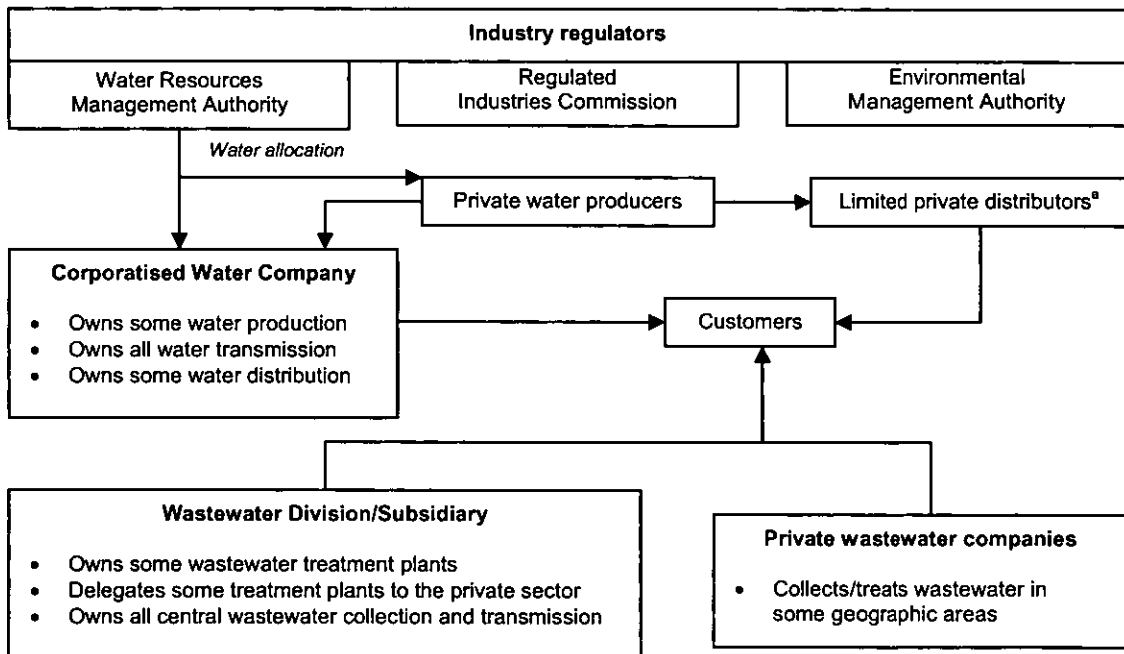
- (f) a financially autonomous administrative organisation responsible for water resources management.

Table 8.7 Proposed disaggregation of WASA

Component	Responsibility	Management
Water resources	Ownership, assessment and allocation	Public
Water production	Abstraction and treatment	Public/private
Water transmission	Bulk movement	Public
Water distribution	Supply to customers' property	Public/private
Wastewater collection	Collection	Public/private
Wastewater treatment	Treatment	Public/private

Source: Vision 2020 MGSCPU (2003); WASA (2004a)

Figure 8.1 Proposed model for the Trinidadian water and wastewater sector



^aSpecial consideration for permission to interface with consumers. Billing however remains the responsibility of the major utility.

Source: Vision 2020 MGSCPU (2003); WASA (2004a)

8.4.3 Policy framework

By international standards, Trinidad is not considered a water scarce country. Concerns however regarding seasonal and spatial variation in water availability, environmental threats from increased industrial activity and resource demands of an increasing population have resulted in the pursuit of a new policy paradigm. The National Water Resources Management Policy (GORTT, 2002), still in draft form since 2002, is expected to form the basis for IWRM for the country. The specific objectives of the policy are to:

- (a) provide an overview of the status of the country's water resources;
- (b) unify various initiatives of government to improve the framework for water resources management¹⁸⁵ and provide a strong direction and vision for the assignment of responsibilities for policy implementation;
- (c) provide direction for various water-related issues such as land-use planning, water resources assessment and planning, abstraction licensing, public water supply, wastewater, pricing and cost recovery, public participation and access to information;
- (d) outline instruments for policy implementation; and
- (e) outline the process for review and revision of policy.

Specific to public water supply, the policy intends to satisfy quality and reliability requirements through conservation and demand reduction and supply development. Water service providers will be obliged to establish plans to meet water conservation targets and to demonstrate progress on an annual basis¹⁸⁶. Government intends to promote the development of new freshwater supplies strictly on the basis of technical, environmental and financial feasibility. The development of other supplies such as desalination and barging has to be self-financing and financially self-sufficient. National quality standards and/or WHO guidelines will be included as service standards in licences granted to water service providers, with RIC responsible for monitoring compliance. Water service providers will be required to publish and distribute annual drinking water quality reports while sewerage service providers will be required to provide performance reports.

For water supply generally and sanitation specifically, the policy speaks of government's intention to encourage "*significant private sector participation wherever practicable*" by implementing strategies for economic investment. Economic instruments to effect this policy strategy will include full marginal cost pricing of water and sewerage services and targeted subsidies when justified on social or other policy grounds. Metering of water connections, application of volume-based water rates and the use of rebates, tax incentives and grants for demand management measures including water and wastewater reuse are also identified. Community responsibility for developing, operating and maintaining decentralised water supply and sewerage facilities will also be encouraged.

¹⁸⁵ Some of these initiatives included (a) enactment of the Environmental Management Act and establishment of EMA; (b) enactment of the RIC Act and establishment of RIC; (c) establishment of an interim operating arrangement for WASA (1995); (d) development of a Water Resources Management Strategy (1999); (e) drafting instructions for a new Water Industries Act (2001); and (f) establishment of a Water Resources Management Unit.

¹⁸⁶ Conservation and demand management targets to be included in licences for water service providers.

Government's Vision 2020 programme has major implications for the sector. Further to the National Water Resources Management Policy, specific strategies for water and sanitation are identified in the Vision 2020 report (Vision 2020 MGSCPU, 2003). Under Vision 2020, a transitional approach to utility reform is envisaged to establish a sound legal and regulatory framework for the sector. Government's policy is to ensure that tariff levels, risk-sharing arrangements and regulatory provisions are sufficient to attract potential investors and provide sustainable benefits to consumers. Regarding tariffs, government advocates stepwise increases. The focus for water supply includes system expansion to result in improved service levels, renewal of WASA's asset base and demand management via universal metering. For wastewater the proposed strategy includes establishing a separate wastewater division and applying separate charges for sewerage services. Government intends to actively pursue innovative financing schemes with the private sector for the rehabilitation, expansion and operation of existing and future wastewater facilities. The collective strategy for the sector will involve the development of water and wastewater master and investment plans to determine implementation priority over the investment period.

8.4.4 Legislative framework

The Water and Sewerage Act (GORTT, 1965) provides for the development and control of water supply and sewerage facilities and the promotion of conservation and proper use of water resources in Trinidad and Tobago. The Act also established WASA to carry out government's policy in relation to water and sewerage following the amalgamation of seven autonomous agencies previously responsible for water and sanitation services. Subject to the approval of the Minister of Finance, the Act empowers WASA to borrow funds to meet its obligations in addition to funds appropriated by Parliament or recovered from revenue¹⁸⁷. Section 28 makes provisions for government's guarantee of WASA's loan payments. Rates and charges for the supply of water and sewerage services are fixed under the Act.

The Act empowers WASA to authorise individuals, local authorities¹⁸⁸ or authorities previously engaged in water supply provision to provide water supply services to defined areas. Subject to such authorisation, water providers are free to acquire land or water rights, impose and collect water rates and maintain and improve their water supply

¹⁸⁷ Revenue should be sufficient to cover operating expenses including taxes, maintenance, depreciation and interest payments on borrowings, meet periodic repayments on long-term indebtedness and create reserves for future expansion.

¹⁸⁸ Local authorities are identified as agents of WASA to collect annual taxes, rates and charges levied with respect to water supply material and equipment and administer and provide water supply services.

systems. In addition to abstraction licences for domestic water supply, WASA is also authorised to grant licences to abstract water for industrial purposes¹⁸⁹ if no other reasonably practical means of obtaining water are available. Licensees and water providers are mandated to keep records and provide information to WASA on the quantity and quality of water abstracted and other matters relating to the water source as prescribed by regulation. In addition, water providers are required to formulate proposals to meet existing or future water supply requirements, either individually or jointly with WASA or other water providers.

With respect to sewerage services, WASA is authorised to delineate sewerage areas to facilitate development and/or operation of sewerage systems. Subsidiary legislation by way of the WASA (Separate Sewerage Areas) Order (GORTT, 1987) defines five sewerage areas for Trinidad and Tobago, namely the capital Port-of-Spain, San Fernando, Arima, Trincity and the rest of the country. All premises within a 0.05 km radius of a collecting sewer must connect to the sewerage system subject to bye-laws made by WASA regulating the construction of sewerage works and materials to be used. In accordance with these regulations, only sanitary constructors licenced by WASA are authorised to do any work in relation to a collecting sewer, house sewer or water closet.

Regulatory provisions for utility services¹⁹⁰ are assumed by RIC pursuant to the RIC Act (GORTT, 1998b). The key functions of RIC are specified in Section 6 of the Act and include:

- (a) granting licences to service providers;
- (b) ensuring that service providers operating under prudent and efficient management are allowed to earn sufficient return to finance necessary investment;
- (c) conducting studies of efficiency and economy of operation and performance by service providers;
- (d) monitoring service providers to determine compliance with service standards and imposing sanctions for non-compliance;
- (e) establishing the principles and methodologies by which service providers determine rates for services and monitoring these rates;
- (f) investigating complaints by customers; and
- (g) facilitating competition between service providers where possible.

¹⁸⁹ Industrial purposes include oil mining, irrigation and inundation for agriculture.

¹⁹⁰ Includes water, sewerage, electricity and telecommunications.

Water and sanitation issues are also addressed incidentally in several pieces of legislation. The Waterworks and Water Conservation (Amendment) Act (GORTT, 1998a) provides for the undertaking of waterworks in industrial or commercial sites and strengthens the provisions for the collection of water improvement rates. Under the Public Health Ordinance (GORTT, 1915), WASA is jointly and severally responsible with local authorities for all matters related to the provision of sewerage facilities including the regulation and construction of sanitary conveniences in buildings. Finally, the Environmental Management Act (GORTT, 2000) provides for consultation between EMA and WASA to establish mechanisms for coordination and implementation of environmental management programmes. Subsidiary legislation in the form of the Certificate of Environmental Clearance (Designated Areas) Activities Order (GORTT, 2001) provides for the certification of wastewater treatment plants by EMA.

8.4.4.1 *Sector-specific legislation*

In 2001, government proceeded to develop drafting instructions for a new Water Industries Act. At the time of data collection, no further details on the Act were available but it is anticipated that this Act will rationalise the responsibilities of institutions involved in the sector and will result in a review of the RIC and Water and Sewerage Acts.

8.4.5 Regulatory framework

8.4.5.1 *Regulatory framework for WASA*

Economic regulation of WASA dates back to 1966 following the establishment of RIC's predecessor, the Public Utilities Commission (PUC). The duties of the five-member Commission included determining rates for utility services, conducting research relevant to rate-making and investigating the operations and standards of service of all public utilities. Rate-making dominated the activities of PUC however, effected through a tribunal procedure where claims for rate increases were presented. Objectors were then given an opportunity to challenge this claim in front of the Tribunal. Appeals against a decision of the Tribunal could only be made on a point of law.

Under PUC, WASA was granted two rate increases, one in 1986 (Order No. 54) and another in 1993 (Order No. 83) pursuant to requests by the Minister of Public Utilities. The basis for the 1993 claim was to provide "*urgent relief*" from WASA's insolvency which was hampering its ability to undertake capital works and cover day-to-day expenses. The Tribunal expressed several concerns during the rate review hearings. Limited data

for analysis to determine the plausibility of WASA's arguments were identified as the "most worrisome feature of the review". Objectors to the rate increase referred to the "absence of audited financial reports and discrepancies in financial data" which admittedly limited the Tribunal's determination of the prudence and cost effectiveness of WASA's claim¹⁹¹. Absence of managerial accountability in the context of unkept promises of improved levels of service was also a concern. Under the PUC Act, accountability and compliance with plans and programmes on which awards were decided were not requirements for granting increased rates. In the absence of accountability, a rate increase on the basis of a promise of improved service was considered "an act of faith."

Despite these misgivings, the limitation of legislation governing PUC denied the Tribunal any authority to deny WASA's claim for relief. A rate increase was granted to WASA on the condition that it maintained a record of payments for PUC's inspection and implemented a rebate system for intermittent supply. To address deficiencies highlighted during the rate hearing, the Tribunal also pledged to assign PUC staff to monitor WASA's use of revenue to effect promised improvements and to help collect data for more accurate financial estimates for future reviews.

Following the recommendations of a Cabinet-Appointed Task Force, PUC was replaced by RIC in 1998 pursuant to the RIC Act¹⁹². The revised scope of regulatory services provided by RIC has already been mentioned in Section 8.4.4. Regulations to effect these services however are subject to ministerial approval¹⁹³. This includes the procedure for licence applications, granting of licences and general terms and conditions of licences. Regulations setting out the principles for rate determination, procedure for conducting reviews and standards of service for the sector also require endorsement from the Minister.

¹⁹¹ For example, the Tribunal explained that the translation of the revenue requirement into a specific set of rate schedules had been hampered by the lack of data on the costs of the various services provided by WASA. Efforts by PUC to separate the costs of water and sewerage services revealed that WASA's accounting records were not organised in a manner which would permit such costs to be readily separated. As a result, the rates charged continue to be based on best judgement of ability to pay rather than costs.

¹⁹² The regulatory mechanism through PUC was attacked on a number of fronts. PUC was criticised for establishing rates unrelated to performance and standard of service provided by the utilities and for adopting a rate-making formula not conducive to promoting greater efficiency. It was also believed that PUC's decisions were informed by political interests rather than the protection of consumers' interests and a 'fair return' for the utilities. Proceedings of the Tribunal were thought to have evolved into adversarial confrontations in which utility management appeared to be on trial. In light of these shortcomings, the Task Force made a number of suggestions for improving the regulatory framework for public utilities. These included (a) a broader definition of public utilities to cover entities that were not statutory authorities but still provided utility services; and (b) redefinition of PUC's role as a regulatory agency with respect to rate determination. It was argued that greater power should be given to the utilities to determine their own rates based on sound business practices. Performance standard and rate-setting principles would then become the major decision areas for PUC instead of rate-making. As such, the regulatory agency would be responsible for setting performance standards/indicators and establishing mechanisms for their monitoring.

¹⁹³ Recall that both RIC and WASA fall under the same portfolio ministry.

As mentioned earlier, the regulatory framework under PUC did not consider accountability and compliance with plans and programmes conditional for rate review determination. The RIC has however sought to expand the regulatory framework for the sector to include service standards for WASA. The first consultative document for the water and wastewater sector was issued in March 2003 for public discussion on the standards and performance targets to be applied to the sector. Guaranteed and overall standards were developed based on WASA's structure, operation, history, data on current service quality performance and standards used in the UK and Jamaica. Under this new regime, WASA is required to provide quarterly (with monthly breakout) quality of service standard reports to RIC. Implementation of these standards initially scheduled for January 1, 2005 is still pending as WASA is allowed more time to prepare itself for reporting and complying with these standards. Once implemented, standards will be in force for a period of three years then reviewed.

Since 2001, an application to EMA for a Certificate of Environmental Clearance is required prior to the construction of new wastewater treatment facilities to certify environmental acceptability. Standards for sewage effluent quality developed by the Trinidad and Tobago Bureau of Standards are also monitored by EMA. WHO water quality guidelines are monitored by both MOH and WASA.

8.4.5.2 *Tariff structure*

The rating structure under which the public is charged for water and sewerage services has not in essence changed since it was first developed in 1923 and revised in 1935. WASA's current rates have been in effect since June 1993, although RIC has on its own accord initiated proceedings to review these rates and rating structure. Residential tariffs are based on an annual rateable value (ARV)¹⁹⁴ which reflects the assessed rental value of a property as a proxy for income and potential household water consumption. Metered residential customers are charged using a two-block tariff, with an initial block of 150 cubic metres per quarter (Table 8.8). Water rates are also levied to standpipe users. Property owners not normally supplied by WASA but located within a 0.4 km radius of a public standpipe are charged TT\$33.75 per quarter. Sewerage rates and charges are generally set at 50% of the water charge and applied to persons located within a 0.05 km radius of a WASA sewerage network. As per the Water and Sewerage Act, rates are payable in advance in equal quarterly or half-yearly instalments. An additional water

¹⁹⁴ The ARV is determined by market analysis and is based on the assessment of the expected rental which the property will attract in the open market in the year of assessment. Once determined, the ARV is recorded in the Assessment Rolls (House Rate Book). The valuation cycle according to legislation is 3 years. Assessment Rolls however are not current and efforts to increase the ARV and/or change its structure have not been successful.

improvement rate in the amount of TT\$4.00 was implemented in 1998 for the Point Lisas Industrial Estate to supplement the higher cost of desalinated water. As a result, customers in the industrial estate are charged TT\$7.50 per cubic metre for water supply services from WASA.

Table 8.8 WASA's existing water and sewerage charges

Class	Water (TT\$)	Sewerage (TT\$)
Domestic		
A1 Standpipe	\$33.75 per quarter	None
A2 Externally serviced	\$67.50 per quarter	None
A3 Internally serviced	\$108 to \$304 per quarter (depending on ARV)	\$75.50/qtr for water bills ≤ \$202.50/qtr \$93.50/qtr for water bills > \$202.50/qtr
A4 Internally serviced (metered)	≤150 m ³ /qtr - \$1.75/m ³ >150 m ³ /qtr - \$3.50/m ³ Minimum of \$30/qtr	50% of water bill
A5 Charitable institutions	Minimum of \$108/qtr	\$75.50 per quarter
A6 Charitable institutions (metered)	Same as A4	Same as A4
Non-domestic		
B3 Industrial	\$474.00 per month	\$237.00 per month
B4 Industrial (metered)	\$3.50/m ³ /mth; minimum of \$35/mth	Same as A4
C3 Commercial	Same as B3	Same as B3
C4 Commercial (metered)	Same as B4	Same as A4
D3 Cottage	\$300.00 per month	Same as A4
D4 Cottage (metered)	≤150 m ³ /qtr - \$2.50/m ³ >150 m ³ /qtr - \$3.50/m ³ Minimum of \$25/mth	Same as A4
E3 Agricultural	15% of ARV; minimum of \$105/mth	Same as A4
E4 Agricultural (metered)	\$2.25/m ³ ; minimum of \$20/mth	Same as A4
F Unserviced premises	\$50.00 per month	None
Swimming pool	\$160 per quarter	None

Source: PUC (1993); RIC (2004a)

8.4.5.3 Regulatory framework for private service providers

Provisions for the regulatory framework applicable to service providers besides WASA are embodied in the RIC Act. Advice on matters relating to the type, level and quality of service provided by service providers is provided to RIC by a ministerial-appointed Consumer Service Committee¹⁹⁵ (Section 24). The Committee is also responsible for assisting RIC in ensuring that service providers implement adequate complaint procedures and on request, participates in proceedings of RIC where the terms and conditions of licences or the bases of tariffs or rates are being considered. Subject to ministerial approval, RIC is authorised to impose a cess on rates and charges on service providers. The cess payable within one month's notice is based proportionately on the gross earnings of the service provider for the preceding calendar year.

¹⁹⁵ Committee consists of a Chairman, one member nominated by the Chief Secretary of the Tobago House of Assembly and three members drawn from throughout Trinidad and Tobago who represent consumer interests but are not public officers or employees of service providers or the RIC.

In formulating regulations to carry out the Act, RIC is mandated to regard the funding and ability of service providers, interest of shareholders, ability of customers to pay rates, standards of service being offered by service providers, inflation and future prospective increases in productivity by service providers. Pursuant to these regulations, RIC must consider expended replacement capital cost, least-cost operating expenses, annual depreciation and return on the rate base. Finally, the Act makes provisions for entities like WASA that were in lawful operation prior to the commencement of the Act in 1998. Until licences are granted under the Act, these entities are deemed to be licenced for the purposes of the Act and rates charged by these entities are deemed to be authorised by the Act.

8.5 Private investment in the water and sanitation sector: An overview

Since inception in 1965, WASA has undergone seven major managerial arrangements ranging from a fully subsidised utility, private sector management and the incumbent post-interim operating arrangement management team (Table 8.9). Between 1992 and 1994, the utility entered a phase of local private sector management during which time it was granted an effective 35% rate increase. Among other reasons, this initiative failed mainly due to the continued lack of funds to effect necessary rehabilitation, refurbishment and new capital expenditure and lack of experience in the sector. This stint with the private sector marked the beginning of government's private initiative which culminated with an interim operating arrangement (IOA) between 1996 and 1999.

Table 8.9 WASA's managerial arrangements (1965-present)

Time	Management arrangement
1965 – 1986	Public sector mode
1986 – 1992	Self sufficiency mandate
1992 – 1994	Institutional strengthening team
1994 – 1996	Interim management team
1996 – 1999	Interim operating arrangement
1999 – 2002	Post-interim operating arrangement I
2002 – present	Post-interim operating arrangement II

Source: WASA (2004a)

8.5.1 Management contract

The IOA represented the first of a two-staged approach to PSP aimed at enhancing WASA's business acumen to the point where it presented a viable option for long-term private capital interests. The second stage of the plan was a long-term arrangement of 20 to 30 years to be developed during the IOA period, with the IOA operator given the

preferential right subject to performance, to negotiate it. The decision to adopt this transitional approach to private participation was informed by several factors. Not enough information was available to give investors confidence in WASA's commercial and operational situation. Government had also decided not to amend legislation governing the provision of water and sewerage services. As such, any private sector arrangement had to work within the existing legal framework. Finally, the introduction of private participation was made conditional to government accessing World Bank funding that had been earmarked for major refurbishment and rehabilitation works¹⁹⁶.

The IOA became effective in April 1996 after review by the new government which had come into power at the end of 1995¹⁹⁷. Parties to the agreement included the government, WASA and the locally incorporated firm - Trinidad and Tobago Water Services Ltd. (TTWS) in which Severn Trent Water International (STWI) and George Wimpey International Holdings/Tarmac Construction Caribbean Ltd. were equal shareholders. The IOA which in effect was a performance-based management contract¹⁹⁸ saw TTWS personnel assume top managerial posts in WASA¹⁹⁹. WASA's Board however continued to have overall responsibility, accountability and control of all strategies and policies relevant to the sector. A ministerial-appointed Consultative Committee consisting of representatives from WASA, TTWS and government monitored the implementation of the IOA and provided a forum for arbitration between WASA's Board and TTWS.

A long-term arrangement did not materialise at the end of the IOA in April 1999. Even though the IOA realised key achievements in performance²⁰⁰, several factors contributed

¹⁹⁶ Agreement had been reached in 1993 on an IBRD loan of US\$60 million for a 3-year reconstruction and development works programme. In 1994, there was also agreement on a further loan of US\$8.6 million for the implementation of an emergency work plan. These projects were however put on hold as the government sought to obtain the World Bank's assistance in financing the process of introducing private sector management as the cornerstone of reform in the sector. The outcome of this approach was the execution of a US\$25 million loan from the World Bank designed to provide *inter alia*, funding for consultancy services and working capital needed by WASA during the transition of its water supply services operation to private sector management. A major portion of the project covered IOA support for WASA and the preparation of a comprehensive rehabilitation programme, as well as the establishment and operation of a rehabilitation emergency fund. The loan agreement required that a subsidiary agreement be made with WASA whereby WASA was obligated to enter into a contract with a private sector operator acceptable to the Bank within a specified period. The PSP contract was required to remain in place until the completion of the project or the conclusion of the rehabilitation and divestment process and was required to afford the private sector operator full technical and financial responsibility for the management of WASA's water supply and sewerage services (Rennie, 2003).

¹⁹⁷ The IOA was signed on November 1, 1995, just 5 days before national elections in which the government changed. The election of a new government and a new WASA Board delayed the contract start-up date to April 4, 1996 as both groups sought to acquaint themselves with the terms and conditions of the contract.

¹⁹⁸ Over 60% of the operator's fees would be paid against performance deliverables. Financing arranged by TTWS to cover the operating shortfall during the IOA was funded by local institutions and syndicated by the local Citibank on a non-recourse basis.

¹⁹⁹ Managerial positions held by TTWS included the Chief Executive Officer and Directors for Operations, Logistics, Transport, Management Information Systems, Capital Investment Planning and Finance. The only senior management positions held by WASA staff were Directors for Human Resources and Water Resources.

²⁰⁰ These included (a) reduction in average plant downtime from 54 to 4 days; (b) 17% increase in average water production; (c) increase in the FSE from 43 to 48%; (d) 49% increase in the number of leaks repaired; (e) improvement in WASA's operating ratio; (f) increase in the collection ratio from 81% to 99%; and (g) introduction of

to the abandonment of a longer-term arrangement. A key supposition of the IOA had been for long-term World Bank funding for refurbishment and rehabilitation works. This did not materialise and severely constrained TTWS's ability to achieve the stated objectives of the IOA beyond improvements made possible by more efficient operations and supply schedule optimisation²⁰¹. With no World Bank loan forthcoming, TTWS acquired government guaranteed loans raised on the local market to finance capital projects. By the end of the IOA, WASA's debt burden was over TT\$1.17 billion.

By policy decision, the act governing the operations of WASA was not modified. This resulted in a strained relationship between TTWS and WASA's Board throughout the life of the IOA²⁰². A new regulatory regime under the RIC did not come into effect until October 1998. As such, the IOA was left to contend with no regulatory clarity during much of its life, but was constrained by contractual stipulations of no tariff adjustments and no non-voluntary separation of permanent WASA staff. Adherence to an anti-privatisation position by union representatives, disenchantment by WASA and government with achievements of the IOA and growing public speculation also contributed to collapsed negotiations for a longer-term arrangement.

8.5.2 BOT arrangement

In August 1999, WASA entered a 20-year BOT arrangement with the Desalination Company of Trinidad and Tobago (DESALCOTT) to purchase 109,090 cubic metres per day of desalinated water, most of it for the Point Lisas Industrial Estate. DESALCOTT is owned 60% by the local company Hafeez Karamath Engineering Services Ltd. and 40% by Ionics Inc. Start-up equity of US\$20 million was provided by DESALCOTT for the US\$120 million facility. The local Republic Bank through its Finance and Merchant Bank subsidiary FINCOR, provided bridge financing in the amount of US\$77 million for the

critical software, work processes, database and management systems to realise improved efficiency, cost-effectiveness, higher customer service and increased productivity.

²⁰¹ Procurement arrangements under the IOA required the finalisation of a purchasing services agreement between WASA and TTWS establishing a Procurement Unit of TTWS to act as an external purchasing agent on behalf of WASA. This did not happen until April 1998 (two years into the IOA). This delay impacted on the processing and negotiation of the new World Bank loan to which the implementation of procurement arrangements was a prerequisite. Further to this delay, the World Bank requested a redefinition of the rehabilitation loan to fund among other things, technical assistance for the implementation of further PSP enhancements, i.e. a long-term arrangement. The Bank's new position with respect to the availability of rehabilitation and other capital funds was seen as an apparent attempt to ensure that the reform process remained on track towards the objective of longer-term PSP through a concession-type arrangement. This strategy however starved the IOA of much needed capital to achieve the stated service provision targets.

²⁰² The new Board adhered to the position that it could only be guided by the provisions of the Water and Sewerage Act which in their opinion superseded the IOA. In the Board's view, the Act made no provision for a Consultative Committee or any such external imposition on the management arrangements for WASA. More fundamentally, the Board held that the Act did not allow for any delegation of its statutory obligations. As such, TTWS personnel seconded to top managerial posts in WASA were viewed as individual employees of WASA subject to the directives of the Board and not to TTWS.

construction of the plant from a syndicate of unnamed lenders. Construction and commissioning of the facility was delayed by over a year, partly due to difficulty raising long-term finance for the project as initial discussions with Japanese and US financiers did not realise a positive outcome. Permanent long-term financing for US\$112.20 million was eventually secured in August 2003 on the local bond market.

WASA purchases water from DESALCOTT at TT\$4.46 per cubic metre which it then sells to the industrial estate for TT\$7.50 per cubic metre. Despite this apparent 'profit' for WASA, the purchase of desalinated water is still a major financial burden to the utility. Approximately 28,200 cubic metres per day is transmitted to improve service to southern Trinidad, attracting WASA's normal domestic rates. UFW at approximately 16% for the Point Lisas Industrial Estate results in additional lost revenue for WASA.

Contracting and collaborating with private sector entities is a major factor in the restructuring process of WASA (see Section 8.4.2). The proposed model for the sector makes provisions for private water producers to be contracted to the new utility by concessions and BOT-type arrangements and franchised private wastewater service providers.

8.5.3 Local capital market

Trinidad has a substantial and effective banking and investment infrastructure. Since 1998, WASA has been authorised to borrow heavily on the local financial market to fund a number of development programmes. These included bond capital to fund the IOA, voluntary early separation offer, South Water and North Water Projects, water purchase from DESALCOTT and working capital. The majority of these bond issues have been guaranteed by the Trinidadian government. A summary of capital market activity in the Trinidadian water and sanitation sector is shown in Table 8.10 with the most recent bond issue in June 2006 for TT\$360 million included in Appendix 7.

Table 8.10 Bond activity in the Trinidadian water and sanitation sector

Period issued	Borrower	Face value (\$ Mn)	Period to maturity	Interest rate	Placement type
June 2006	WASA	TT\$360.0	10 years	7.50%	Private
June 2005	WASA	TT\$435.0	15 years	6.35%	Private
February 2005	WASA	US\$60.0	-	-	Private
June 2004	WASA	TT\$145.0	15 years	5.85%	Private
December 2004	WASA	TT\$52.6	-	-	Private
December 2004	WASA	TT\$500.0	-	-	Private
July 2003	WASA	TT\$413.0	10 years	6.75%	Private
August 2003	DESALCOTT	US\$112.2	20 years	8.50%	Private
August 2003	WASA	TT\$52.0	-	-	Private
December 2003	WASA	TT\$271.4	12 years	6.10%	Private
November 2001	WASA	TT\$330.0	20 years	11.50%	Private
April 2000	WASA	TT\$330.0	20 years	11.40%	Private
September 1999	WASA	TT\$343.0	20 years	11.45% ^a	Private
June 1998	WASA	TT\$80.0	15 years	14.10% ^b	Private
September 1998	WASA	TT\$300.0	20 years	11.50%	Private

^aFixed rate of 11.45% for the first 10 years then a step-up rate of 12% for the following 10 years

^bPrime less 3.4%. Initial rate of 14.1% with an interest rate CAP of 16.1% and a 13.6% floor.

Source: CBTT (1999; 2000; 2001; 2002; 2004a; 2004b; 2005)

8.6 Criteria for private investment in water and sanitation

8.6.1 Perception of private service providers

Several factors emerged as important reasons for respondents' interest in the sector.

These included:

- **Potential for high returns matched by 'guaranteed to succeed' projects.** In bidding for the IOA for example, STWI identified the Point Lisas Industrial Estate as a high revenue area and proposed tariff adjustments accordingly. Their funding proposal was therefore calculated on the strength of this 'guaranteed' revenue against a background of good payment discipline by WASA's commercial customers.
- **Multilateral and government commitment and support.** The IOA was preceded by strong government and World Bank support for private investment in the sector (PSP as a major policy issue of government plus conditional World Bank funding to the tune of US\$100 million). There was also an expectation that the IOA would evolve into a longer-term concession arrangement with STWI having the preferential right subject to performance to negotiate the longer-term arrangement.
- **Opportunity to diversify operations.** STWI's local partner previously involved in the local construction industry was interested in 'dominating' the construction of water and sewerage infrastructure and in exploring other business interests such as water supply service provision. For DESALCOTT's local partner also heavily involved in the construction sectors of Trinidad and the Eastern Caribbean, the desalination BOT was considered "more profitable than straight construction."

- **Opportunity for growth in the wider Caribbean.** *“Our vision when we started was to get this thing [IOA] to work in Trinidad. We would then use the TTWS model and go to Barbados, then to Grenada, then to Jamaica and basically move through the Caribbean islands. Our thinking was that if it worked for one then it should work for the others.”* Similarly, STWI was also eyeing potential investment opportunities in St. Lucia, Puerto Rico and Guyana. Getting involved in Trinidad was therefore seen as a chance to get a foothold in the Caribbean and acquire local experience to better align TTWS/STWI for future regional undertakings.
- **Recognition in the company.** At the time of the interview, the key business interests of Severn Trent Plc. were its solid waste division (Biffa Waste Services), product and services division (Severn Trent Services) and UK regulated water services (Severn Trent Water)²⁰³. In addition, the company was in the process of major management changes²⁰⁴ and the Group's continued strategy as a diversified water company was uncertain. STWI's position within the Group was especially vulnerable given the misfortunes of other international water companies that had lost money in the sector. As such, there was keen competition within the Severn Trent Group in general and within STWI in particular for the allocation of company finances, project selection and recognition. *“They [directors] have looked at a large number of organisations that have lost money in other places around the world. That does not go down too well in the City [London Stock Exchange]. There is that pressure, albeit not directly on me, but it is something I have to be aware of.”*
- **Project location.** Respondents believed that the Caribbean's sun and sand appeal gave it a natural advantage over 'less appealing' areas for investment as *“people like nice places to do business in.”* It was also suggested that companies were more likely to invest in countries they were familiar with or were located within easy reach of headquarters.
- **The size of the project.** The desalination BOT was the largest seawater desalination plant in the western hemisphere and the largest operating reverse osmosis seawater desalination plant in the world. For Ionics, this was their biggest project venture to date.

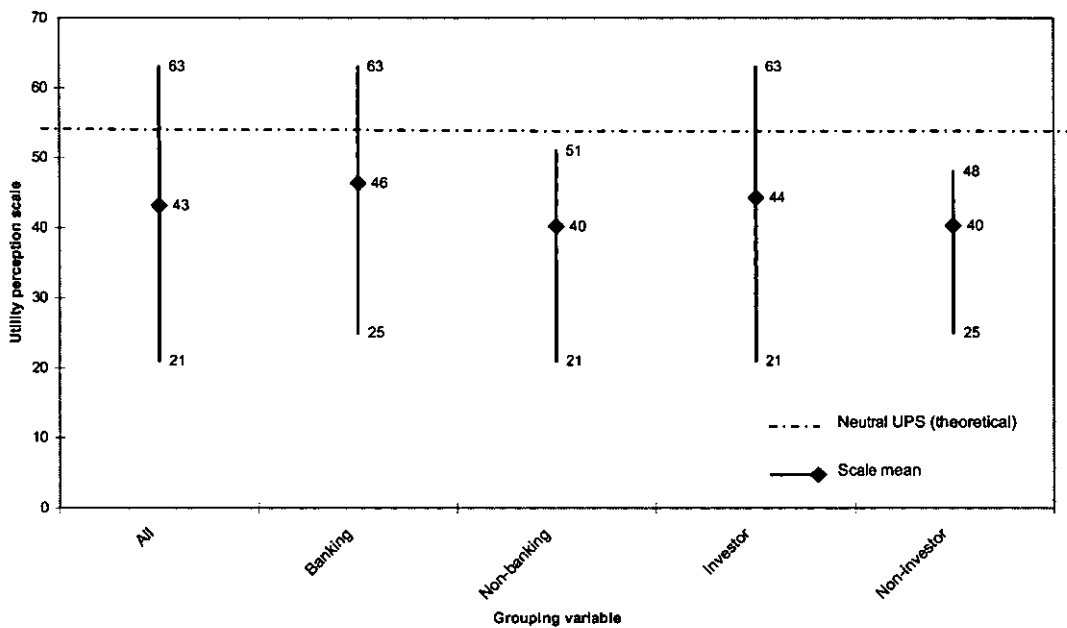
²⁰³ The Group's core businesses of regulated water, waste and laboratories accounted for 83% of Group revenues and over 90% of Group operating profit for 2003/04 (Severn Trent, 2004).

²⁰⁴ Senior management changes included that of Group Chairman, Group Chief Executive, Group Finance Director, Managing Director of Severn Trent Water and STWI's Managing Director (Severn Trent, 2004).

8.6.2 Perception of local financial institutions

The majority of survey respondents (80%) scored less than 50 on the UPS which indicated a relatively negative attitude towards the water utility (Figure 8.2; Appendix 6: Table A8). No significant difference in the UPS was observed based on organisation category ($p=0.077$) or investment activity ($p=0.192$) (Appendix 6: Table A9; Table A10). It should be noted however that non-investors (100%) had a relatively lower perception of WASA (UPS<50) compared to investors (72.2%).

Figure 8.2 Utility perception scale range for Trinidadian financial institutions

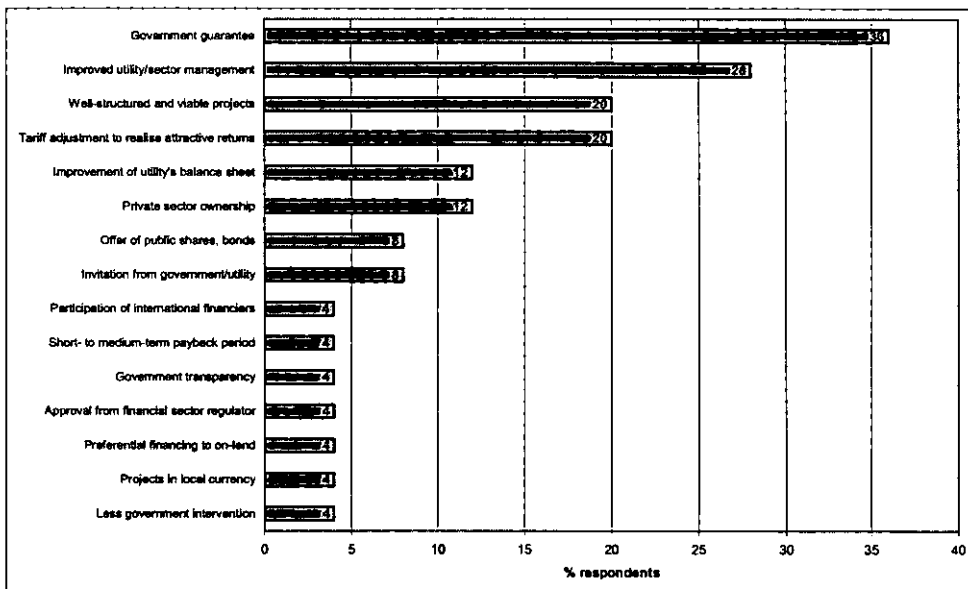


The majority of respondents (76%) considered investment prospects in the sector to be acceptable, good or excellent (Appendix 6: Table A11). While no significant difference ($p=0.491$) was observed in respondents' perception of investment prospects in the sector based on organisation category, a significant difference ($p=0.017$) based on investment activity was observed (Appendix 6: Table A12; Table A13). More investors (88.9%) considered investment prospects in the sector to be acceptable, good or excellent compared to 42.9% of non-investors. A significant positive relationship ($p=0.02$) between respondents' perception of WASA and perception of investment prospects in the sector was observed (Appendix 6: Table A14). All respondents with a UPS greater than 50 considered investment prospects in the sector to be acceptable, good or excellent while 66.7% of respondents with a UPS between 20 and 30 were doubtful about investment prospects in the sector (Appendix 6: Table A15). These findings indicate that there is a

tendency for respondents' perception of investment prospects in the sector to improve as their perception of WASA also improves.

In rating factors that would influence the investment decision in the sector, respondents had higher regard for economic and financial factors than for institutional factors (Appendix 6: Figure A2). Bond issues, credit enhancement mechanisms and infrastructure investment funds featured highly among economic and financial factors while good capital investment planning, institutional reform and tariffs to reflect the true cost of service provision featured highly among institutional factors (Appendix 6: Table A16).

Figure 8.3 Requirements to become involved in the sector (Trinidad)



Finally, in terms of personal preferences to get involved in the sector, the most frequently mentioned requirements were the provision of government guarantees (36%), improved utility management (28%), the availability of well-structured and viable projects (20%) and tariffs that realised attractive returns (20%) (Figure 8.3).

8.6.3 Perception of water sector officials

Low tariffs, low willingness-to-pay and the regulatory framework were identified as the main deterrents to private investment in the local water and sanitation sector. With the last tariff increase in 1993 and a tariff structure described as “archaic,” respondents were of the opinion that “the tariff was a big humbug to investment.” Also considered

discouraging was the lack of financial incentives to local private service operators to invest in the sector. WASA being the only entity entitled to collect rates for example, was seen as a contributing factor to the abandonment of several private sewerage treatment plants originally established to serve private housing developments.

8.7 Scope and strategy for private investment in water and sanitation

8.7.1 Perception of private service providers

Respondents believed that the future of private investment in Trinidad was the BOT-type arrangement similar to that in effect with DESALCOTT. By 'rejecting' the IOA and longer-term concession arrangement and supporting the desalination BOT, some respondents felt that government had inadvertently narrowed the scope for private investment in that a model similar to the IOA would be less appealing to private investors compared to a BOT. DESALCOTT's water sales agreement to supply the Point Lisas Industrial Estate was also believed to highlight investment prospects for disaggregating the sector into discrete water supply areas. Respondents were therefore in favour of WASA's proposed industry restructure wherein some water production/distribution and wastewater operations would be contracted to the private sector under BOT-type arrangements.

In terms of a private investment strategy, respondents recommended:

- **The need for a context-specific strategy.** Respondents felt that Trinidad's experience with the IOA was probably a result of donors and transaction advisers imposing a 'one size fits all' approach instead of addressing the specific needs and nuances of the local sector. Issues such as TTWS assuming most of the top management positions in WASA, underestimating local potential and adopting a "*colonial approach*" to managing WASA were considered important oversights in the IOA strategy. According to one respondent, "*I don't think they understood Trinidad and Trinidadians. When you are coming in to do something like that in Trinidad, you have to come in understanding the people, the culture and the way things work.*"
- **The need for a gradual strategy** so that 'simpler' forms of PSP would set the stage in terms of developing the operating environment for private investment in preparation for more 'complex' forms of PSP.
- **The need for a realistic strategy.** Respondents opined that government needed to appreciate that private investment was not an instant panacea for the failings of the sector (especially since private investment was often sought after years of

neglect) and as such should not have unrealistic expectations for “*overnight results.*” From the viewpoint of an international investor, STWI opined that in a lot of cases, countries tended to overvalue their water utilities and in so doing, failed to come to grips with what they really had to offer investors.

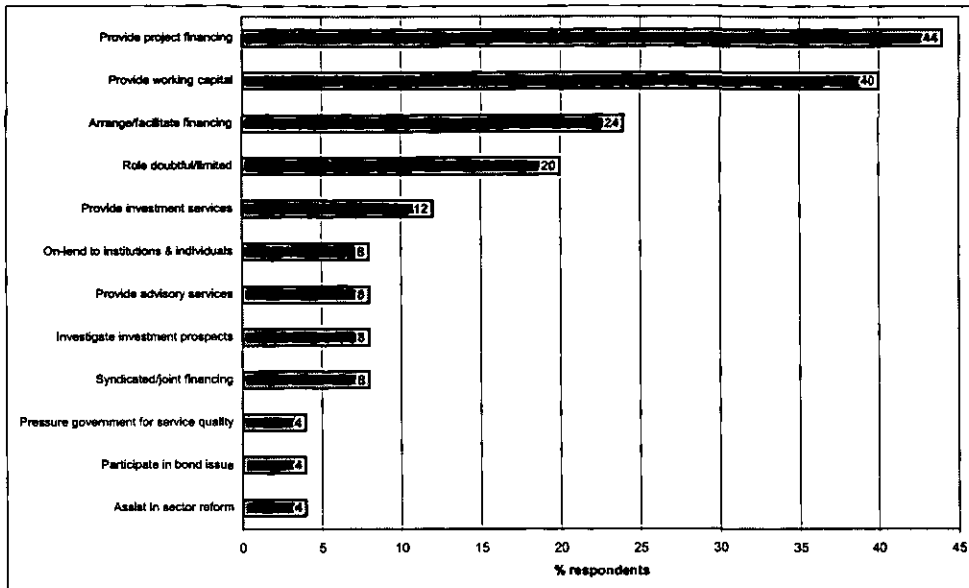
- ***The need for a targeted strategy.*** Respondents felt that government should do more to understand investors’ motivations and to create win-win situations.
- ***The need for less emphasis on the model/contract and more emphasis on putting the appropriate framework in place.*** Referring to the IOA, respondents opined that nothing was ‘wrong’ with it as it was a good first step for Trinidad given the state of the sector. Instead, factors such as the delay in setting-up the regulatory framework (6 months before the end of the IOA) and the lack of political continuity and commitment to the contract contributed to an inadequate environment for its success.
- ***The need for a consistent strategy.*** Referring to government’s pro-private investment strategy in the 1990s and the current less-inclined private investment strategy, respondents generally felt that government was inconsistent and transitory in its commitment to private investment in the sector. STWI’s Business Development Manager for example, when asked how facilitating government/WASA/RIC was to private investment responded, “*Last week, now or next week?*”
- ***The need for a supported strategy.*** Respondents generally felt that the failure of the IOA and problems encountered by DESALCOTT was a result of a lack of support for private investment by various public sector actors. TTWS for example, faced strong criticism and resistance throughout the life of the IOA, partly from “*detractors within WASA who prejudiced government against it,*” WASA’s Board who “*crippled it*” and were very “*anti-TTWS,*” government who was “*consistently against us*” (especially having inherited the IOA from a previous administration) and civil society who was “*suspicious and felt excluded from the process.*” Similarly, DESALCOTT described both government and WASA as “*less than helpful*” which they believed contributed to delays in obtaining long-term financing.

8.7.2 Perception of local financial institutions

When asked to rate the investment prospects of the sector based on the use of different operational models for private investment, respondents showed a slightly greater preference for short-term arrangements such as management/service contracts (Appendix 6: Figure A3). When asked to indicate their possible role in the sector, the

most frequently mentioned roles were project financing (44%) and providing working capital in support of WASA's day-to-day operations (40%) (Figure 8.4).

Figure 8.4 Role of financial institutions in the sector (Trinidad)



8.7.3 Perception of water sector officials

Respondents strongly asserted their preference for local private investment in the sector, particularly in “non-strategic areas” such as rural service provision using the BOT model and wherever applicable, community water associations. Strong anti-foreign private sector comments such as “I hate privatisation with a passion” and “foreigners don’t have any interest in this country” typified this sentiment. As provided for in the proposed industry model, BOTs were seen as the most appropriate option for private investment as they did not interfere with the day-to-day management of WASA. Concession arrangements had limited appeal as doable investment options due to the fact that investors would have to operate within the existing legislative framework with limited control over the industrial relations climate (as was the case of the IOA).

In terms of the strategy to encourage private investment in the sector, the following points were highlighted by the respondents:

- **The need to link the strategy to more profitable investment opportunities.** Respondents were mindful of the fact that on its own, the sector would not attract significant private investment. “The actual balance sheets at WASA are very poor

but the country's rating is high - we piggyback on the strength of our energy industry." The strength of the economy and the importance of water in shaping continued industrial development were however believed to put Trinidad in a unique position compared to other Caribbean countries with respect to being able to attract private investment. Respondents therefore believed that a strong industrial-based economy presented private investors with more opportunities to earn competitive returns in the sector (e.g. water improvement rates for the Point Lisas Industrial Estate).

- **The need for an appropriate strategy to suit the local context.** While respondents acknowledged that in theory the IOA was a timely investment option for the sector, the general feeling was that the overall experience *"did not fit with our culture and the state of the utility."* Respondents felt that the same experience could have been obtained from a less 'invasive' type of arrangement such as a twinning arrangement²⁰⁵. With regards to the regulatory framework, respondents opined that RIC's adopted standards (from Jamaica and the UK) were not particularly suited to the local context which made compliance difficult.
- **The need for a strategy that includes/involves all major stakeholders in the process.** Referring to the IOA, respondents felt that WASA had basically been left out of the arrangement. With TTWS assuming the majority of top management positions, respondents felt that local management had been disempowered and there was little regard for local potential. As put by one respondent, *"We do not need anybody to come and run this place [WASA] – to be above us. We don't subscribe to that."* With regards to the desalination BOT, some respondents felt that the project was a political decision that had been forced on WASA who now had to bear the financial burden of paying for expensive desalinated water.
- **The need to select competent investors.** The IOA was criticised on a number of levels. Most noticeable was respondents' impassioned account of the calibre of persons sent by STWI to manage the IOA and the relationship these persons had with WASA personnel. *"They sent a set of old people here – people who had resigned or retired. A fellow who was the requisition clerk in England, he came here and became the Director of the Supplies Department."* Respondents felt that STWI thinking they were going to *"Africa or India or some real backward area where they thought people were illiterate"* had not approached the IOA with the same businesslike acumen they would normally apply if pursuing a similar arrangement elsewhere. STWI was also criticised for approaching the IOA with a superior attitude which resulted in a lot of friction and distrust.

²⁰⁵ Twinning is a concept where utilities from geographically distinct areas are paired with the goal of developing management and technical expertise and sharing experiences.

- **The need for a more diverse strategy.** WASA’s frequent use of the local capital market to finance investments and the resultant high level of indebtedness was a major cause for concern. As put by one respondent, *“They [commercial banks] are going to own us [WASA] one day if we continue like that.”* Respondents were therefore interested in pursuing a more diverse investment strategy that accessed various types of private financing.

8.8 Small size

8.8.1 Effect of small size

The majority of water sector officials (71%) felt that small size affected the Caribbean’s ability to attract private investment to the sector, especially in the smaller countries of the Eastern Caribbean. Limited professional capacity in terms of the number of skilled persons available and their level of exposure/experience, and a smaller revenue base were identified as the most important effects of small size (Table 8.11). Respondents opined that professionals in larger countries/utilities benefited from being exposed to a wider range of projects and from more direct liaison with international lending institutions, many of which had in-country representatives in the larger islands. Access to larger local banking institutions also meant that professionals in the larger countries were better able to hone their skills in structuring more complex financing arrangements. In terms of limited professional capacity, the provision of specialist skills such as utility regulation was considered to be most affected by small size. As put by RIC’s Executive Director to reflect his frustration in trying to recruit for several critical posts over a two-year period, *“Getting the staff of the calibre we need is not easy in a small country like this. The capabilities are very limited.”*

Table 8.11 Small size effects (Trinidad)

Size an issue?	Main reasons given
YES (71%)	<ul style="list-style-type: none"> • Scarcity of trained professionals • Specialist services expensive and unavailable • Limited exposure to/experience on big projects • Smaller revenue base/limited return on investment
NO (29%)	<ul style="list-style-type: none"> • Regulatory framework and macroeconomic environment more important • Not an issue for big capital projects

Respondents who did not consider small size to affect investment prospects in the sector felt that the regulatory framework and macroeconomic environment were more important issues for attracting private investment. Big capital project opportunities such as the

desalination BOT were believed to transcend the issue of small country size and appeal to private investors.

8.8.2 Response strategies to address size constraints

8.8.2.1 *Regional cooperation*

Water sector officials had mixed views about the prospects for regional cooperation in the sector. Sharing professional expertise and experiences, training and standardisation towards the development of “*realistic utility performance targets for the Caribbean*” were identified as the most likely areas for regional cooperation in the sector. Respondents felt that the onus to spearhead such a regional approach was up to the larger islands such as Trinidad and Jamaica, which was explained as the basis for the proposed professional collaboration between WASA and NWC. Existing regional institutions such as CWWA and CBWMP were challenged to play a stronger role in the sector, possibly enabled by stronger and more official commitment from CARICOM. As put by one respondent, “*Integration has to start at the top.*”

Likely challenges to a regional approach in the sector were identified as:

- Difficulty in getting accurate information due to utilities’ fear of being judged or compared with others.
- Difficulty in getting politicians and policy-makers committed to the process.
- Insularity and the tendency to think about “*me first.*”
- Differences in the level of sector development throughout the Caribbean.

8.8.2.2 *Other response strategies*

When asked to suggest strategies to improve small-scale investment opportunities in the sector, water sector officials proposed:

- Grouping projects into larger contracts.
- Government actively encouraging small investors to get involved.

Local financial institutions were also highly supportive of ‘project bundling’ as a means of responding to small size issues and improving the investment prospects of the sector

(Appendix 6: Figure A4). Respondents were least supportive of the formation of multi-utilities to offset disadvantages from insufficient size.

8.9 Chapter summary

This chapter presented the Trinidadian case study which examined the operating environment for private investment in the water and sanitation sector and the perceptions of public and private sector actors to criteria for private investment, scope and strategy for private investment and size-related response strategies to improve conditions for private investment in the sector. Findings from documents, survey questionnaires and semi-structured interviews were systematically presented for further discussion within the context of the literature in the cross-case analysis (Chapter 10).

CHAPTER 9 INTERNATIONAL PRIVATE INVESTORS AND CARIBBEAN WATER PROFESSIONALS: PERCEPTIONS

9.1 Chapter introduction

As mentioned in chapter 4, Surveys B and C were conducted outside the case study framework to determine (a) international investors' criteria for investing in the utilities sector; and (b) the level of awareness of Caribbean water utility managers to investors' criteria and their views on regional cooperation as a strategic response to address size constraints in the sector. This chapter summarises the findings of both surveys.

9.2 Criteria for private investment

Investors generally relied on three main sources for information on new investment proposals – themselves as they actively searched and pursued investment opportunities, project sponsors as they participated as major stakeholders in project financings and host country governments and/or their agencies as they responded to invitations to tender (Appendix 6; Table A17). Project type, past experience, the availability of finance and project location were the main means of screening new investment proposals (Appendix 6, Table A18). Reasons for investing abroad were mainly strategic as fits business strategy, large market growth potential and competitive advantage featured highly as motives for international activity (Appendix 6; Table A19).

To identify investors' priorities when choosing where to invest and to evaluate factors that contributed to their investment successes and failures, questions 7 and 8 of Survey B asked respondents to rate the importance of factors that influenced these investment decisions and outcomes. In assessing country conditions, investors gave top priority to factors such as government commitment, market size and regulatory independence (Figure 9.1). The degree to which various factors contributed to investors' best and worst investment experiences varied which was most likely a reflection of the various circumstances in which investments take place. Two factors however emerged as very important to both investment success and failure – regulatory commitment throughout the life of the contract and the ability to earn reasonable returns from tariffs and good revenue collection practices (Figure 9.2). Of note, factors that stood out as very important to investment failure included government response or lack of to investors' needs, arbitrary regulatory processes and lack of government commitment.

Figure 9.1 International investors' priorities when choosing where to invest

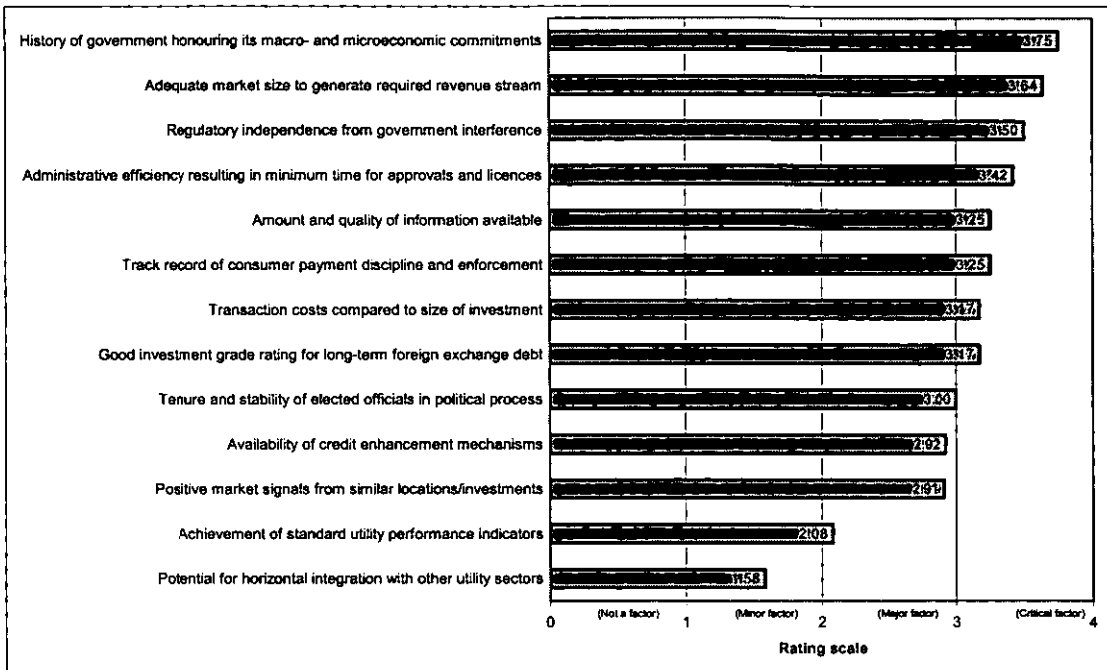
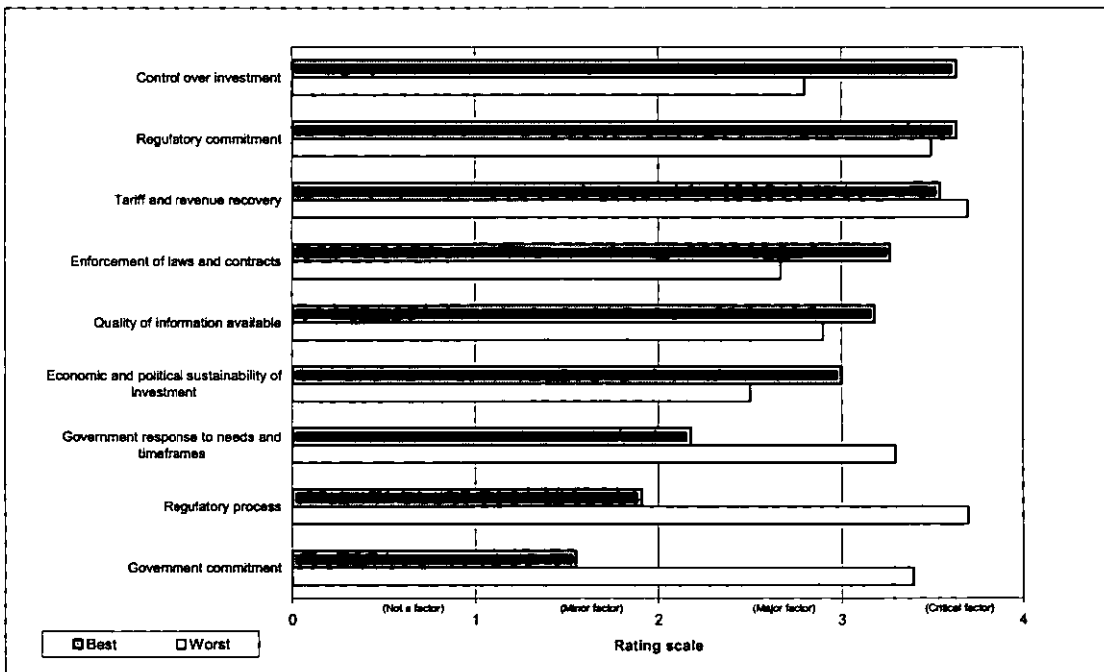


Figure 9.2 What makes for the best and worst investment experiences



Survey B also sought to ascertain investors' specific preferences in terms of investment location. Investments in Asia and Europe were most favourably rated while up to 75% of investors considered Africa to have low potential as an investment destination (Appendix 6: Table A20). When asked about investment activity in the Caribbean, 54.5% of respondents indicated that they had no knowledge of investment prospects in the region.

41.7% of respondents admitted to having invested in the Caribbean and being fairly satisfied with these investments. As put by one respondent, *“The risk-reward balance of investments in the Caribbean is okay if structured correctly.”* Investors not active in the region either claimed that investing in the Caribbean was not a strategic objective due to focus elsewhere or the region was not amenable to investment as *“we only permit investment in countries which have passed certain regulatory and legal hurdles and are allowable markets for investment.”*

Using similar constructs as question 7 in Survey B, question 6 of Survey C asked Caribbean water utility managers to rate the importance of factors that they believed influenced investors’ choices when deciding where to invest. The Mann-Whitney test was used to discern differences in the relative ranking of factors by international investors and Caribbean water utility managers (Appendix 6: Table A21). There was no significant difference ($p > 0.05$) in the mean ranking of locational investment decision-making factors by both sets of respondents, thereby indicating that Caribbean water utility managers were generally aware of investors’ priorities when choosing an investment location.

9.3 Promotion strategy for private investment in water and sanitation

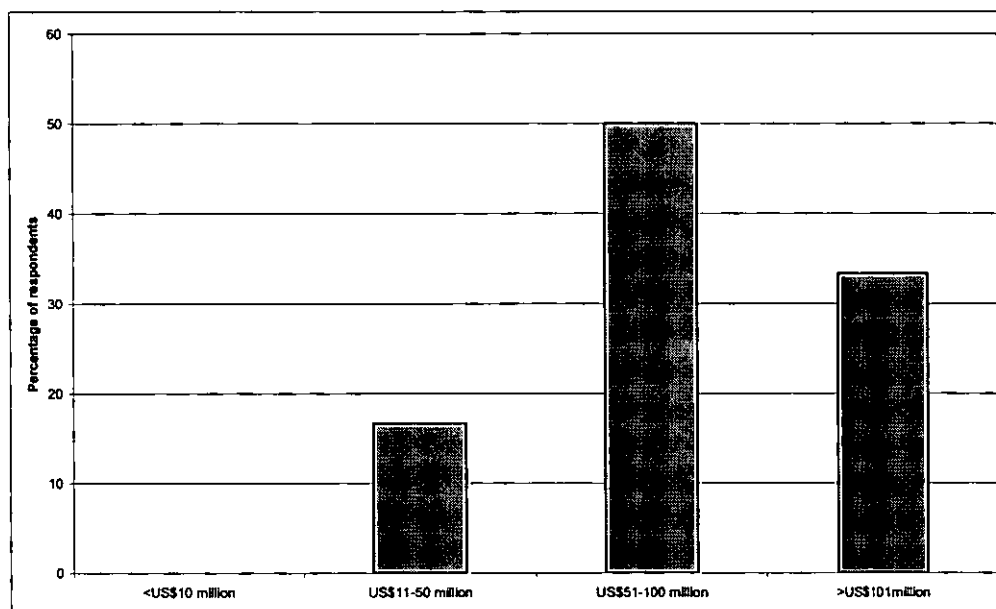
Survey C also sought to capture Caribbean water utility managers’ views on promoting private investment in the sector. The majority of respondents (90.5%) felt that a targeted investment promotion strategy was necessary for the sector. Respondents gave top priority to a promotion strategy focused on image-building activities to improve the sector’s image within the investment community with 38.1% considering this the most important investment promotion activity (Appendix 6: Table A22).

9.4 Effect of small size

Both surveys sought to determine respondents’ views on the importance of size-related factors to attracting private investment in the sector. In assessing the extent to which various factors affected their investments in small countries, international investors prioritised economic and financial factors such as high transaction costs and higher borrowing costs (Appendix 6: Table A23). Caribbean water utility managers also considered economic and financial factors such as a small revenue base to have important implications to the success of private investments in the Caribbean. For both sets of respondents, project bundling, shared professional expertise across projects and financing options to reduce cost emerged as the most favourable responses to improve investment opportunities where small size posed as a constraint to private investment in

the sector (Appendix 6: Table A24). Investors' preferred project size showed a bias for large-valued projects with the majority indicating a preference for projects valued over US\$50 million (Figure 9.3).

Figure 9.3 Investors' preferred investment size

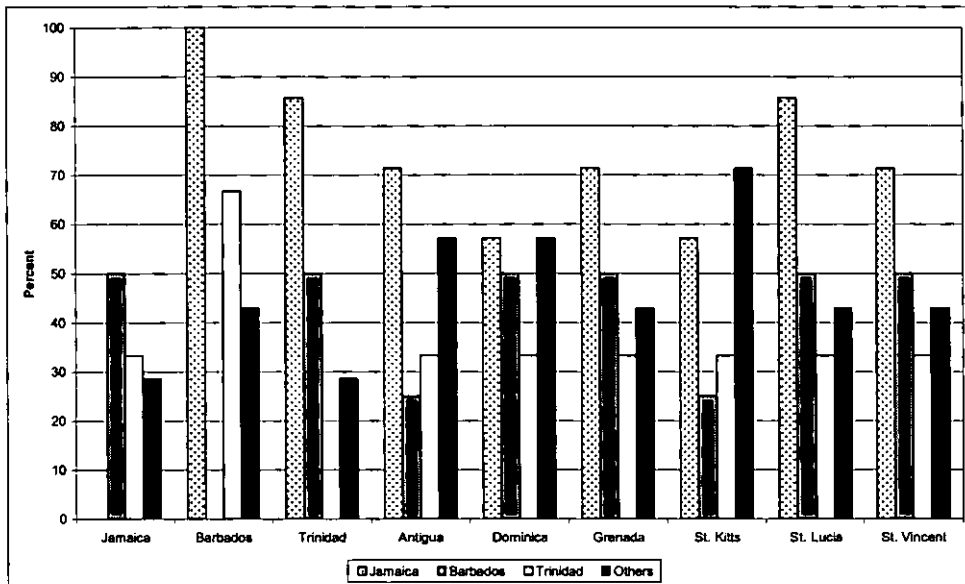


Caribbean water utility managers were asked a series of questions to determine their attitudes towards regional cooperation and the range of issues they felt could fall under a regional cooperation scheme. Increased bargaining power, achieving economies of scale and the opportunity to pool resources to attract external funding were considered the most important benefits of regional cooperation in general (Appendix 6: Table A25). Specific to the sector, respondents were in strong agreement that a regional approach would be more relevant to more generic areas such as information exchange and technical training than to areas such as investment promotion, regulation and operations which they considered to be very location-specific (Appendix 6: Table A26). Lack of political support, different national interests and financial dependency of a regional body on national governments were prioritised as the most likely challenges to regional cooperation in the sector (Appendix 6: Table A27).

Finally, to ascertain respondents' preferences for regional membership, question 14 of Survey C asked respondents to indicate likely partners for regional cooperation in the sector. The results indicated a general tendency for respondents from the smaller Caribbean islands to partner with other small islands (Figure 9.4). Conversely, respondents from the larger islands of Jamaica, Barbados and Trinidad showed greater preference to partner with each other. When asked to indicate the basis for these

preferences, dealing with similar issues and level of development featured highly among respondents' choices (Appendix 6: Table A28).

Figure 9.4 Preferences for regional grouping



9.5 Chapter summary

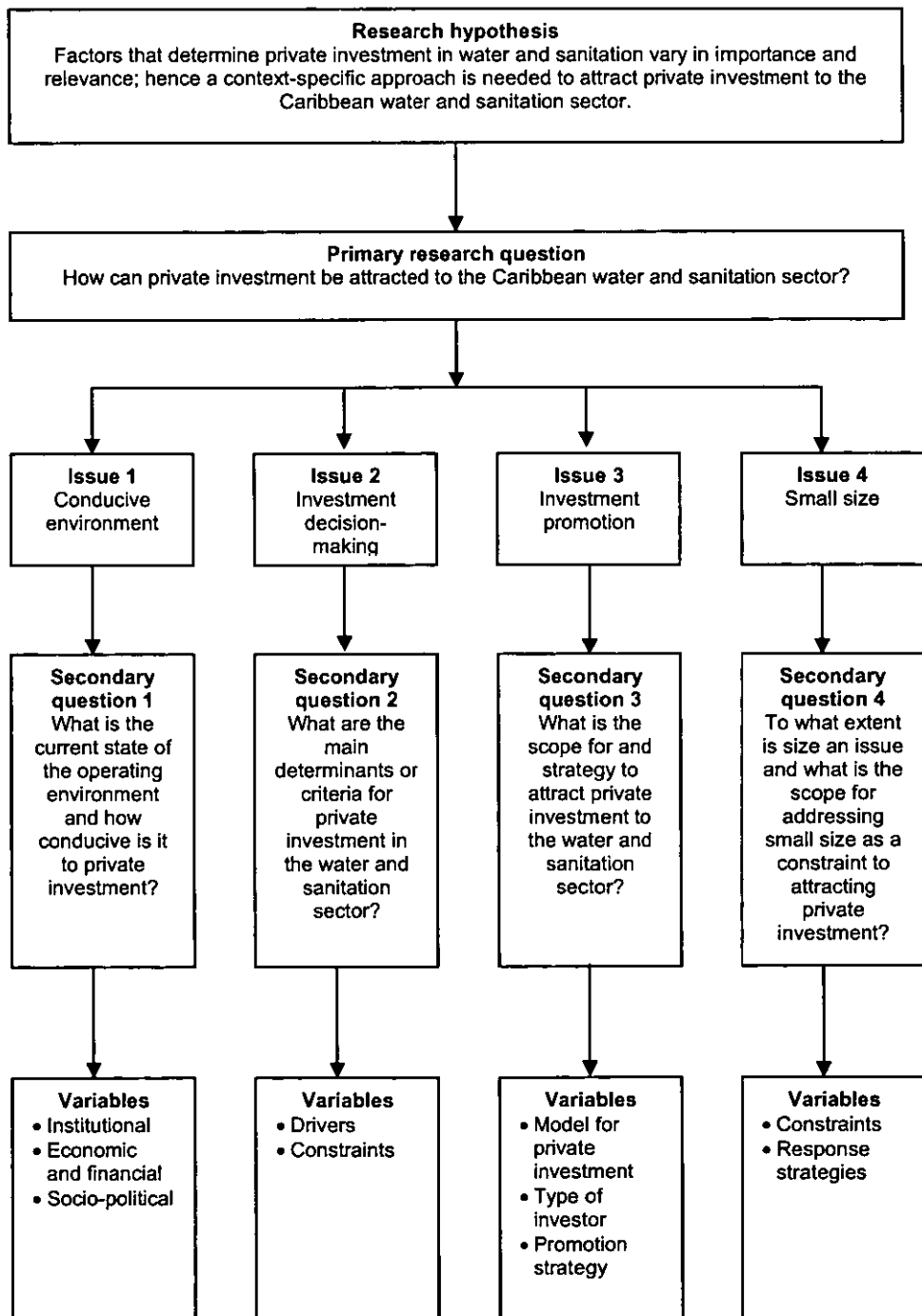
This chapter presented the results of Surveys B and C which were conducted outside of the case study framework. Survey B determined the interests of international institutional investors in the utilities sector to identify factors important when choosing an investment destination and factors that impacted on investment performance. Survey C determined Caribbean water utility managers' awareness of factors important to investors in the sector and assessed their attitudes towards regional cooperation in the sector. The findings of both surveys are discussed alongside those of the case studies within the context of the literature in the cross-analysis and discussion chapter (Chapter 10).

CHAPTER 10 CROSS-CASE ANALYSIS AND DISCUSSION

10.1 Chapter introduction

This chapter draws on the findings of case study data presented in chapters 6, 7, and 8 and the findings of Surveys B and C presented in chapter 9 to answer the research questions which are repeated in Figure 10.1 for ease of reference.

Figure 10.1 Schematic of research hypothesis and questions



10.2 Overview of the operating environment

Sections 6.4, 7.4 and 8.4 provided an overview of the operating environment in the Jamaican, Barbadian and Trinidadian water and sanitation sectors respectively. An overview of the macroeconomic environment situated the operating environment within a broad country context. Policy, legislative and regulatory frameworks specific to the sector provided a within industry assessment. Collectively, the macro and micro-outlook defined the incumbent operating environment for private investment. To answer the question, “*What is the current state of the operating environment and how conducive is it to private investment?*” requires an examination of the strengths, weaknesses, opportunities and threats to the operating environment from an investor’s perspective. This section therefore discusses the extent to which the operating environment in each case location encouraged (discouraged) or had the potential to encourage (discourage) private investment in the sector. A SWOT analysis of the operating environment in each case location is summarised in Tables 10.1 and 10.2 for reference. To facilitate evaluation across case locations, a 1-2-3 ranking system is used where appropriate to characterise the operating environment (1 being most favourable and 3 least favourable to private investment). Both the SWOT analysis and 1-2-3 numeric ranking are based on the author’s interpretation of the research data.

Table 10.1 Strengths and weaknesses of the operating environment

	Strengths	Weaknesses
JAMAICA	<ul style="list-style-type: none"> • Separation of institutional responsibilities • Policy sets out criteria and scope for private investment • Independent economic and service standards regulator • Regulatory framework for private service providers • Provision for return on capital/profit in rate determination • System of gradual tariff increases • Stakeholder involvement through public consultations • Dedicated Water Ministry/corporate division within NWC • Evolving pro-private legislative and regulatory frameworks 	<ul style="list-style-type: none"> • NWC’s conflicting regulatory powers
BARBADOS	<ul style="list-style-type: none"> • Draft policy advocates BOT-type arrangements • Recent revision of tariff structure and rates • Process of policy formulation involves major stakeholders in the decision-making process 	<ul style="list-style-type: none"> • Policy still in draft form since 1997 • Legislation BWA-specific • Poorly-defined institutional arrangements • Self-regulation by BWA • Limited professional capacity • BWA’s poor financial performance
TRINIDAD	<ul style="list-style-type: none"> • Government policy commitment to encourage private investment • Regulatory framework expanded to provide for independent regulation of service quality standards 	<ul style="list-style-type: none"> • Policy still in draft form since 2002 • Legislation/regulatory framework WASA-specific • No clear separation of service provision and water resource management responsibilities • Potential conflict of interest with RIC and WASA reporting to same line ministry • Rate determination excluded from RIC’s mandate • Outdated tariff structure and tariffs unchanged since 1993 • WASA’s poor financial performance

Table 10.2 Opportunities and threats to the operating environment

	Opportunities	Threats
JAMAICA	<ul style="list-style-type: none"> • Pending WSSS Act to further empower OUR • Pending Rural Water Supply Ltd. to separate urban and rural water supply • History of small privately operated rural water supply systems • Inadequate coverage especially for sewerage services 	<ul style="list-style-type: none"> • High interest rate regime • High inflation rate • Fluctuating currency • Large public debt
BARBADOS	<ul style="list-style-type: none"> • Stable currency • Low inflation • Low interest rates • High GDP per capita • Good local and foreign credit rating • Well-developed banking and insurance sectors • Water scarcity providing options for private investment • Inadequate sewerage coverage by BWA • Pending sector reform to have FTC assume economic/service regulation duties, restrict BWA to service provision and introduce legislative framework to support PPPs 	<ul style="list-style-type: none"> • Historic dominance of public investment since 1895
TRINIDAD	<ul style="list-style-type: none"> • Stable currency • Subdued inflation • Moderate interest rates • Good local and foreign credit rating • Well-developed banking sector • Inadequate service/high demand from industrial sector • Proposed Water Industries Act to rationalise institutional responsibilities • Proposed reorganisation of WASA using various management models including BOTs, concessions, etc. • Planned sector reform to establish legal and regulatory frameworks 	<ul style="list-style-type: none"> • Strong opposition to foreign private investment

10.2.1 Macroeconomic environment

There was a clear difference in the macroeconomic environment across case locations. The Barbadian and Trinidadian economies were characterised by more stable currencies, more subdued inflation and lower interest rates than the Jamaican economy to result in a 1-2-3 ranking for Barbados, Trinidad and Jamaica respectively (Table 10.3). Anecdotal evidence pointed to the role of the macroeconomic environment in encouraging private investment in the sector. In many developing countries, BOT-type contracts typically specify payment in a stable currency such as US dollars to mitigate fluctuations in interest rates, inflation, taxes and price/cost increases which can affect profits (Bond and Carter, 1994; Grimsey and Lewis, 2002). In Barbados however, investor confidence in the long-term stability of the Barbadian economy was reflected in IFL's acceptance of payment in Barbadian dollars over the life of the 15-year BOT even though the contract had a significant US dollar component. In Trinidad, the prospect of a strong industrial-based economy overshadowed the poor performance of the sector so that investors were prepared to overlook obvious shortfalls. Conversely, Jamaica's high inflation, currency instability and high interest rates were 'hostile' to private investment with local investors discouraged from sourcing finance locally and foreign investors keenly aware of inflationary pressure on profits.

Table 10.3 Cross-case ranking of the macroeconomic environment

Indicator	Jamaica	Barbados	Trinidad
GDP per capita	3	1	2
GDP growth	3	2	1
Inflation	3	1	2
Exchange rate	3	1	2
Interest rate	3	1	2
Public debt	3	2	1
Overall ranking	3	1	2

1 = Most favourable; 3 = Least favourable

Anecdotal and empirical evidence in the privatisation literature also support this intuitive positive relationship between the macroeconomic environment and attracting private investment. The Asian financial crisis in the mid-1990s for example is generally associated with the fall-off in private investment activity in the sector (Baietti, 2001; Green and Campos, 2001). In a study of the water sector in several Latin American countries, Pargal (2003) established that richer economies generated higher private investment flows in the sector and higher interest rates negatively affected investment volume. If extrapolated to the research context, such evidence may explain the difference in monetary value of BOTs across the case locations with larger-valued BOTs in Barbados and Trinidad than in Jamaica. Regardless, the anecdotal evidence from the case studies supports the established position that the macroeconomic environment is important in creating conducive conditions for private investment in the sector.

10.2.2 Institutional arrangements

Of the three cases examined, the institutional arrangements in the Jamaican water and sanitation sector were the most conducive to private investment (Table 10.4). The sector was characterised by well-defined institutions with the various agencies assigned clear roles and responsibilities and given the necessary capacity to carry out their mandate. Chief among these was the establishment of a dedicated water ministry with a very focused policy mandate for the sector, the presence of an empowered independent economic regulator and the establishment of a strategic planning unit within NWC tasked to address private investment issues in the sector. Institutional arrangements were generally less robust in Barbados and Trinidad with less visible separation of policy, service provision and economic regulation responsibilities.

The importance of institutional arrangements to creating conducive conditions for private investment is reflected in the effectiveness of said institutions to implement these provisions (Seppälä, 2002). So as to avoid repetition, the impact of institutional

arrangements on private investment in the sector is assessed alongside the examination of the policy, legal and regulatory environment for private investment in Section 10.2.3.

Table 10.4 Cross-case ranking of institutional arrangements

Indicator	Jamaica	Barbados	Trinidad
Separation of roles	1	3	2
Institutional capacity	1	3	2
Overall ranking	1	3	2

1 = Most favourable; 3 = Least favourable

10.2.3 Policy, legal and regulatory frameworks

In accordance with intuition, the case studies highlighted the importance of the policy, legal and regulatory environment to encourage private investment in the sector. When characterised in terms of the six criteria proposed by Stern and Holder (1999) to assess the adequacy of regulatory governance, the Jamaican case study ranked highest in terms of the extent to which support for private investment was provided by the regulatory framework (Table 10.5). To Jamaica's credit was the presence of an independent regulator, pending sector-specific legislation to empower regulatory governance and the practice of public consultations on regulatory decisions. As mentioned in the previous section, institutions were less robust in Barbados and Trinidad. In both cases for example, policy changes to address the role of private investment and remedy regulatory uncertainties remained in draft form. In Barbados, the FTC although legally identified as the economic regulator had never operated as such. In Trinidad, the regulatory authority of RIC was restrictive despite being the location with the longest tradition of economic regulation in the sector.

Table 10.5 Cross-case ranking of the regulatory framework

Indicator	Jamaica	Barbados	Trinidad
Clarity of roles	1	3	2
Autonomy	1	3	2
Accountability	1	3	2
Participation	1	3	2
Transparency	1	3	2
Predictability	1	3	2
Overall ranking	1	3	2

1 = Most favourable; 3 = Least favourable

In terms of providing a supportive environment for private investment, the case studies demonstrated several instances where policy, legislative and regulatory frameworks mattered. In Jamaica, investor confidence in the clear pro-private position of the Water

Sector Policy, government commitment despite unresolved legal obstacles and occasional NWC interference and OUR's autonomy and commercial focus was reflected in a noticeable increase in local investor interest and activity. In addition, the policy, legal and regulatory environment was conducive to encouraging a variety of private investment options including private utilities and BOTs. In Barbados and Trinidad where the legal and regulatory frameworks remained public sector/investment oriented, private activity was essentially limited to BOTs which by nature operated independently of the prevailing regulatory environment. The importance of having a clearly defined legal and regulatory framework was particularly obvious in the Trinidadian case study with the IOA. By not modifying legislation governing WASA and delaying the implementation of a new regulatory regime under RIC, the IOA was characterised by conflict and tension between TTWS and WASA's Board which not only contributed to the unsatisfactory end of the IOA but led to the breakdown in negotiations for a longer-term arrangement.

These observations are largely consistent with anecdotal and empirical evidence in the privatisation literature where the regulatory framework is often singled out as the most important determinant of private investment in the sector. Case study appraisals by economic consultants NERA (1998) of regulatory governance across six developing Asia-Pacific countries presented anecdotal evidence on the extent of support for private investment provided by the regulatory framework. Basic frameworks capable of delivering good standards of regulation in the Philippines water sector for example, coincided with the increased (though limited) introduction of private capital in the sector. Econometric work by Pargal (2003) on the ability of regulatory frameworks to attract private investment in nine Latin American countries found a highly positive correlation between private investment levels and the existence of a regulatory body.

10.2.4 Summary assessment of the operating environment

Empirical research on the cause and effect relationship between the operating environment and private investment generally highlight two issues that can potentially affect results. First is that of endogeneity bias where instead of the intuitive expectation of the regulatory environment for example driving private investment, the reality may be the reverse with private investment driving regulatory reform. The water sector is considered particularly susceptible to this error as in many cases private investment has preceded sectoral restructuring (Jensen and Blanc-Brude, 2005). In such circumstances, the regulatory framework may have been created as a condition for private investment. As such, an assumption that causation runs exclusively from the regulatory arrangement

to the level of private investment may not be sustainable as unexplored and/or interrelated factors are not independently considered. The potential for endogeneity bias was also evident in the case studies. In both Barbados and Trinidad, private investment became a reality not because of provisions in the legal and regulatory framework but in response to crisis situations. Since then however, changes to the legal and regulatory framework have been actively considered such as the proposed Water Industries Act in Trinidad to rationalise institutional responsibility in the sector. Private utilities existed in Jamaica long before the Water Sector Policy and OUR. Subsequently the policy, legal and regulatory environment has played catch-up to formally accommodate private enterprise. A snapshot examination of the operating environment could therefore lend itself to an assumption that certain factors facilitated private investment when in fact other forces were also at work.

Second is the assumption of a nonlinear relationship between determinants of private investment and the predicted occurrence of private investment. As Jensen and Blanc-Brude (2006) assume in their investigation of factors influencing private investment volume in 60 developing countries, relationships are best described by the natural log function where beyond a certain threshold the effect of the variables tends to wear off. This interestingly raises the question of the level of effort necessary to create a conducive environment for private investment and to what extent it is necessary to aspire towards 'best practice' recommendations if beyond a certain level, additional 'improvements' to the operating environment are unlikely to make a significant difference in the level of private investment. In the Barbados case for example, despite the absence of 'best practice' legal and regulatory provisions such as an independent regulator, private investment under a contractual arrangement was still possible. Is it therefore necessary considering the cost of developing and maintaining regulatory capacity for Barbados to attempt to establish the 'best practice' model for regulatory governance? Instead of looking towards developing best practice guidelines, an alternate approach may be for countries like those in the Caribbean to first decide what level and type of private investment they want and then to strive towards developing the minimum facilitative environment to attract this investment.

Admittedly it is difficult to prove direct causation between the macroeconomic environment, institutional arrangements and policy, legislative and regulatory frameworks and their propensity to encourage private investment in the sector. This is because it is difficult to 'unpack' and quantify what are essentially cross-cutting and multidimensional variables. The evidence from the research however indicated that as a group these

variables were important in terms of providing an environment where investors felt confident in the rule of law and protection of their investments.

10.3 Criteria for private investment in the water and sanitation sector

Sections 6.6, 7.6 and 8.6 presented private service providers' and local financial institutions' criteria for investment in the Jamaican, Barbadian and Trinidadian water and sanitation sectors respectively. The investment criteria of international investors were presented in section 9.2. Caribbean water sector officials' insights into various criteria for private investment in the sector were also presented in sections 6.6, 7.6, 8.6 and 9.2. In answering the question, "*What are the main determinants or criteria for private investment in the water and sanitation sector?*" this section discusses the main investment criteria of both local and international private investors.

10.3.1 Investment criteria

Although assessed independently, the investment criteria of different types of investors (local vs. international and service providers vs. financial institutions) shared many similarities, thereby supporting the notion that there is wide applicability of investors' criteria because of the generic nature of investment decision-making (Feeney *et al.*, 1999). Profitability and expectations of realising reasonable returns featured highly among investors' motivation to invest in the sector. More specifically, opportunities that boosted investors' chances of financial success, that is 'controlled risk-high reward' situations were important incentives for investment. Service providers for example, were keen to respond to opportunities that 'guaranteed' financial success such as serving niche markets or capitalising on the utility's failure to provide adequate levels of service. Similarly, local financial institutions had high regard for enhancement mechanisms such as government guarantees to protect their investments and desired financially viable projects to maximise their investments.

Empirical evidence in the privatisation literature also demonstrates the importance of the risk-return relationship to the investment decision. Using a dataset of 460 project observations in 45 countries between 1990-2005, Jensen and Blanc-Brude (2005) found that investors' decision to invest in the sector was influenced by the expected risk and return associated with project-specific and to a lesser extent, macroeconomic characteristics (significant at the 10% level). Investors were willing to take on more risk if the expected returns from the investment were high enough. Anecdotal evidence in the

literature also supports this view. Financing for the US\$284 million 20-year BOT in Johor Malaysia was achieved in record time (within 3 months after signing) as a result of the attractive cash profile of the project and the availability of long-term local finance at reasonable rates (Haarmeyer and Mody, 1997). Similarly, after initial disinterest by local investors in the sector, the first bond issue by the Tamil Nadu (India) water and sanitation pooled fund in November 2000 of US\$21.3 million was eventually oversubscribed by US\$1.3 million after safeguards to ensure repayment were put in place (PADCO, 2003).

Investors also reiterated the importance of institutional factors such as the existence of clear and enabling policy, legislative and regulatory frameworks to their investment decisions. Also important was government's commitment and support for private investment. There is ample anecdotal evidence in the literature to confirm the importance of these criteria to the private investment decision in the sector. During the 1990s, Latin American countries dominated private investment activity both in terms of total investment and number of projects. Besides being attractive in terms of their large economies, populations and levels of urbanisation, the level of private investment in the region was also attributed to the extent of constitutional and sectoral reforms compared to other regions which facilitated international private activity (Sader, 1999; Budds and McGranahan, 2003). In Jakarta, the absence of primary legislation or clear regulatory principles resulted in problems arising from conflicts of interest with the former public utility, discrepancies regarding responsibility for tariff increases and inadequate treatment of dispute resolution. Consequently, the Jakarta water concessions have been characterised by continuous renegotiations with the concessionaires periodically threatening termination (Jensen, 2005).

Empirical evidence also corroborates the research findings. A 2003 survey of 400 stakeholders including local/international financiers and public/private operators in the LAC region for example, identified features such as inadequate regulatory frameworks with respect to pricing policies, the lack of regulatory institutions and the lack of clarity in regulatory processes as the most critical barriers to increasing investment in the water and sanitation sector (IDB, 2003a). In testing the relationship between commitment and investment in the electricity sector using long-term panel data, Bergara *et al.* (1998) found that government commitment (measured by a political constraints index) was a significant determinant of investment in the sector. The results are expected to hold for the water sector given industry similarities such as high sunk costs and a high degree of politicisation, features that make both sectors particularly vulnerable to government renegeing on promises or changing policies once the initial investment has occurred.

Finally, besides the ‘predictable’ criteria for investment as discussed above, anecdotal evidence from the research indicated that investors in the sector were also driven by personal motives such as job security, remuneration, recognition and comfort. This was particularly relevant to investors affiliated with large overseas companies. Company x in Jamaica and STWI in Trinidad both represented small non-core business divisions of large multinational companies. Both managers were therefore keen to have successful projects that would bring them recognition in the parent company. International service providers were also motivated to continue working in the Caribbean water and sanitation sector due to pleasant surroundings and working conditions. Similar projects in ‘less hospitable’ locations evoked a ‘let’s just get it done and get out of here’ attitude while in the case locations famous for their sun, sea and sand appeal, investors were more enthusiastic to ‘hang around’ by going so far as to actively generate additional projects.

Such motives although rarely discussed in the privatisation literature, intuitively may factor as important supplementary reasons for investment once more traditional criteria have been satisfied. Wheeler and Mody (1992) for example, included expatriate comfort as a measure of risk and found that the overall risk variable had a positive albeit small effect on FDI location. Factors that can potentially affect investor comfort however such as infrastructure quality, level of development and cultural compatibility have all been proven to have positive significant effects on investment choices (Wheeler and Mody, 1992; Lim, 2001; Galan and Gonzalez-Benito, 2006). As such, given a choice, investors may opt for ‘nice’ places to do business where amenities are of a certain standard and there is minimum cultural distance.

10.3.2 Investor perception

Intuitively, investor perception was expected to be important to investment decision-making in terms of the way in which investors’ regard for investment prospects in the sector was influenced by their feeling and judgement of the sector. Empirical testing of this subjective indicator of investment measured by the UPS found a significant positive relationship ($p=0.014$) between local financiers’ perception of the water utility and their perception of investment prospects in the sector (Appendix 6: Table A33). This correlation indicated a tendency for investors’ assessment of investment prospects in the sector to improve as their perception of the utility also improved. This relationship was very significant for non-investors ($p=0.003$) (Appendix 6: Table A34) whose low perception of the utility (compared to investors) paralleled their views of low investment prospects in the sector and their reluctance to invest in the sector. In Trinidad for

example, 28% of the financial institutions surveyed indicated that improved utility/sector management would be a prerequisite to them investing in the sector. Accordingly, the status of the utility/sector and investors' judgement of such were important to their investment choices.

The privatisation literature also places a high premium on the status of the utility as a determinant for private investment. In assessing the sector, public water utilities usually undergo extensive scrutiny of their operations and finances to determine their productivity and viability. This is because public water utilities are often plagued by problems such as poor commercial practices (e.g. low tariffs and levels of revenue recovery), poor operational practices (e.g. irregular maintenance and inadequate service coverage), overstaffing, inadequate managerial capacity and political intervention which can render them inefficient and uneconomical and hence potentially risky investments (Idelovitch and Ringskog, 1995; Briscoe, 1999a; 1999b; Lee and Floris, 2003). The very poor state of many water utilities in sub-Saharan African cities for example, has deterred many international investors and resulted in situations where investors and governments have been unable to reach agreements in contract negotiations such as Nairobi (Kenya) and Gweru (Zimbabwe) (Budds and McGranahan, 2003). As is often the case however, once government has made the decision to attract private investment to the sector, a programme of reform and rehabilitation of the utility is undertaken to establish an autonomous, commercially orientated and financially viable entity backed by appropriate forms of governance and regulation (Mehta, 2003). In Buenos Aires, Manila, Conakry and Cartagena for example, the utility workforce was substantially reduced as a productivity enhancing measure in the run-up to privatisation to make them more attractive to private investors (Braadbaart, 2002). The assumptions therefore commonly underlying such efforts to improve the position of the utility are that without them there would be minimal interest for private investment in the sector (Ibid.).

Empirical research in the privatisation literature rarely focus on investors' perception of the utility per se as a determinant for investment but on investors' attitudes towards broader issues such as pricing policies and governance. As such, the research was unique in its investigation of investors' perception of the utility as a determinant for investment in the sector. Given the difficulty in quantifying subjective indicators such as perception, the UPS proved to be a good indicator of actual utility performance and hence a potentially good predictor of the investment potential of the sector. As shown in Table 10.6, utility performance varied in each case location. The working ratio²⁰⁶ which is

²⁰⁶ The working ratio is the ratio of annual operating costs less depreciation and interest payments to annual operating revenues. The best practice working ratio for developed countries is about 0.7. A working ratio of more than 1 means that a utility fails to recover its operating costs from annual revenue. Less than 1 means that it

an indication of the financial health of an organisation indicated a 1-2-3 rating for NWC, BWA and WASA respectively with one representing the best performing utility. NWC's performance was characterised by higher collection efficiencies, higher operating profit margins and lower staff to connection ratios. Collectively, these features indicated that NWC had exhibited a more commercial approach to service provision and was more efficient than the other case utilities. NWC's position was also aided by a programme of regular tariff adjustments, indexed tariff structures and rates that provided for rehabilitation and capital expenditure. Lower tariffs, higher debt service obligations, low collection efficiencies and higher staff to connection ratios contributed to WASA's pattern of loss-making and poor performance relative to that of NWC and BWA.

Table 10.6 Cross-case comparison of utility financial and operational data

	Industry benchmark ²⁰⁷	Jamaica (2003)	Barbados (2003)	Trinidad (2002)
Working ratio	0.7	1.0	1.2	1.2
Debt service ratio	-	35%	31%	50%
Operating profit margin	-	-12%	-38%	-131%
Collection efficiency	≤3 months	89%	65%	68%
Staff per 1000 connections	≤5	6	9	11
Employee cost/total cost	<40%	46%	36%	45%
Service coverage (water)	-	74%	98%	82% ²⁰⁸
Service coverage (sewage)	-	18%	6%	15%
Unaccounted-for-water (UFW)	<23%	65%	60%	45%

Investors' perception of their respective case utility captured by the UPS matched actual utility performance. There was a very highly significant difference ($p=0.000$) in the UPS across case locations (Appendix 6: Table A29). As shown in Figure 10.2, financial institutions in Trinidad had a consistently lower opinion of WASA compared to similar institutions in Jamaica and Barbados. Barbadian financial institutions had the most positive perception of their utility, closely followed by their Jamaican counterparts. Statistically however, there was no significant difference ($p=0.258$) in the UPS between the two countries (Appendix 6: Table A30). Trinidad's UPS was found to be significantly very different from that of Jamaica's ($p=0.001$) and Barbados' ($p=0.000$) (Appendix 6: Table A31; Table A32). Respondents' comments during interviews also reflected their perception of the local utility (Table 10.7). In general there were more 'negative' remarks about WASA than for NWC and BWA thereby corroborating the UPS ranking of case utilities. As a rating system therefore, the UPS served as a good indicator and predictor of the investment potential of the water and sanitation sector.

recovers operating costs and some or all of investment costs. A significant number of utilities in developing countries fail to cover operating costs leading to under-investment in assets and a lower level and quality of service. The working ratio is more than 1 for about 17% of utilities (IBNET, 2005).

²⁰⁷ As per IBNET (2005).

²⁰⁸ Service coverage figure misleading as only 18% of the population receives a continuous water supply.

Figure 10.2 Cross-case boxplot of UPS

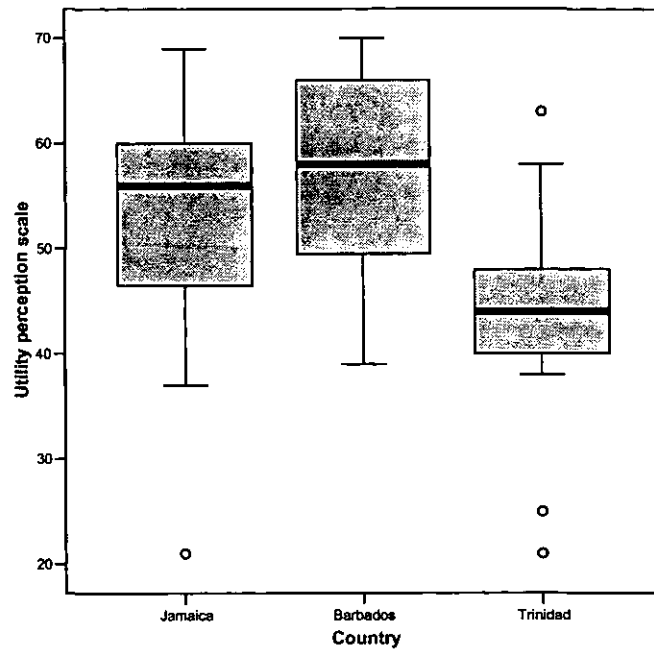


Table 10.7 Quotes pertaining to respondents' perception of case utilities

Location	Respondents' perception of the water utility
Jamaica	<p>"We feel that there is a new spirit in the NWC and we like it."</p> <p>"We have good relations with the NWC."</p> <p>"You can't trust them [NWC]."</p> <p>"They [NWC] are not reliable in making payments."</p> <p>"I don't wish to be maligning the NWC but none of their plants are operating anywhere close to design."</p> <p>"It's a fact that NWC is not so easy to work with."</p>
Barbados	<p>"The BWA is taken as a bit of a joke."</p> <p>"They [BWA] have pretty good financial controls and government gives them whatever support they need."</p> <p>"The BWA for all its problems pays its bills."</p> <p>"The BWA needs to take business seriously and operate along commercial lines."</p> <p>"The BWA can't stand on its own so we would not be interested in it."</p> <p>"BWA's structure lends itself to weak financial operations."</p>
Trinidad	<p>"WASA is notably known to be very inefficient."</p> <p>"WASA is bankrupt. It would be in receivership tomorrow if the government withdrew support."</p> <p>"When we look at WASA's balance sheets and financial statements, we realise that this is an entity that doesn't make money."</p> <p>"They [Tonics] haven't come across a client [WASA] where they have had so many problems in getting paid."</p> <p>"WASA does not provide you with a product and when they do provide it, they don't meter it and don't get paid for the service."</p>

10.4 Scope and strategy for private investment

Sections 6.7, 7.7 and 8.7 presented respondents' views on appropriate models for private investment and strategies to attract private investment to the Jamaican, Barbadian and Trinidadian water and sanitation sectors respectively. In answering the question, "What

is the scope for and strategy to attract private investment to the water and sanitation sector?” this section discusses appropriate forms of private investment and ways to encourage this private investment given the local context and conditions.

10.4.1 Scope for private investment

BOTs were generally regarded as the most feasible option for private investment in the sector. Described as “attractive” and “convenient” by water sector officials, BOT-type arrangements were highly favoured because of their use in augmenting supply without committing the utility to large upfront service expansion costs, their suitability in areas considered “non-strategic” by the utility and their ability to maintain the status quo by not interfering with utility operation and management. In all three case locations, BOTs were essentially used to address service shortfalls especially where the respective utilities were not in a position (financially and/or strategically) to do so. In Barbados and Trinidad for example, BOTs were used to deliver large-scale expensive desalination projects at a time when BWA and WASA had to respond to crisis situations. In Jamaica, BO projects were encouraged at the community level to serve rural communities that were of little commercial interest to NWC. In all three locations, the BOT model was also widely used in the provision of sewerage services to discrete housing developments that were either outside the utilities’ service area or could not be handled by the utilities’ oversubscribed system. BOTs were also the preferred means of investment by local financiers with the majority indicating an interest in providing project financing for the sector.

The privatisation literature also illustrates a similar appeal for BOTs in many developing countries where governments see them as a way to relieve the financial burden of the state, fast-track projects and attract international investment and technology (Quartey, 1996; Vinter, 1998; Wolfs and Woodroffe, 2002). Like the case studies, BOTs are also seen as an attractive way to expand systems because they do not require changes in the way public utilities operate or are managed and there is no direct transfer from government (Spiller and Savedoff, 1999). Investors have likewise shown a preference for project finance techniques because of reduced market and credit risks from having government or the utility as the only customer, the ability to achieve off-balance sheet treatment of debt and overall protection through the contract (Vinter, 1998; Wolfs and Woodroffe, 2002).

In terms of investor origin, local private investment received widespread support as a viable financing option for the sector as local investors were believed to be more

responsive to local needs and conditions (especially in rural communities). Sader (1999) also notes that public officials tend to be more partial to local private investment for similar reasons. Local investors are generally perceived to be more familiar with local conditions and more sensitive to local issues than their foreign counterparts.

10.4.2 Strategy for private investment

The private investment strategy pursued in each case location reflected the respective institutional capacity, level of government commitment and different circumstances surrounding each specific case. In Barbados and Trinidad for example, the industry structure with respect to institutional and regulatory arrangements, the need for quick-fix solutions and the depth of local capital markets facilitated a BOT-type investment strategy that was effective in bringing in large sums of up-front private capital for specific projects and achieving regulatory credibility through a contract, yet operable under strict public sector procurement rules. In Jamaica, explicit policy guidelines, the presence of an independent regulator, a regulatory framework by which licensing specified the regulatory process for price determination and the prospect of very specific legislation to further empower regulatory capacity facilitated a more diverse and dynamic investment strategy than the other case locations.

This observation that the use of different transaction types reveals the overall strategy of how to involve private investors is persistent in the privatisation literature. Latin American countries for example are typically credited with having a broad approach to sectoral liberalisation which is reflected in the dominance of divestitures over BOTs in their water and sanitation sectors (Sader, 1999). East Asia on the other hand, is famous for relying on the creation of new capacity without parallel sectoral reform which results in a reliance on BOTs to attract private investment to the sector. As in the case locations, the operating environment in terms of the existing institutional capacity and investment needs determine the type of private investment strategy pursued.

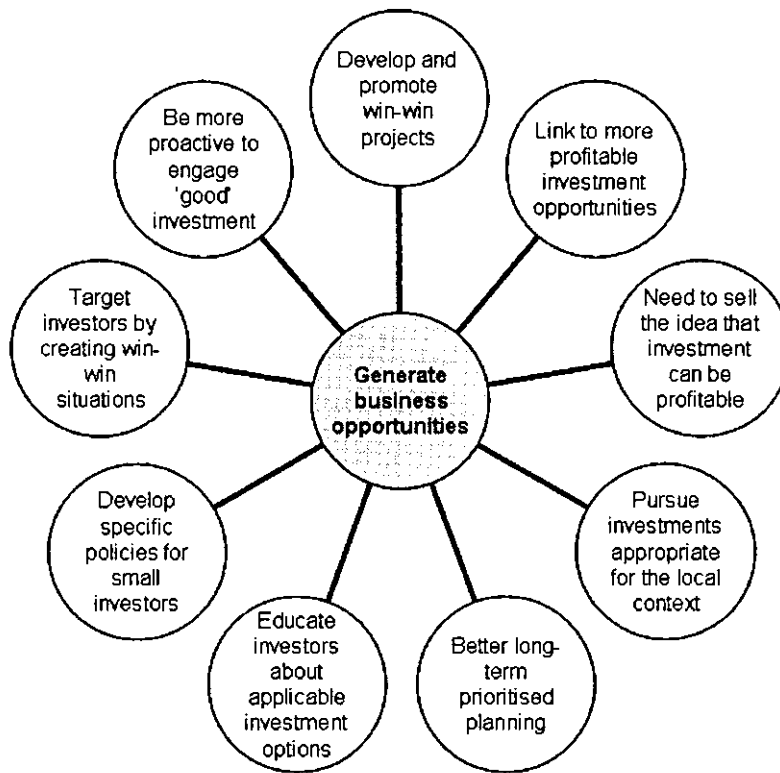
The case studies also found that public officials' attitudes towards private investment influenced or had the potential to influence the type of private investment strategy being pursued. As previously mentioned, respondents were supportive of private investment options that did not affect the day-to-day management, operation and monopoly status of the utility. This attitude particularly endeared BOT-type arrangements which were seen as standalone investments. In Trinidad strong anti-foreign private investment sentiments resulted in WASA actively lobbying and promoting a new industry model which catered

primarily to local private investment. In Jamaica, interest in preserving the monopoly status of NWC led to attempts to prevent the establishment of private utilities. Water sector officials' potential influence on the type of private investment therefore highlighted the importance of their acceptance and cooperation for successful private investment in the sector. Empirical evidence in the privatisation literature also demonstrates the importance of public officials' attitudes to the type of investment strategy pursued. In Jordan for example, a survey of the attitudes of public officials from 24 public enterprises (including the Water Authority) found that their attitudes varied for different forms of PSP with greater preference for 'milder' forms of PSP such as service contracts and less preference for more 'invasive' forms such as divestiture (Awamleh, 2002). In the case locations where at least theoretically senior public officials are highly influential due to their small numbers, demand for their technical expertise and their multifunctional duties (Farrugia, 1993), this potential to influence the type of private investment and impact on investment success takes on increased significance.

10.4.2.1 *Strategy recommendations*

The importance of creating enabling conditions to attract private investment to the sector has already been established from respondents' accounts of issues important to their investment choices. Establishing a conducive business and policy environment was understood to be a fundamental part of the promotion strategy for private investment in the sector. Respondents however believed that much more could be done to generate business opportunities in the sector by purposefully formulating projects/investments in such a way to provide specific opportunities for private investment. As shown in Figure 10.3, recommendations to promote win-win projects, educate investors about investment opportunities and pursue investment options appropriate for the local context indicated a recurring theme that it was not enough to just focus on creating conducive conditions for investment. Respondents were equally concerned about the provision of specific opportunities in the sector to win-over investor confidence in the potential of the sector as a viable investment option. The potential for such a targeted strategy to encourage private investment in the sector is not unfounded. In Jamaica for example, a two-day BO workshop with prospective local investors improved investor response to a second call for tender. Similar promotional tactics have been used elsewhere to encourage private investment. In Brazil for example, a by-invitation-only two-day executive roundtable in November 2003 was used to successfully showcase various water and wastewater projects to international private investors (GWI, 2003).

Figure 10.3 Focus on generating business opportunities



10.5 Small size

Sections 6.8, 7.8 and 8.8 examined the issue of size to determine whether or not small size was a constraint to attracting private investment in the Jamaican, Barbadian and Trinidadian water and sanitation sectors respectively. Response strategies, particularly regional cooperation to address this size constraint were also examined. In answering the question, *“To what extent is size an issue and what is the scope for addressing small size as a constraint to attracting private investment?”* this section discusses the impact of small size on the investment potential of the water sector and examines response strategies to mitigate against likely disadvantages of small size.

10.5.1 Effect of small size

Respondents were unanimous in their belief that small size presented various challenges to attracting private investment to the Caribbean water and sanitation sector. Limited professional capacity in particular was considered the most important consequence of small size to negatively impact on the operating environment for private investment through its effect on institutional arrangements in the sector. Capacity and capability

constraints were reflected in the 'status' of the operating environment in the case locations. In Barbados for example, the absence of a dedicated planning unit in the BWA, the absence of an identifiable individual or division within the Ministry with specific responsibility for the sector and the multiplicity of roles assumed by BWA contributed to the sector being the least conducive of the case locations to private investment. Jamaica's larger size on the other hand was able to support a unit within NWC with responsibilities specific to sourcing and structuring private investment for the sector. The effect of limited professional capacity was also reflected in the limited regulatory capacity in Barbados where the FTC lacked sector-specific regulatory abilities and in Trinidad where the RIC had been unsuccessful in filling key posts. In Barbados, a transaction adviser had to be hired to manage the desalination BOT contract due to the lack of requisite skills in the sector. Although there was no direct evidence to prove the extent to which the lack of professional capacity affected the sector's ability to establish the requisite environment to attract private investment, the implications for regulatory and related institutional requirements were clear as pointed out by Stern (2000).

A review of capital projects in each case location indicated that the majority of projects were valued at less than US\$10 million. With project financing generally available for a minimum project size of US\$50-100 million (Winpenny, 2003), very few projects would have qualified for this type of financing. This was the position in the case locations with projects being financed primarily by a mixture of sources – government, utility revenues and funds facilitated by government on behalf of the utility from various commercial, bilateral and multilateral sources. Projects financed by project financing included the desalination plants in Barbados and Trinidad valued at US\$22 million and US\$120 million respectively. International investors' preferred project size also indicated a distinct size-investment relationship with investors participating or interested in large-value projects.

As previously mentioned, the majority of projects in the case locations were valued at less than US\$10 million. In fact, out of 106 projects, 57 (54%) were valued at less than US\$1 million, all of which were being financed by government or the utility. Returns to scale generally make project financing uneconomical for smaller projects. Pooling or bundling projects to form economically viable entities has been used to access private capital by providing a larger revenue base to attract private investment. In Malaysia for example, the entire sewerage system was bundled under one concession to attract private investment (Haarmeyer and Mody, 1998c). Although not practiced in the case locations, the opportunity to bundle several small projects to form larger more financially viable ones was apparent. Investors' support for project bundling to improve investment prospects in the sector supported this intuitive finding (Appendix 6: Figure A4).

Contrary to conventional wisdom, Zieroth (2001) found that despite the small size of water and sanitation markets, difficult logistics and high costs in the South Pacific, private investors were still willing to invest in the sector. Of note however, was the fact that investors were mainly interested in directly negotiated arrangements that allowed them to operate in an informally regulated, non-competitive environment. In such cases, small size would not appear to be a constraint to investment. In reality however, the impact of small size on regulatory capacity is significant as the conditions for investment are far from ideal in terms of consumer protection and investment in a country's best interest.

10.5.2 Response strategies to address size constraints

10.5.2.1 *Regional cooperation*

Integration theorists posit that if countries identify the constraints of small size as real or important enough, they are more likely to embark on a regional strategy to address those constraints (Müllerleile, 1996). For the case studies, limited professional capacity was considered the most important consequence of small size to negatively impact on the operating environment for private investment through its effect on institutional arrangements in the sector. Consequently, respondents' 'vision' of a regional strategy in the sector focused on the sharing of professional expertise to address capacity constraints either through the work of existing regional institutions such as CWWA and OOCUR with their annual conference and networking opportunities or through professional exchange programmes between utilities. Similarly in the Asia-Pacific region, regional cooperation in the sector provides a forum for learning good institutional practices and policies (UNESCAP, 2006). The Pacific Water Association for example has a similar mandate as the CWWA and CBWMP in terms of maintaining links between water and sanitation utilities and administering training and technical assistance (Zieroth, 2001).

Respondents' level of enthusiasm for a regional approach to improve conditions for private investment in the sector was related to the size of the case locations. The greatest support came from Barbados, the smallest case location while the least support came from Jamaica, the largest case location. This difference in interest was also matched by concerns that cooperating with smaller 'less developed' islands would retard progress in larger 'more developed' islands, that smaller countries would have more to gain than to offer and that regional initiatives were more likely to be biased towards smaller more closely-knit member states. Respondents were also mindful of likely challenges to cooperation such as political commitment and support.

The cautious attitude of the respondents to the prospects of regional cooperation is not uncommon in the integration literature. Müllerleile (1996) for example in his review of Caribbean integration experiences observes that while the reciprocity of benefits of regional cooperation are evident, the process is often seen as an abstract concept viewed with some amount of scepticism. This is because there is generally not enough confidence in the impartiality of distribution, the equality in the effects and the benefits of transactions. For regional cooperation to succeed, the final objective should not in Axline's view (1979) be set too low as the lower the expectations placed on the benefits of cooperation, the less prospects there are for its success. In addition, the success of regional integration strategies as pointed out by Bryan and Bryan (1999) takes years to become visible. Initiatives such as the professional exchange programme between NWC and WASA are a good start but their short-term and non-binding nature can mean that the benefits of cooperation are not immediately obvious and either party can easily opt out without committing to the process.

10.6 Hypothesis review

The research hypothesised that *factors that determine private investment in water and sanitation vary in importance and relevance from location to location; hence a context-specific approach is needed to attract private investment to the Caribbean water and sanitation sector*. In testing this hypothesis, the research used a case study approach to examine the environment for private investment and determine factors influencing investors' choices in the sector. In addition, the potential for regional cooperation to improve the environment for private investment was also examined given the small size of the case locations.

The research found that while there was general similarity in investors' criteria for investment, location-specific factors such as the case locations' sun, sea and sand appeal also featured in the investment decisions of international investors. In Jamaica, the focus of the public utility on urban service provision, the ensuing opportunities for small-scale investors in rural supply and the institutional frameworks for private investment realised an investment strategy that encouraged the operation of small private utilities. In Barbados and Trinidad however, the provisions (or lack thereof) of the policy, legal and regulatory environment were less conducive to a similar approach but instead realised a more project-specific, contract-based approach through the use of BOT-type arrangements. In the absence of adequate institutional frameworks, the macroeconomic environment therefore became more central to influencing investors' choices. The criteria for investment were therefore found to differ in importance and

relevance throughout the case studies depending on the status of the operating environment and the type of investment. The implications of limited professional capacity on institutional arrangements as a result of small country size also necessitated a tailored approach such as the use of transaction advisers in Barbados. Each country's institutional endowment was therefore important in determining the strategy to attract private investment and the type of investment.

10.7 Chapter summary

This chapter relied on the findings of the case studies and Surveys B and C to answer the research questions. The main findings from survey questionnaires and semi-structured interviews supplemented by documentary evidence were systematically presented and discussed within the context of the existing literature.

CHAPTER 11 CONCLUSIONS

11.1 Chapter introduction

The purpose of this chapter is to review the research process, identify the main findings of the research, discuss the implications of these findings and suggest areas for further research. The research began with a review of the extant literature to develop an understanding of important issues related to private investment in the sector. The core concepts of investment decision-making and investment promotion were examined to develop an analogous framework for the private investment decision in water and sanitation. The issue of small size as a constraint to facilitating private investment in the sector and regional cooperation as a possible response strategy were also examined due to the intended geographical focus of the research. The review of literature highlighted the need to incorporate the interests of domestic private investors, the importance of investors' perceptions on their investment choices, the relative difference in importance of investment criteria and the need to adapt investment promotion strategies to the prevailing investment climate.

To guide the various lines of enquiry, a primary research question and four secondary research questions were formulated as follows:

Primary research question

- How can private investment be attracted to the Caribbean water and sanitation sector?

Secondary research questions:

- What is the current state of the operating environment and how conducive is it to private investment?
- What are the main determinants or criteria for private investment in the water and sanitation sector?
- What is the scope for and strategy to attract private investment to the water and sanitation sector?
- To what extent is size an issue and what is the scope for addressing small size as a constraint to attracting private investment?

The research hypothesised that *factors that determine private investment in water and sanitation vary in importance and relevance from location to location; hence a context-*

specific approach is needed to attract private investment to the Caribbean water and sanitation sector.

The research adopted a multiple-case study methodology to examine the private investment phenomenon in the water and sanitation sectors in Jamaica, Barbados and Trinidad and Tobago. Three main sources of evidence were used within the case study framework to answer the research questions – surveys, interviews and documents. Survey questionnaires were also administered outside the case study framework to access data sources beyond the case locations. In total, the research database consisted of 101 survey questionnaires, 52 interviews and over 250 documents. Quantitative data was subjected to various statistical analyses using SPSS while qualitative data was organised thematically and retrieved as required.

Background information on the research study area was then used to contextualise and introduce basic physical, geographic, historical, social and contemporary factors pertinent to the research problems and issues. The case studies were then presented to highlight the operating environment for private investment, provide descriptive accounts of actual private investment experiences and identify respondents' attitudes and perceptions of private investment in the sector. Finally, research findings outside the case study framework along with the case study research findings were discussed within the context of the literature from which research conclusions were made and presented below.

11.2 Conclusions

The following are key findings from the research:

- ***Investors' perception of the utility is a statistically significant determinant of investment in the sector.*** The research found that investors' perception of investment prospects in the sector improved as their perception of the water utility also improved. The privatisation literature places a high premium on the status of the utility in terms of financial performance and operational practice as a determinant for private investment in the sector. Both of these variables are measurable indicators commonly used to assess the investment climate. Indicators such as investors' perception of the utility/sector known to have an important impact on investment choices are difficult to quantify due to their subjective nature. By developing a utility perception scale (UPS), the research provided a measurable index of investor perception to facilitate like-for-like comparison between investment locations in the Caribbean. By validating the UPS

against actual utility performance (determined from financial and operational data), the research found that the UPS is a good indicator/predictor of the investment climate which can be used with other assessment tools to gauge investor interest in the sector.

- ***Behaviour-related factors such as interest in job security, recognition and comfort feature as supplementary investment criteria to satisfy the personal goals of individual decision-makers.*** The research found that investors (particularly those affiliated with large overseas companies), were keen to have successful projects that would bring them recognition in the parent company and allow them to continue enjoying the comfortable working conditions in the Caribbean. Investors were found to be less enthusiastic about similar projects in 'less hospitable' locations, preferring the sun, sea and sand appeal of the Caribbean islands. The privatisation literature often focuses on the strategic motives of the firm (such as risk diversification, transfer of organisational assets and competitive advantage) to invest abroad. The research however found that in addition to strategic ambitions, individual decision-makers have their own goals which factor in their investment choices.
- ***In addition to creating a conducive environment for private investment, there is a need to simultaneously focus on generating specific investment opportunities to build investor confidence.*** The research found that even though the enabling environment paradigm was central to the promotion strategy for private investment in the sector, specific opportunities that showcased the investment potential of the sector (i.e. a targeted promotion strategy) were also important in increasing the likelihood of investors having a positive response to investment opportunities in the sector. Creating an enabling environment in terms of establishing the right conditions for business and a policy environment conducive to private investment tends to dominate the private investment strategy in the sector. As such, much attention is given to institutional/governance, economic/financial and socio-political factors to tackle problems such as unclear policy guidelines, inadequate regulatory frameworks, inappropriate water pricing, inadequate cost recovery, excessive government involvement and outdated institutional arrangements. The research however found that in addition to what amounts to a general sector reform agenda, more specific investor targeting in terms of generating business opportunities such as championing model projects and packaging 'bankable' projects also requires special attention in the investment promotion strategy.

- ***The investment strategy pursued reflects a location's institutional capacity, public sector attitudes towards private investment and specific investment needs.*** The research found that the operating environment in terms of the existing institutional capacity and investment needs determined the private investment strategy pursued. Where the operating environment was characterised by explicit policy guidelines, an adequate regulatory framework and supportive legislation, a more diverse and dynamic investment strategy was pursued. Conversely, where the operating environment was restricted in terms of institutional and regulatory arrangements and investment needs were immediate, a more contract-oriented and project-specific investment strategy was pursued. The research also found that water officials were highly influential in the investment strategy pursued. A general preference for local private investment and 'non-intrusive' arrangements that safeguarded utility management and operations realised an investment strategy geared towards local investors and BOT-type arrangements.
- ***Limited professional capacity is the most important consequence of small size to negatively impact on the operating environment for private investment in the sector through its effect on institutional arrangements.*** The development literature highlights various characteristics of small states which have important economic, financial, institutional and socio-political implications for creating a conducive environment for private investment in the sector. The research found that limited professional capacity was the most important consequence of small size to impact on regulatory and related institutional requirements necessary to support private investment in the sector. Difficulty in filling key posts and achieving genuine separation of roles were just some of the size-related issues to affect the sector's ability to establish the requisite environment for investment.
- ***Sharing professional expertise to address capacity constraints is the most feasible opportunity for regional cooperation to improve conditions for private investment in the sector.*** The research found that the scope for regional cooperation to improve conditions for private investment in the sector was limited to that of sharing professional expertise to counteract issues related to limited professional capacity. Networking opportunities during annual conferences and professional exchange programmes between utilities were found to be ideal opportunities for regional cooperation.

The research findings confirmed expectations from the extant literature on the importance of creating conducive conditions to attract private investment in the sector, the effect of small size on attracting private investment and the potential of regional cooperation as a response strategy to address likely size constraints. The findings are however advances on previous research in that they add a new depth to our understanding of the private investment phenomenon in the water and sanitation sector in general and its manifestation in the Caribbean in particular. A lot of the evidence in the privatisation literature is anecdotal. An important contribution of this research therefore is the empirical analysis of various investment criteria. Most significant is the development of a measurable index of investors' perception of the utility to enable the evaluation of a rather subjective determinant of investment. By considering small size and the potential of regional cooperation to improve the environment for investment, the research makes an important contribution to the development literature on infrastructure policy and provision in small island developing states.

11.3 Implications of the research findings

The research findings have important policy and practical implications for informing and directing government's strategy to attract private investment to water and sanitation. These are listed below:

- It is important for countries to set realistic goals once the decision to encourage private investment in the sector has been made. An independent regulatory agency for example does not guarantee private investment as there are many ways of undermining supposedly 'independent' regulators whatever the underlying legal framework. Governments should therefore take stock of the environment for investment, determine investment needs and the desired level of investment and pursue investment strategies that reflect a country's institutional endowment.
- As part of a foreign private investment promotion strategy, government should make the most of locational advantages by promoting a country's status as a 'nice place to do business' as an additional incentive for investment as this can be a deciding factor between projects of similar type and size in similar operating environments.
- There is a general preference for local investors on the basis that they are more familiar with local conditions and more sensitive to local issues than their foreign counterparts. Despite this familiarity and sensitivity, local investors share many

similarities with their foreign counterparts in terms of investment criteria. The strategy to attract local investors should therefore not be 'watered down' with the expectation that local investors will compromise on their investment criteria and that issues of import at the international level are any less relevant at the domestic level.

- Water sector officials' potential influence on the type of private investment strategy pursued and the importance of their acceptance and cooperation to investment success stress the importance of involving them as early as possible in the private investment promotion strategy.
- The benefits of regional cooperation to improve conditions for investment are evident but there is general scepticism about the scope for and effectiveness of cooperation in the sector. As such, the choice of whether or not to embark on a regional strategy is an abstract one, especially if countries are not faced with the alternative 'integrate or die'. The task is therefore to make cooperation appear to be a more attractive choice by showing tangible benefits. Sharing professional expertise can form the building blocks of a regional initiative in the sector to raise awareness of the prospects of cooperation after which increasingly more complex issues such as financing and building regulatory capacity can be accommodated.

11.4 Areas for further research

A number of issues were not addressed because of the scope of the research. These are detailed below as possible areas for further research:

- Much of the evidence in the privatisation literature is anecdotal. In addition, the relatively recent nature of the private investment phenomenon in water and sanitation means that there is no real track record on which to judge whether or not what is put forward as best practice is actually sustainable. There is therefore a need for research that examines the phenomenon of private investment in the sector over a longer-time series so that more conclusive generalisations can be made.
- It is difficult to show direct causation between the status of the operating environment and its propensity to encourage private investment in the sector. This is because it is difficult to unpack and quantify what are essentially cross-cutting and multidimensional variables. There is therefore need for research that

separates these variables into their various components and tests each component separately. If possible, indicators that adequately reflect underlying attributes should be identified and used to empirically test the relevance of these variables to the private investment decision in the sector.

- The informal private sector is considered to be an untapped and potentially valuable source of investment in many developing countries. The research however focused on the needs and priorities of the formal private sector. There is therefore a need for research that incorporates the needs and priorities of the informal private sector in the Caribbean so that they can be included in more formal government procurement strategies as legitimate sources of financing for the sector.
- The research highlighted various issues relevant to pursuing a targeted investment strategy for the sector such as developing and promoting winning projects and linking investments in the sector to more profitable investment opportunities (see Figure 10.3). The scope of the research however prevented a detailed analysis of the significance of generating investment opportunities to the private investment strategy in the Caribbean water and sanitation sector. There is therefore a need for research that validates the concept of generating investment opportunities as an integral phase of the private investment strategy in the sector and prioritises the various components proposed to contribute to this strategy.
- The research presumed that small size was an inevitable constraint to developing best practice institutional arrangements to attract private investment to the sector. There is however need for research to empirically determine the extent to which resource constraints such as limited regulatory capacity actually affect investment potential.
- The research focused on the scope of regional cooperation to identify the range of issues that could fall under a regional cooperation strategy to improve the investment climate for private investment in the sector. Other concepts relevant to the process of regional cooperation such as the extent of coordination, mechanisms for cooperation and the nature of decision-making were not addressed. There is therefore a need for research that examines regional cooperation in its broadest context to fully assess its feasibility to improve the investment climate for private investment in the Caribbean water and sanitation sector.

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APPENDICES

- Appendix 1 Survey instruments
- Appendix 2 Cover letters
- Appendix 3 Interview guides
- Appendix 4 Interviewee list
- Appendix 5 Sample interview transcript
- Appendix 6 Quantitative data
- Appendix 7 Qualitative data

**Survey of local financial institutions: Investment
decision-making in the water and sanitation sector**

General Guidance

The purpose of this survey is to obtain the attitude of local financial institutions to the investment prospects of the water and sanitation sector. This is an independent survey. The information provided will be treated with the strictest confidence and used only for academic purposes. Please indicate your response to close-ended questions and statements by placing a cross (x) in the space provided. Unless stated, only one choice is valid for each question/statement. For the purposes of the research, 'water' refers to a system of delivery of potable water to consumers while 'sanitation' refers to the management of excreta and wastewater but not the disposal of solid wastes. Please address queries to:

Norline Martin
Email: N.A.Martin@lboro.ac.uk
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(246) 425-1406 (Barbados)
(868) 662-0922 (Trinidad)

Legal/registered name of organisation
Country

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Part A – Investment prospects for water and sanitation

1. How would you rate the investment prospects of the following utility sectors?

Utilities	Excellent	Good	Acceptable	Doubtful	Poor
	5	4	3	2	1
Electricity					
Gas					
Roads					
Telecommunications					
Water and sanitation					

2. Considering the following characteristics of water and sanitation, how would you rate the investment prospects of the sector?

Characteristics of water & sanitation	Excellent	Good	Acceptable	Doubtful	Poor
	5	4	3	2	1
Capital intensive with high initial investment					
Long payback period					
Currency mismatch – large foreign exchange costs while product is sold primarily in local currency					
Poor track record of consumer payment discipline and enforcement					
Assets not easily redeployed for other uses – sunk assets					
Value of underground assets often uncertain					
Production of non-tradable services					
Close political scrutiny regarding pricing and services					
Weak management structures					
Possibility of government not keeping promises made at time of initial investment					
Essentially a monopoly with limited direct competition					

3. From a professional viewpoint, how do you perceive the local water utility?

Perception of the local water and sanitation utility	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree	
	5	4	3	2	1	
The utility is a financially robust organisation						Perception 1
Water and sewerage rates levied by the utility are adequate to sustain its operation						Perception 2
The utility honours commitments to financial institutions						Perception 3
The utility has a good corporate image						Perception 4
The utility operates along sound commercial principles						Perception 5
The utility is a creditworthy organisation						Perception 6
The utility demonstrates a 'willingness-to-collect' to improve revenue						Perception 7
The utility values its assets and infrastructure investments						Perception 8
The utility is a well-managed organisation						Perception 9
The utility has a long-term strategic vision and mission for providing water and sewerage services to the country						Perception 10
The utility is content with the way things are						Perception 11
The utility is doing its best considering constraints						Perception 12
The utility operates within a well-regulated environment						Perception 13
The utility is committed to improving service access and delivery						Perception 14
The utility has the ability to address the water and sewerage needs of the country						Perception 15
The utility has a good track record for project conceptualisation and delivery						Perception 16
The utility has the full backing and support of government						Perception 17
The utility is independent of government control and intervention						Perception 18
The utility has a good public image						Perception 19
I am confident in the quality of services provided						Perception 20
Customers are loyal and supportive of the utility						Perception 21
The utility is vital to the country's socio-economic growth						Perception 22

4. Based on your professional perception of the local water and sanitation utility, what do you think about investment prospects in the sector?

Excellent Good Acceptable Doubtful Poor

Please support your answer.

5. Considering the following options and their likely impact, how would you then rate the investment prospects of the local water and sanitation sector?

Incentives for private investment	Excellent 5	Good 4	Acceptable 3	Doubtful 2	Poor 1
Issuing of infrastructure bonds for major projects					
Creation of a special infrastructure development fund					
Debt write-off of utility by government					
Use of credit enhancement mechanisms (e.g. guarantees, subsidies)					
Preferential financing for the sector to on-lend to local financial institutions					
Clear identification and separation of roles (e.g. regulation, operation)					
Tariffs adjusted to represent the true cost of service provision					
Government legislation to encourage and support private participation					
Institutional reform and sector restructuring to achieve utility management along corporate principles					
Preparation of well-structured capital investment and maintenance plans					
Targeted promotion of projects to investors					
Joint ventures between the utility and the private sector					
Use of service or management contracts to private entities (e.g. meter reading, bulk water supply, wastewater plant operation)					
Use of build, own, operate type arrangements with the private sector to develop new systems					
Use of long-term contracts (concessions) for the private management and operation of water and sewerage systems					
Some services merged with those of another utility – multi-utility formation					
Collaboration among Caribbean water and sewerage utilities (e.g. shared professional and technical expertise)					
Bundling of small- to medium-size projects to form economically and financially viable projects					
Merging small water and sewerage systems to form more viable systems					

6. What is the possible role of local financial institutions in the local water & sanitation sector?

7. What would it take for your organisation to become involved in the local water and sanitation sector?

Part C – Investment profile

8. Which category best describes your organisation? (Choose only one)

<input type="checkbox"/> Commercial bank	<input type="checkbox"/> Trust/Unit trust	<input type="checkbox"/> Pensions fund management
<input type="checkbox"/> Merchant bank	<input type="checkbox"/> Insurance Company	<input type="checkbox"/> Building society
<input type="checkbox"/> Development bank	<input type="checkbox"/> Securities broker	
<input type="checkbox"/> Other (please specify)		

9. What is the current approximate size of your investment portfolio²⁰⁹?

- Less than US\$10 Million
 US\$11 – 50 Million
 US\$51 – 100 Million
 US\$101 – 500 Million
 Greater than US\$501 Million

10. What percentage of this investment portfolio is linked to infrastructure²¹⁰?

- 0%
 1 – 5%
 6 – 10%
 11 – 15%
 16 – 20%
 Greater than 21%

11. What is the nature of your investments linked to infrastructure? (Select those that apply)

- Does not apply
 Loans and advances
 Equity _____
 Bonds
 Other (please specify) _____

End of questionnaire
Thank you

Would you like a copy of the report on the questionnaire results?
 Would you like your organisation's involvement to remain anonymous?

- Yes No
 Yes No

This questionnaire was completed by:

Name (optional): _____
 Position: _____
 Tel: _____
 E-mail: _____
 Date: _____

²⁰⁹ Including but not limited to public securities, private securities, foreign securities, loans and advances, local currency, foreign currency, real estate and other assets.

²¹⁰ Includes electricity, gas, roads, telecommunications, water and sanitation.

**Survey of locational determinants and
investment decision-making in the utilities sector**

General Guidance

The purpose of this survey is to obtain investors' perceptions about factors that impact on the choice of investment location, small-scale investment opportunities and investment decision-making in the utilities sector. Please indicate your response to close-ended questions and statements by placing a cross (x) in the space provided. Please return the completed questionnaire or address queries to:

Norline Martin
Water, Engineering and Development Centre (WEDC)
Loughborough University
Leicestershire LE11 3TU, UK
Email: N.A.Martin@lboro.ac.uk
Telephone: +44 (0) 1509 228527/2885
Fax: +44 (0) 1509 211079

Organisation Country

Part A – Investment profile

1. What category of investor is your organisation?

- Investing institution (e.g. investment bank, credit export agency)
 Multilateral/bilateral organisation
 Private operator/contractor
 Other (please specify)

2. Which utility sector(s) does your organisation and/or your clients invest in?

- Water and sanitation Telecommunications Electricity
 Gas Other (please specify)

3. What do you think about the investment potential of the following sectors?

	High	Average	Low
Water and sanitation			
Telecommunications			
Electricity			
Gas			

Part B - Investment decision-making

4. On a four-point scale with 4 representing the most important and 1 representing the least important, please indicate the extent to which your organisation *relies on the following sources for new investment information*:

Sources for new investment information	Most important 4	Important 3	Slightly important 2	Least important 1
Published information (e.g. advertisements, terms of reference)				
Host country government/country's utilities sector agencies				
Host country's investment promotion agency				
Your organisation's commercial network				
International organisations (e.g. World Bank, European Union)				
Specialist agencies and consultants				
Project sponsors (e.g. private operators, contractors)				

5. On a four-point scale with 4 representing the most important and 1 representing the least important, please indicate the extent to which your organisation **screens new investment proposals** based on the following factors:

Screening criteria	Most important 4	Important 3	Slightly important 2	Least important 1
Project size				
Nature of project (e.g. BOT, concession)				
Project location				
Available finance (e.g. multilateral loan, government guarantee)				
Available information				
Past experience (similar location/investment)				

Part C - Investment location assessment

6. On a four-point scale with 4 representing the most important and 1 representing the least important, please indicate the extent to which the following reasons have impacted on your **organisation's decision to invest in the utilities sector overseas**:

Reasons for investing abroad	Most important 4	Important 3	Slightly important 2	Least important 1
Financial/Economic				
Policy and financial support for privatisation strategy by international organisations (e.g. World Bank)				
Larger market growth opportunities/potential abroad				
Lower cost of doing business abroad				
Increasing political and economic stability in target markets				
Benefit of economies of scale and scope (utilise excess capacity e.g. managerial expertise)				
Ease of foreign market penetration				
Emergence of new markets				
General				
Fits business strategy				
Gain competitive advantage				
Information about opportunities abroad				
Approached by overseas governments/clients				

7. On a four-point scale with 4 representing a critical factor/deal breaker and 1 representing a non-factor, please respond to the following statements regarding **choice of investment destination**:

Factors regarding choice of investment destination	Critical factor 4	Major factor 3	Minor factor 2	Not a factor 1
Financial/Economic				
Good investment grade rating for long-term foreign exchange debt				
Achievement of standard utility performance indicators				
Track record of consumer payment discipline and enforcement				
Availability of credit enhancement or guarantee from government				
Transaction costs compared to size of investment				
Adequate market size to generate required revenue stream				

Positive market signals from similar locations/investments				
Potential for horizontal integration with other utility sectors (i.e. multi-utility operations)				
Political				
Administrative efficiency - short lead time to get necessary approvals				
History of government honouring macro- and microeconomic commitments				
Tenure and stability of elected officials in political process				
Independence of regulatory institution and processes from government interference				
Amount and quality of information available				

8. On a four-point scale with 4 representing a critical factor/deal breaker and 1 representing a non-factor, please respond to the following statements regarding **factors contributing to your best and worst investment experiences**.

Best Experience				Factors contributing to best and worst investment experiences	Worst Experience			
Critical factor	Major factor	Minor factor	Not a factor		Critical factor	Major factor	Minor factor	Not a factor
4	3	2	1		4	3	2	1
				Tariff levels and collection discipline adequate to meet cash flow needs				
				Government unresponsive to needs and timeframes of investors				
				Regulatory commitment sustained through long-term contract				
				Government did not meet its commitments of state enterprise performance and exchange conversion				
				Arbitrary regulatory process leading to unsatisfactory tariff adjustments and outcomes on disputes				
				Economic and political sustainability of the investment enhanced by a competitive selection process				
				Laws and contracts were enforced (e.g. disconnections)				
				Ability to exercise effective management and operational control over the investment				
				Amount and quality of information available				

9. What do you think about the investment potential of the following geographic regions?

	High	Average	Low
Africa			
Asia			
Europe			
Latin America & the Caribbean			
North America			
Oceania			

10. Please indicate the most frequent size of your investments.

Less than US\$10 million
 US\$11 to 50 million
 US\$51 to 100 million
 Greater than US\$101 million

11. Please indicate your degree of satisfaction with your smallest investment experience:

High degree of satisfaction
 Average satisfaction
 Low degree of satisfaction

12. On a four-point scale with 4 representing a critical factor and 1 representing a non-factor, please indicate the extent to which the following **factors affected your smallest investment experience**:

Factors affecting smallest investment experience	Critical factor	Major factor	Minor factor	Not a factor
	4	3	2	1
Small customer base				
High transaction costs compared to size of investment				
Diseconomies of scale and scope (e.g. delivery network, procurement, administrative costs)				
Higher cost of borrowing due to lower absolute size of financial transaction				
Appropriate technologies for size requirements				
Limited counterpart professional/technical capabilities				
Tariff inadequate for revenue generation				
Interference from government and/or state enterprise				
Greater overall risk at a smaller scale				

13. On a four-point scale with 4 representing the most favourable response and 1 representing the least favourable response, please respond to the following **options for improving small-scale investment opportunities**:

Options for improving small-scale investment opportunities	Strongly agree	Agree	Disagree	Strongly disagree
	4	3	2	1
Bundling of projects to form economically viable entities				
Horizontal integration of utilities (i.e. multi-utility operation)				
Use of financing options to reduce cost in terms of time and resources (e.g. pooled funds)				
Aggregated systems to increase revenue base				
Shared professional/technical expertise across projects				

14. What do you think about investment prospects in the Caribbean Region?

	Very Good	Good	Poor	Very Poor
Water and wastewater				
Telecommunications				
Electricity				

My organisation knows nothing about utilities sector investment prospects in the Caribbean

15. Has your organisation ever invested in the Caribbean Region? Yes No

If **yes**, please describe your investment experience in the Caribbean;

If **no**, please indicate why your organisation has not invested in the Caribbean:

End of questionnaire
Thank you

**Survey of locational determinants and investment promotion
in the Caribbean water and wastewater sector**

General Guidance

The purpose of this survey is to obtain an overview of Caribbean water utility managers' perceptions about factors that impact on the choice of investment location and strategies to attract private investment in the water and wastewater sector. Please indicate your response to close-ended questions and statements by placing a cross (x) in the space provided. Please return the completed questionnaire or address queries to:

Norline Martin
Water, Engineering and Development Centre (WEDC)
Loughborough University
Leicestershire LE11 3TU, UK
Email: N.A.Martin@lboro.ac.uk
Telephone: +44 (0) 1509 228527/2885
Fax: +44 (0) 1509 211079

Organisation Country

Part A – Sector profile

1. What is the scope of activity of the utility beyond water supply?

Water supply and:

No other activity Wastewater Electricity
 Telecommunications Other (please specify)

2. How would you classify the status of the following aspects of the water and wastewater sector in your country?

	Highly satisfactory	Satisfactory	Not satisfactory
General			
Population coverage			
Continuity of supply/service			
Water resource development/management			
Water and wastewater quality			
Rehabilitation and maintenance programme			
Physical assets (e.g. pumps, treatment plants)			
Unaccounted for water (UFW)			
Number and level of skilled professionals			
Number and frequency of customer complaints			
Performance of regulatory body			
Financial/Economic			
Government budget allocation			
Level of investment other than government			
Level of revenue recovery			
Tariff to recover operation and maintenance costs			
Long-term strategic planning			

3. Do you think additional investments are needed to improve the sector? Yes No
If **yes**, what aspect(s) of the sector are in need of additional investments?

Strengthening of institutional capacity Construction of new infrastructure
 Rehabilitation of existing infrastructure Other (please specify)

4. Has there been any private investment in the sector? Yes No
If **yes**, please indicate your degree of satisfaction with these private investments:

High degree of satisfaction Average satisfaction Low degree of satisfaction

If **no**, please indicate why you think this has not happened:

- | | |
|---|--|
| <input type="checkbox"/> Sector not in need of private investment | <input type="checkbox"/> Strong opposition to private sector involvement |
| <input type="checkbox"/> Private investors not interested in sector | <input type="checkbox"/> No success sourcing private investment |

5. Compared to the water and wastewater sector, how would you describe the investment potential of the following sectors in your country?

	Higher	Same	Lower
Telecommunications			
Electricity			
Gas			

Part B – Scale and scope assessment

6. On a four-point scale with 4 representing a critical factor/deal breaker and 1 representing a non-factor, please indicate the extent to which you think the following statements **determine investors' choice of investment destination**:

Factors regarding choice of investment destination	Critical factor	Major factor	Minor factor	Not a factor
	4	3	2	1
Financial/Economic				
Good investment grade rating for long-term foreign exchange debt				
Achievement of standard utility performance indicators				
Track record of consumer payment discipline and enforcement				
Availability of credit enhancement or guarantee from government				
Transaction costs compared to size of investment				
Adequate market size to generate required revenue stream				
Positive market signals from similar locations/investments				
Potential for horizontal integration with other utility sectors (i.e. multi-utility operation)				
Political				
Administrative efficiency – short lead time to get necessary approvals				
History of government honouring macro- and microeconomic commitments				
Tenure and stability of elected officials in political process				
Independence of regulatory institution and processes from government interference				
Amount and quality of information available				

7. **Considering the scale of water and wastewater investments in the Caribbean compared to similar investments elsewhere**, on a four-point scale with 4 representing a critical factor and 1 representing a non-factor, please indicate the extent to which you think the following **factors affect the investment experience**:

Factors affecting the investment experience	Critical factor	Major factor	Minor factor	Not a factor
	4	3	2	1
Small customer base				
High transaction costs compared to size of investment				
Diseconomies of scale and scope (e.g. delivery network, procurement, administrative costs)				
Higher cost of borrowing due to lower absolute size of financial transaction				
Appropriate technologies for size requirements				
Limited counterpart professional/technical capabilities				

Tariff inadequate for revenue generation				
Interference from government and/or state enterprise				
Greater overall risk at a smaller scale				

8. Do you think the Caribbean is disadvantaged by its small size with respect to attracting investment to the water and wastewater sector?

Yes No

9. On a four-point scale with 4 representing the most favourable response and 1 representing the least favourable response, please respond to the following **options for improving small-scale investment opportunities**:

Options for improving small-scale investment opportunities	Strongly agree 4	Agree 3	Disagree 2	Strongly disagree 1
Bundling of projects to form economically viable entities				
Horizontal integration of utilities (i.e. multi-utility operation)				
Use of financing options to reduce cost in terms of time and resources (e.g. pooled funds)				
Aggregated systems to increase revenue base				
Shared professional/technical expertise across projects				

10. For multi-utility operation, which other sector(s) do you think the water and wastewater sector could be partnered with?

Telecommunications Electricity Gas

11. On a four-point scale with 4 representing the most favourable response and 1 representing the least favourable response, please respond to the **following benefits of regional cooperation**:

Benefits of regional cooperation	Strongly agree 4	Agree 3	Disagree 2	Strongly disagree 1
Shared investment/transaction costs for capital intensive activities				
Pooled resources to promote and attract external funding through improved credibility				
Overcome capacity and/or capability constraints				
Increased bargaining power				
Increased potential for risk diversification				
Economies of scale to overcome limitations of small size				

12. On a four-point scale with 4 representing the most favourable response and 1 representing the least favourable response, please indicate the extent to which you think a **regional approach could be applied to aspects of the water and wastewater sector**.

Regional approach to aspects of the water and wastewater sector	Strongly agree 4	Agree 3	Disagree 2	Strongly disagree 1
Investment promotion and sourcing				
Standardisation of service quality/performance indicators				
Support services (e.g. billing, accounting)				
Professional services (e.g. arbitration, project management)				
Regulation				
Procurement of material/equipment				
Technical training				

Operations and maintenance				
Research/project development (e.g. appropriate technologies)				
Exchange of information/experiences				

13. On a four-point scale with 4 representing a critical factor and 1 representing a non-factor, please indicate the extent to which you think the following factors *could impact on a regional approach to the water and wastewater sector in the Caribbean*:

Factors impacting on a regional approach to the water and wastewater sector	Critical factor	Major factor	Minor factor	Not a factor
	4	3	2	1
Different national interests/priorities/agenda				
Difficulty in enforcing regional agreements				
Inadequate regional institutional structure				
Sustained political support and respect for regional institution				
Satisfactory allocation of investment				
Support from local stakeholders				
Funding for regional institution dependent on national governments				
National rivalry and competition				

14. If a regional approach to pursuing opportunities for increasing the investment potential of the water and wastewater sector was adopted, *which island(s) do you think could become likely partners with your country?*

<input type="checkbox"/> Antigua & Barbuda	<input type="checkbox"/> Barbados	<input type="checkbox"/> Dominica	<input type="checkbox"/> Grenada
<input type="checkbox"/> Jamaica	<input type="checkbox"/> St. Kitts & Nevis	<input type="checkbox"/> St. Lucia	<input type="checkbox"/> St. Vincent
<input type="checkbox"/> Trinidad & Tobago	<input type="checkbox"/> Other (please specify)	<input type="text"/>	

15. On a four-point scale with 4 representing the most favourable response and 1 representing the least favourable response, please indicate *the basis for your selection(s) to question 15*:

Basis for regional grouping	Strongly agree	Agree	Disagree	Strongly disagree
	4	3	2	1
Similar issues/problems/challenges to be addressed				
Strong history of cooperation				
Already working together on similar issues				
Geographical proximity				
Level of development of the sector				

Part C - Investment promotion

16. Who has responsibility for sourcing investment for the water and wastewater sector?

<input type="checkbox"/> Water utility	<input type="checkbox"/> Government water ministry
<input type="checkbox"/> Government finance ministry	<input type="checkbox"/> Development/investment promotion agency
<input type="checkbox"/> Other (please specify)	<input type="text"/>

17. Do you think a promotion strategy specifically targeted at sourcing investment is necessary for the water and wastewater sector?

Yes No

18. On a four-point scale with 4 representing the most important and 1 representing the least important, please indicate the extent to which you think **a promotion strategy for the water and wastewater sector should focus on the following:**

Focus of promotion strategy	Most important 4	Important 3	Slightly important 2	Least important 1
Image-building for the sector (i.e. improving country's/region's image within the investment community as a favourable location for investment)				
Investment generation (i.e. targeting specific investors with a view to creating investment leads)				
Pre and post investment service (i.e. providing services to prospective and current investors to assist in the analysis of investment decisions, investment facilitation and investment maintenance)				

End of questionnaire
Thank you

Would you like a copy of the report on the questionnaire results?
Would you like your organisation's involvement to remain anonymous?

<input type="checkbox"/>	Yes	<input type="checkbox"/>	No
<input type="checkbox"/>	Yes	<input type="checkbox"/>	No

This questionnaire was completed by:

Name:	<input type="text"/>		
Position:	<input type="text"/>		
Tel:	<input type="text"/>	Fax:	<input type="text"/>
E-mail:	<input type="text"/>		
Date:	<input type="text"/>		

Cover letter for Survey A



Date

Respondent's name
Respondent's job title
Company name
Address

Salutation

Re: Survey of local financial institutions: Investment decision-making in the water and sanitation sector

I am writing to ask for your assistance in conducting a survey aimed at obtaining the attitude of local banking and non-banking private financial institutions to the investment prospects of the water and sanitation sector. The survey to be administered in Jamaica, Barbados and Trinidad and Tobago forms part of an independent study towards a PhD in Development Engineering at Loughborough University in the United Kingdom. Your organisation was randomly selected from a list of registered local financial institutions. In keeping with international development literature, you are considered a potential source of private financing for water and sanitation infrastructure.

I appreciate that most local financial institutions have limited investment experience in water and sanitation which has traditionally been the responsibility of government. Through this survey, I hope to benefit from your organisation's general investment experience and the possible application of this know-how to water and sanitation. The main benefit of participation is access to the final report on local and Caribbean investment attitudes to water and sanitation-related issues, at no cost to your organisation save for the short time required for completion.



I would be extremely grateful if you or an appropriate colleague will consent to spend about 15 minutes completing the questionnaire *as you enjoy a cup of England's finest*. Please note that the information requested will be treated with the strictest confidence and used only for academic purposes. Verification of my research status may be obtained by contacting my supervisor, Dr. M. Sohail at M.Sohail@lboro.ac.uk or at +44 (0)1509-222890/222885. Completed questionnaires will be picked up in a week's time. Further queries may be addressed to N.A.Martin@lboro.ac.uk.

I hope that my research will be of interest to your organisation and my request favourably considered.

Yours sincerely and thanks in advance,

Norline Martin

Water, Engineering and Development Centre (WEDC)
Civil and Building Engineering, Loughborough University
Leicestershire LE11 3TU, UK
Telephone:(0) 1509 228527/222885
Fax: (0) 1509 211079
Email: N.A.Martin@lboro.ac.uk

Cover letter for Survey B	Cover letter for Survey C
	
Date	Date
Respondent's name Respondent's job title Company name Address	Respondent's name Respondent's job title Company name Address
Salutation	Salutation
Re: Survey of locational determinants and investment decision-making in the utilities sector	Re: Survey of locational determinants and the potential for regional cooperation in the Caribbean water and sanitation sector
Following my recent contact with your organisation through (contact person), I am writing to ask for your assistance in conducting a survey aimed at capturing the experiences and/or views of global investors on key factors that impact on the choice of investment location, small-scale investment opportunities and investment decision-making in the utilities sector. This is a crucial part of my PhD research programme in the Civil and Building Engineering department at Loughborough University which is motivated in part by my experience in the water and sanitation sector in the Caribbean.	I am writing to ask for your assistance in conducting a survey aimed at capturing the experiences and/or views of Caribbean water utility managers on key factors that impact on the choice of investment location and strategies to attract private investment in the Caribbean water and wastewater sector. A brief introduction has already been made on my behalf by Ms. Marian Stephen at the CWWA Secretariat in Trinidad. This is a crucial part of my PhD research programme in the Civil and Building Engineering department at Loughborough University which is motivated in part by my experience in the water and sanitation sector in Jamaica.
The benefits of participation to your organisation include:	The benefits of participation to your organisation include:
<ol style="list-style-type: none"> 1. Access to the final report which could help your organisation to develop future strategies with respect to investment destination in the sector; 2. Access to an up-to-date overview of clients' and investors' attitudes to these investments at no cost to your organisation save for the short time required for completion; and 3. Expression of your organisation's valued opinion and experience to existing and potential clients in the Caribbean Region. 	<ol style="list-style-type: none"> 1. Access to the final report which could help your organisation to develop future strategies with respect to attracting investment to the sector; and 2. Access to an up-to-date overview of investors' and your Caribbean counterparts' attitudes to these investments at no cost to your organisation save for the short time required for completion.
The questionnaire sent as an e-mail attachment is divided into three parts:	The questionnaire sent as an e-mail attachment is divided into three parts:
<p style="margin-left: 40px;">Part A – Investment profile of your organisation Part B – Investment decision-making Part C – investment location assessment</p>	<p style="margin-left: 40px;">Part A – Sector profile Part B – Scale and scope assessment Part C – Investment promotion</p>
I would be extremely grateful if you or an appropriate colleague would consent to spend about 20 minutes completing the questionnaire. Please note that the information requested will be treated with the strictest confidence and used only for academic purposes. Please return the completed questionnaire and/or address further queries to N.A.Martin@lboro.ac.uk or at 01509-228527/222885. Verification of my researcher status may be obtained by contacting my supervisor, Dr. M. Sohail at M.Sohail@lboro.ac.uk or at 01509-222890/222885.	I would be extremely grateful if you and/or appropriate colleagues would consent to spend about 20 minutes completing the questionnaire. Please note that the information requested will be treated with the strictest confidence and used only for academic purposes. Please return the completed questionnaire and/or address further queries to N.A.Martin@lboro.ac.uk . Verification of my researcher status may be obtained by contacting my supervisor, Dr. M. Sohail at M.Sohail@lboro.ac.uk or at +44 (0) 1509-222890/222885.
I hope that my research will be of interest to your organisation and my request favourably considered.	I hope that my research will be of interest to your organisation and my request favourably considered.
Yours sincerely and thanks in advance,	Yours sincerely and thanks in advance,
Norline Martin	Norline Martin
Water, Engineering and Development Centre (WEDC) Civil and Building Engineering, Loughborough University Leicestershire LE11 3TU, UK Telephone: (0) 1509 228527/222885 Fax: (0) 1509 211079 Email: N.A.Martin@lboro.ac.uk	Water, Engineering and Development Centre (WEDC) Civil and Building Engineering, Loughborough University Leicestershire LE11 3TU, UK Telephone: (0) 1509 228527/222885 Fax: (0) 1509 211079 Email: N.A.Martin@lboro.ac.uk

Interview guides for ...

Water sector officials

1. Compared to other utility services, how would you describe the investment prospects of the water and wastewater sector in your country?
2. What are the local needs and context of the water and wastewater sector in your country?
3. Considering these local needs/context, to what extent do you think the following PSP options (concession, BOT and divestiture) appropriate for the water and wastewater sector in your country?
4. What and how has been your experience with private investment in the water and wastewater sector?
5. What type of economic, political, regulatory and social environment do you think is necessary to attract private investment to the water and wastewater sector?
6. How does your country's investment climate attract and/or deter private investment in the water and wastewater sector?
7. How involved is the water utility in investment promotion for the sector?
8. What more can be done to promote the Caribbean as an investment location for water and wastewater projects?
9. To what extent is size an issue for the Caribbean with respect to attracting private investment to the water and wastewater sector?
10. What options do you think exist for improving small-scale investment opportunities?
11. Regional cooperation has been used as a strategic response to overcome size constraints. To what extent can regional cooperation in the following areas (investment sourcing, standardisation, professional expertise and regulation) improve opportunities for investment in the Caribbean water and wastewater sector?
12. How would regional cooperation in the sector be effected?
13. What challenges do you envision for regional cooperation in the Caribbean water and wastewater sector?

Utility regulators

1. What is the legal/regulatory framework within which your organisation operates?
2. What is your organisation's professional responsibility to the water utility, private investors/operators, government/political interests and consumers?
3. What special considerations if any are made when determining the pricing structure for water and sewerage rates in your country?
4. What type of regulatory framework do you think is necessary to encourage and sustain private investment in the water and wastewater sector?
5. How does your current regulatory framework attract and/or deter private investment in the water and wastewater sector?
6. What and how has been your experience with private investment in the water sector?
7. How would (has) your organisation's role change(d) with the introduction of private investment in your country's water sector?
8. To what extent is size an issue in the scope/effectiveness of utility regulation in the Caribbean?
9. How can regional cooperation improve the regulatory capacity/framework of the Caribbean water and wastewater sector?
10. What challenges would you envision for a regional approach to water utility regulation in the Caribbean?

Private service providers

1. What was your motivation to become a private operator in the sector?
2. How do you perceive the investment prospects of the sector? What are your expectations?
3. Describe the 'journey' or process that you had to go through to become established as a private service provider.
4. What more do you think should be done to encourage other private operators like yourself to enter the sector?
5. What options for private sector participation do you think are viable considering the local environment?
6. Describe your operations – customer base, production, capital/operational costs, service area, tariff, revenue collection, UFW, etc.
7. What is your source of financing?
8. How facilitative were the water utility, regulator, government, water ministry?
9. Please comment on the regulatory framework for private operators in the sector.
10. What are your long-term plans for the sector?
11. What is the scope for local and foreign private sector participation given the local context?

Interview guides for ...

Local financial institutions

1. What are the investment prospects for the water and wastewater sector?
2. What banking products and services are available to the water and wastewater sector?
3. What factors impact on your decision to provide financing for water and wastewater projects?
4. Does the bank make any distinction in its lending policies for (a) rural vs. urban supply (b) public vs. private service providers (c) local private vs. international private service providers?
5. What are (were) the positive and negative aspects of your experience in providing finance to the local water and wastewater sector?
6. What improvements if any are needed to encourage local financial institutions to become more involved in the water and wastewater sector?
7. What opportunities do you see for improving bank lending to the water and wastewater sector?
8. What do you see as the future for financing the water and wastewater sector?

List of interviewees

Date	Position	Location
March 15, 2004	Professor of International Business of University of the West Indies	Jamaica
March 26, 2004	Project Manager of NWC	Jamaica
March 28, 2004	VP, Corporate and Strategic Planning of NWC	Jamaica
March 30, 2004	GM, Systems Development of NWC	Jamaica
March 31, 2004	NWC Board Commissioner	Jamaica
April 1, 2004	Project Manager of Company x	Jamaica
April 5, 2004	Chief Technical Director of MOWH	Jamaica
April 5, 2004	Chief Engineer and Senior VP of NWC	Jamaica
April 5, 2004	Community Development and Gender Specialist of MOWH	Jamaica
April 6, 2004	President of NWC	Jamaica
April 6, 2004	Chairman of National Contracts Committee	Jamaica
April 8, 2004	Director General of OUR	Jamaica
April 8, 2004	GM, Special Projects and Public-Private Sector Partnerships of NWC	Jamaica
April 15, 2004	Division Chief, Project Supervision Division of Caribbean Development Bank	Barbados
April 15, 2004	Operations Officer, Project Supervision Division of CDB	Barbados
April 19, 2004	Senior Petroleum Engineer of MOEPU	Barbados
April 20, 2004	Manager, Engineering of BWA	Barbados
April 22, 2004	Financial Analyst of FTC	Barbados
April 22, 2004	Director of Ionics Freshwater Ltd.	Barbados
April 23, 2004	Project Manager, West Coast Sewerage Project Unit of BWA	Barbados
April 27, 2004	General Manager of BWA	Barbados
April 30, 2004	Head, Action Plan Unit of WASA	Trinidad
May 4, 2004	Chief Executive Officer of WASA	Trinidad
May 4, 2004	GM, Business Services of WASA	Trinidad
May 4, 2004	GM, Operations of WASA	Trinidad
May 4, 2004	System Manager, Special Projects in the Office of the CEO of WASA	Trinidad
May 4, 2004	Deputy GM, Corporate Services of WASA	Trinidad
May 4, 2004	Chief Operating Officer of Water for the People (NGO)	Trinidad
May 5, 2004	Regional Director of Carillion (Caribbean) Ltd.	Trinidad
May 5, 2004	GM of the Desalination Company of Trinidad and Tobago	Trinidad
May 6, 2004	Executive Director of RIC	Trinidad
May 6, 2004	Senior Investment Officer of International Finance Corporation	Trinidad
June 10, 2004	Business Development Manager of Severn Trent Water International	UK
July 29, 2004	Assistant GM, Corporate Banking of Scotiabank TT	Trinidad
August 26, 2004	Director, Corporate Division of FINCOR	Trinidad
January 10, 2005	Assistant GM, Corporate Banking Centre of RBTT Bank Jamaica Ltd.	Jamaica
January 19, 2005	MD of Dairy Spring Ltd.	Jamaica
January 20, 2005	Senior Project Engineer of Carib Engineering Corporation Ltd.	Jamaica
January 20, 2005	Programme Director, Rural Water Programme of MOWH	Jamaica
January 24, 2005	Project Manager, External Cooperation of Planning Institute of Jamaica	Jamaica
February 1, 2005	Project Manager, Capital Works of BWA	Barbados
February 2, 2005	Commercial Banking Manager of Scotiabank	Barbados
February 4, 2005	MD of New Water Inc.	Barbados
February 9, 2005	Senior Trader of Caribbean Money Markey Brokers Ltd.	Barbados
February 10, 2005	Relationship Manager, Corporate Credit of Barbados National Bank	Barbados
February 15, 2005	GM of Barbados National Bank Finance and Trust Corporation	Barbados
February 24, 2005	WASA Standards Engineer of RIC	Trinidad
March 2, 2005	Registrar, National Institute of Higher Education	Trinidad
March 3, 2005	MD of Lee Young and Partners	Trinidad
March 7, 2005	Manager, Structured Finance of FINCOR	Trinidad
March 22, 2005	Corporate Manager, FirstCaribbean International Bank	Jamaica
March 22, 2005	MD of Can-Cara Environments Ltd.	Jamaica

Sample interview transcript

Chief Technical Director, Ministry of Water & Housing – Jamaica (April 5, 2004)

Q. Compared to other utilities and infrastructure in general, how would you describe the investment prospects of the water and wastewater sector in Jamaica?

A. Simultaneously - very good and very bad. Very good from the standpoint of our needs – we clearly have needs in water and wastewater. We need probably more than US\$100/200 M worth of investments – so the need is there. The bad thing though is that water is necessarily not that attractive, especially when it comes onto wastewater it is more of a public good, so the returns are not there and people a little bit wary of investing in water and sewerage for those very reasons. In telecommunications, there are prospects and a lot of investments are going there because the returns are there. In water even though there is probably a greater need we don't find a lot of people coming here because (1) the whole perception of water as a social good (2) the ability of people to pay and people looking at water as a right. So the attractiveness of the investment is not there even though the need is there. In that regard water is probably worse off than electricity and telecom because you do not get back those types of returns.

Q. What are the local needs and context of the water and wastewater sector in Jamaica?

A. We have a plan and our plan by policy is to have water accessible to every community in Jamaica by 2010 – accessible meaning not necessarily piped water, so we have to use a number of non-conventional solutions – rainwater harvesting, wayside tank, etc. In irrigation, we have a National Irrigation Development Plan that proposes some 51 projects to put a number of acreages under irrigation. The projects range from large scale to small size to rehabilitation projects. In wastewater, that is where our needs are greatest right now. Our plan is to put a central sewerage system in every parish capital and in some of the major towns by 2020. So the needs are there. The context is what will give a little problem. For instance, in potable water where the needs are basically in those areas on the north coast which are not now served – virgin areas. We have a project going on now to cover the strip from Lucea to Montego Bay by some French investors, we are now looking at a project from Falmouth to Duncans and there is also the area from Ocho Rios to Port Maria. Those are huge developmental projects for which a large number of foreign investors will come if they can get government guarantee – so I don't see any problems getting investment for those areas because the potential is there in terms of tourism development to ensure the payback over time.

Where the real need is now in the domestic water sector is in the rural areas and that is where we have a problem. Our rural areas are very challenging terrain so there is an excessive pumping cost, they are not always near to sources of water so you have to transmit water over long distances and the population density is very low which does not auger well for payback. All of those factors combined sort of render rural water unattractive and what we have to do is tailor solutions to fit the conditions. So what we want are not the conventional pipe systems in some of the rural areas because we will never get payback for them and they cannot be sustainable – what we need are more generic systems tailored to meet the needs of those communities. So we are experimenting with rainwater harvesting, entombment and things that are community-driven and managed. The challenge now is how do you get private investment in those sorts of systems that are not conventional, and that's where the local context comes in with respect to rural water.

The challenge in wastewater is that we are now attempting to put in central systems in areas that are already populated, having to deal with dislocation and to get people to connect – from our experience with our 3 new systems on the north coast, people just don't connect and you literally have to borrow money and give them to connect to the system which does not auger well again for an investor who would want this to recoup his money. I don't know how feasible it is to ask people to pay back the real cost in terms of capital and operational maintenance costs for a central sewerage system because it is just very expensive but it is something you have to do for environmental reasons. So the challenge there is how to marry private funds with public funds to see how you can get a solution that satisfies everybody.

Finally, we also have a big need in terms of rehabilitating existing systems in NWC. That is where I think the prospects are greatest because where as the current tariffs don't make any provisions for capital recovery which does not auger well for private investment, they do make provisions for rehabilitating existing systems. I think private people should come in and cooperate with the NWC, make the investments to fix the system to bring down unaccounted for water, to improve efficiency, to replace pumps and so on and to repair sewerage systems, and the extent to which those investments translate to greater efficiencies, then they reap some of the efficiency gains and I think that's a model we should pursue in respect of rehabilitation of systems.

Q. Considering these local needs/context, to what extent do you think the following PSP options (concession, BOT and divestiture) appropriate for the water and wastewater sector in Jamaica?

A. In terms of concession, what I have just alluded to I think can work – either a private investor could get a section of the country, they make the necessary investments to expand the infrastructure, coverage and to rehabilitate what currently exists and they reap whatever benefits accrue from those investments through the tariffs. I think it would be good from 2 standpoints (1) they would have been making the investments so that they free-up the government to make those investments that other areas so that there would be less demand from us in terms of up-front investments in those areas, and (2) when you have a concession running along side a national utility like the NWC, one could compare and see where management makes a difference. The problem with that is that I think there is so sort of attitude problem in terms of concessions existing within the NWC itself. I don't know that the management of NWC is at a point where they would be amenable to that type of intervention and that is the greatest challenge in that regard. In terms of BOT etc., that is possible and I think probably is the most convenient way of having private sector investment because there is no question as to ownership of existing facilities – my understanding is that BOT and BOO are basically added capacity and those guys would not interface with the final customer. The challenge is that when you buy water in bulk that has been developed by private investors, most times the state of our infrastructure is such that we cannot take that water and efficiently distribute it – so then you buy water and then have it leak out. Also most private sector people are most comfortable with types of BOT because they don't want to face the risk of interfacing with the customer. Divestiture for us is out of the question (chuckles) – it is a policy that we have no interest in divesting what already exists. What we are doing people can come into virgin areas and operate as utilities but what exists we are committed to reforming the NWC and making them more efficient, either by themselves or in corporation with other private sectors by whatever means – outsourcing, management contracts, concessions perhaps, but the existing assets will remain with the government.

Q. What and how has been your experience with private investment in the water and wastewater sector?

A. Disappointing – we have been inviting private sector investment over the last 6 years, and when I say we have been inviting, not just merely getting up and saying welcome, but concrete things. We have an independent body in place by legislation which is the Water Resources Authority that allocates the resource such that no private investor can come in a worry as to whether or not they will have access to the resource – there is a fair and objective methodology in terms of allocating the resource which I think would be a prerequisite for private sector investment. We also have an independent economic regulator, the OUR which sets rates independent of the political directorate which in and of itself should be an incentive for private sector involvement. We have amended the NWC ACT because formerly the NWC had the power to licence other operators. We have removed that because that is an inherent conflict of interest. We are now working as we speak with a new legislation that is with the chief parliamentary council being drafted (cabinet has okayed it already) called the Water and Sewerage Services Act that establishes a licensing regime for the sector. So under that act any private investor local or from overseas, can in fact come if they identify an area that has a need for water supply and sewerage services, they can apply for a licence from the OUR and get that licence to operate like a utility along side the NWC.

So I think in terms of legislation and institutional development, we have done all that is required of us to have private sector investment a reality. However, that has not been the case because what we have, we are flooded with all kinds of proposals from private people. Essentially, every one of them asks for 3 things (1) government guarantee and (2) no interface with the customer (3) and they want exclusive relationships. So they will come and say that they want to put a water scheme in Port Maria but I don't want to compete with other private sector persons, I want it to be an exclusive deal. So you don't know whether or not you are getting the best in terms of price. They want a government guarantee that means the risk remains with the public sector and they are only interested in selling the NWC water, they don't want to face the risk of going to the customer. So it has been disappointing. We now have the French on the north coast - that is the first sort of a real private sector involvement in the sector. But then when you look at it, it is not a 'real' private sector thing – they raise the funds but with a government guarantee, they are undertaking the construction of the project and of course they will sell the water to NWC to be paid back over time. What I want to see is a real transfer of risk from the public to the private and that is what I would call real private sector investment.

Q. What type of economic, political, regulatory, and social environment do you think is necessary to attract private investment to the water and wastewater sector?

A. I have just described what we have done and those turn out not to be sufficient. We have done the institutional reform where we have an independent regulator for tariff and also for the water resources and we have done legislative changes in terms of the NWC Act being amended and the new

Act which we are working on. I think though something that we overlook sometimes in respect of private sector is really the changing of the attitude of the private sector itself. In Jamaica for instance even though there is this enormous opportunity for investment in the water sector, we find that our banks are very conservative and I don't know if that has to do with the many alternatives they have to earn money, for certainly is you can buy government paper and earn money, why would you want to take on all the risks to come into the water sector. I don't think what we have done also necessary is sufficient. What is now necessary is to some how nurse our local financial sector which when you look at their balance sheet have tons of money. How do you get them to put those monies in the sector? I don't know, probably we need to sit down and talk to them and find out what would satisfy them. In recent times the USAID came up with this idea of providing guarantees to local banks. If a bank is going to lend a million dollars to a private person who wants to put up a water scheme, I mean interest rates in this country are very high, you cannot invest in the water sector at 20%+, it just can't work and banks want back their money in 5 years. I think what we need to do is for the government to borrow for example, Japanese 1% money and lend it the private sector, to banks, so that by the time the money reaches the people who want to invest in the water sector, it is probably at 5%. Otherwise we will never move investment in this country.

Q. You have touched on question 6 looking at the investment climate and how this may attract or deter private investment in the sector. How involved is the water utility in investment promotion for the sector? And here you can include what the MOWH is doing as well.

A. We are very involved. The truth is one of the problems is that we take a more reactive stance in other words, we speak in general terms that we need investment and people come in with proposals and we react to them and we waste a lot of time this way for as I mentioned before, invariably these people come and want guarantees and exclusive relationships, etc. I think we need to go one step further where we actually define what we need and put out requests, that is what has been lacking. So we speak in general terms but have not been proactive with it. For instance look at Harbour View and operation pride projects in Bull Bay. I believe that the density is there that if a private investor comes in, builds a new plant and connects everybody, even from the existing tariff, they can make a return. But we don't go out and request a proposal for Harbour View, we simply sit down and everybody comes and puts a proposal and then we say that is not suitable and invariably when people come, they are coming with their interests in mind. We have to define what it is we want and put down the parameters and let people present us proposals competitively. The ministry is here saying something but the change of attitude that is required in the utility is not there. We don't put our proposal for NWC for Harbour View or wherever else is their thing and that is what we really need to do, to have the change of attitude inside the utility itself where they say what are our needs in terms of rehabilitation, expansion and then you put it out there. Even the French that we now have, that is something that was initiated by them – they did the Lucea/Negril project which was a normal construction project funded by the Japanese and there was a good relationship and they said okay can we raise funds to do this one for you? And we said yes – we found it acceptable. We have to package what we want and sell to them.

Q. What more can be done to promote the Caribbean as an investment location for water and wastewater projects?

A. Essentially what I have just said – it starts with a definition of what is required rather than speaking in general terms. For instance, the whole thing about central sewerage, I don't know how it is in other countries but I'm sure that that is suppose to be a sore point all over the Caribbean. I mean if Jamaica has a problem, I would suspect that those people would have a bigger problem. These islands are just too small to have anything less than proper centralised sewerage systems because we depend upon the quality of our coastal water for our survival in terms of tourism. I think that is something we need to wake up and start looking into very seriously and perhaps we should do it as a Caribbean. Part of the thing with us is that our projects are so small in relative terms that they are not always attractive for the private man because the transaction cost alone would eat up a significant amount of the investment, so I don't know the extent to which countries can combine and have 2 or 3 projects funded under one banner – a sewerage scheme in Kingston, one in Barbados, or something like that so that the transaction fee is spread. Also, one of things that is required, I blame us that we don't package our things and go out there, but the reason why we don't it is that we don't have any notion as to the feasibility. So if we could have a block of funds dedicated to doing feasibility and we do that feasibility, it could turn out that most of our projects are feasible and if we establish that in feasibility studies, we can now go out and say, "Hi, this is something that is attractive and I am speaking on the basis of fact, from an informed position." We don't have that.

Q. Well, I think you have touched on question 9 with respect to size and a little on 10, if you could elaborate on how size is manifested in transaction costs, professional/technical capability, cost of borrowing and revenue general potential.

A. Well, transaction costs – people who are involved in project financing are not looking for US\$2 M projects because transaction costs are fairly standard. If you are doing contract documentation for a US\$10 M project, chances are it is the same amount you will have to pay your lawyer as a US\$1 M project. So then, the bigger the project, the smaller the proportion of transaction cost to the entire thing and it renders the project a little bit more feasible. So that is the problem with us – our projects are typically small because you are talking about a 1 million or 2 million gallon sewage plant – there are countries that need 10 million gallon sewage plants, it's like a joke. Professional and technical capacity, I don't think we have a problem here in Jamaica because I think you would agree that we have a good cadre of professionals that know what is to be done. What beats us more in terms of our people is the mindsets and attitudes more than the concrete technical capability. The cost of borrowing is a factor because the truth is that we always have to look outside our shores for investment dollars because borrowing money in Jamaica at 20/30% is not on for infrastructure projects and the irony of the whole thing is that a lot of our banks – NCB, BNS, RBTT – they have a lot of money sitting down and not doing anything. Revenue generation potential – that is a problem because where population densities are low, there is a definite problem and I think the investment that will payoff very quickly are those that will have to do with rehabilitation where you can reap efficiency gains and share it with the investor and in the tourist areas where we know that development will come and cities where the population is there, but rural water that's the biggest challenge.

Q. What options do you think exist for improving small-scale investment opportunities?

A. It all comes back to money – it happens in Jamaica, I don't know the extent to which it happens in other Caribbean countries. The truth is water and wastewater are not things you can leave entirely to the private sector because of the positive externalities government has to make a contribution. The question is if the government has \$50 M to spend on water, how should it spend it – should it go out there and do 1 single project or use it to leverage financing from elsewhere – that is where I think we should begin thinking. For instance, we are saying that rural water may be unattractive but suppose there is a man who is willing and goes to a certain community and when he does his assessment to put a system in say Wait-a-bit will cost \$20 M. I can only recover \$15 M over time based on the existing tariff and the population density. I think that government should give that man the \$5 M to over his debt rather than directly investing through NWC where the project takes 20 years to implement and at the end of the 20 years the cost has gone up multiplefold. Although water is unattractive, there are creative ways to marry public and private funds to make the whole thing more attractive and I think what government should do is to move away from the direct investment – those huge budgets where you invest millions and say “Private sector, you take the lead and where there is a gap we will fill it.”

Q. Regional cooperation has been used as a strategic response to overcoming size constraints. To what extent can regional cooperation in the following areas (investment sourcing, standardisation, professional expertise and regulation) improve opportunities for investment in the Caribbean water and wastewater sector?

A. We have this thing called the CWWA. I don't see any reason why in that forum you can't organise a regional thing where everybody says, “This is my portfolio of projects and so on.” It would not cost any extra and rather than going there and listening to papers, that could be going on simultaneously, because I don't see us going to New York and doing that. Caribbean embassies abroad right in Washington can come together and put on these things in terms of promotion.

Q. What about standardisation of service, performance indicators, professional expertise?

A. Well I think all of those can be achieved through cooperation with institutions. For example in Jamaica we are a little ahead in terms of institutional development (OUR, WRA, etc) and I don't see any reason why we can't cooperate even within the ambit of the CWWA in terms of sharing information and standards, etc. We have done that successfully with the Bureau of Standards and other standard organisations in the Caribbean. I don't know that we do enough of that in the water sector. I don't know for instance if there is a forum where a WASA, NWC and BWA come together and share these things – there isn't, and this is not difficult to do with e-mails and those sorts of things. Same thing with professional expertise - we have an investor talking about desalination. They did a project with Trinidad and one in Barbados – independently and neither is happy for they get into this deal and find out that when everything is said and done, the cost is escalating. Now when we came to do ours someone said, “Wait a minute, let us talk to hear from Barbados what is happening.” When we heard the nightmare that they were going through we just stopped the thing. So there is nothing to stop us from sharing information and sometime you have a contractor that does badly in Jamaica and goes to Barbados and does the same thing because we just exist independently of each other. We can share information especially in terms of negotiation strategy.

Q. In terms of say regulation and procurement?

A. Again, I don't know, we have to start thinking in unconventional ways when we have problems. In recent times in Jamaica for instance we have been buying pipes from China – good quality pipes at better prices. There is nothing that says that 2 or 3 Caribbean water utilities can't come together and make a big order because, say in St. Vincent where they may not need not much pipes so it would not make sense to go to China and just by US\$2 M worth of pipes for a small country like that but if you pool it there may be tremendous benefits.

Q. How would regional cooperation in the sector be effected?

A. There has to be some kind of regional structure for as I said before, we don't know what is happening elsewhere and I think we all have common problems. An attempt is now being made to form a Caribbean Water Partnership – I am hoping that that type of forum will lend itself to some of these things we are talking about. I hope it is not just a talk-shop where you go and present papers every year but where you can have joint promotion, exchange of ideas, and even joint projects. When you go to some of these international conferences the people in SE Asia who are as poor as us, probably a little bit bigger in population – they have whole regional institutions that are devoted exclusively to putting together proposals, to lobby and get funds. In the Caribbean, that is lacking because the truth is that if you have a country with 60,000 people, that's not a viable state in my view, so you would not have people to go to these places where there are benefits to be derived. That is what a regional thing could do for you. Even within the UN body, the funds that are available at different international forum, you find that most of it goes to the Latin Americans and the Asians because they make their presence felt – they come with their proposals and have joint projects. We are very loose when it comes on to that and I think those are some of the things that this Caribbean Water Partnership can address. Nobody stops us from making our presence felt as a regional organisation and I think that institutions like CWWA, rather than coming together and just presenting papers, these are some of the things we must engage our minds with, so I am hoping that this CWP is not just one of those things that you go every year and cool out but really take on these kinds of the challenges and present regional projects for funding. There is one now for instance in water resources management – a regional project that has to do with saline intrusion in Jamaica, Barbados and Antigua. We need more of these kinds of things because largely our problems are more or less the same.

Q. What challenges do you envision for regional cooperation in the Caribbean water and wastewater sector?

A. Somebody has to take the leadership initiative and sometimes I feel there is an inherent distrust between some of the bigger islands and the smaller ones. The smaller islands tend to bond together. We Jamaicans tend to look north instead of down especially since we have more developed institutions. Consider an institution like xxx which is suppose to be a regional institution, you wonder sometimes if they understand their mandate. You go to these international places and you see xxx and them and it's like they are only answerable to himself and his little team and nothing is disseminated – you don't know who they speak for and people go to these conferences as if they are going in their personal capacity. People really need to understand what a regional mandate is and be accountable, because institutions exist but they don't have any mandate from the region so they operate more like private individuals. You have a guy called xxx – everywhere you go you see him and who he reports to you don't know. You keep seeing the same faces everywhere you go and you wonder who do these guys report to? I went to Geneva in December - this World Water and Sanitation Collaboration Council, and when we were there I hear people say that they are the national coordinator for this WASH promotion – World Water Supply and Sanitation Collaborative Council based in Geneva – they claim that they don't deal with governments just with private and NGOs and they are promoting this water sanitation and hygiene. They don't have funds but they are just trying to build awareness and form alliances. I hear people stand up and say, "I am the national coordinator." And I say, "Who is your constituency, where do you get your legitimacy from?" And these guys just raise some money and go on these trips and claim that they speak for us but they don't speak for anybody. They don't have a mandate or a constituency and that is what is beating Caribbean people. When you look at Asian people now, they caucus, they come with a programme and their presence is really felt. Now a girl come from Guyana saying she is from WASH – what have you done for WASH? You don't have a launch you are just the focal point and the focal point means that you go to these meetings every now and again. We need to have a notion of accountability, people come together and say I am giving you this mandate and holding you accountable – that does not exist in Caribbean institutions, probably because they are voluntary, I don't know.

End of interview

Table A1 Perception item loadings and factors 1 to 5 (22-item UPS)

Scale items	Component				
	1	2	3	4	5
Perception 21	0.834	-3.431E-02	0.135	0.275	7.155E-02
Perception 19	0.832	0.129	0.190	0.170	0.151
Perception 20	0.744	0.198	-7.456E-02	0.331	8.862E-02
Perception 4	0.740	0.383	0.269	-1.475E-02	0.107
Perception 16	0.715	0.266	8.329E-02	0.222	0.280
Perception 9	0.702	0.433	0.245	5.176E-02	0.113
Perception 8	0.692	0.357	1.808E-02	0.113	-0.193
Perception 12	0.622	0.436	0.132	-3.937E-02	-1.815E-02
Perception 5	0.558	0.448	0.405	0.125	0.147
Perception 13	0.551	0.451	0.273	3.705E-02	4.035E-02
Perception 7	0.527	0.247	0.464	-0.102	-0.198
Perception 14	0.477	0.471	1.398E-02	0.284	-5.083E-02
Perception 11	0.227	0.827	-8.130E-02	4.278E-02	-5.026E-02
Perception 3	0.126	0.688	8.532E-02	7.900E-02	0.118
Perception 10	0.461	0.602	6.447E-02	0.215	-7.094E-02
Perception 6	0.237	0.548	0.502	0.265	5.511E-02
Perception 2	-4.501E-02	1.724E-02	0.863	0.148	3.883E-02
Perception 1	0.312	-2.152E-03	0.775	5.346E-02	8.437E-02
Perception 17	0.108	0.182	0.278	0.719	-0.237
Perception 15	0.344	0.118	2.449E-02	0.716	0.151
Perception 22	3.382E-03	3.860E-02	2.855E-02	-3.953E-02	-0.860
Perception 18	0.372	0.182	0.273	-0.184	0.606

Figure A1 Scree plot of eigenvalues for UPS

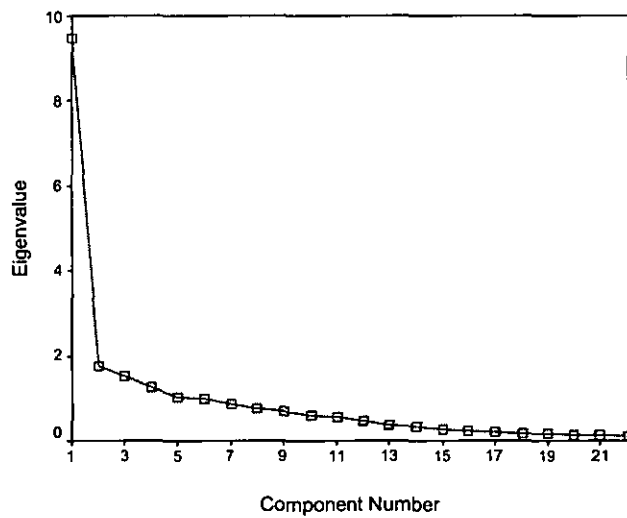


Table A2 Descriptive statistics of UPS for different grouping variables

Grouping variable	Scale range	Mean	Median
CASE SUMMARY			
All participants	21 – 70	50.37	51.00
Banking	21 – 70	53.66	58.00
Non-banking	21 – 69	47.87	47.50
Investor	21 – 69	50.74	51.00
Non-investor	25 – 70	48.76	47.00
JAMAICA			
All participants	21 – 69	53.11	56.00
Banking	21 – 67	57.00	59.00
Non-banking	37 – 69	50.44	52.00
Investor	21 – 69	54.47	58.00
Non-investor	38 – 66	50.80	52.00
BARBADOS			
All participants	39 – 70	57.40	58.00
Banking	48 – 70	62.00	65.00
Non-banking	39 – 67	54.33	55.00
Investor	48 – 67	57.25	56.50
Non-investor	43 – 70	58.50	60.50
TRINIDAD			
All participants	21 – 63	43.20	44.00
Banking	25 – 63	46.42	45.50
Non-banking	21 – 51	40.23	42.00
Investor	21 – 63	44.33	45.00
Non-investor	25 – 48	40.29	42.00

Table A3 K-W test comparing respondents' characteristics across case locations

Test Statistics^{a,b}

	Organisation category	Size of investment portfolio	Infrastructure investment activity	Infrastructure as part of investment portfolio	Infrastructure investment - loans	Infrastructure investment - equity	Infrastructure investment - bonds
Chi-Square	.458	.727	.741	.679	.745	.880	7.573
df	2	2	2	2	2	2	2
Asymp. Sig.	.795	.695	.690	.712	.689	.644	.023

a. Kruskal Wallis Test

b. Grouping Variable: Country

Table A4 Characteristics of Survey A respondents (Jamaica)

Variable	Percent				
	All	Type of institution		Infrastructure investment activity	
		Banking	Non-banking	Investor	Non-investor
		39.3	60.7	60.7	39.3
Size of investment portfolio					
<US\$10 m	21.4	9.1	29.4	5.9	45.5
US\$11-50 m	28.6	27.3	29.4	23.5	36.4
US\$51-100 m	7.1	18.2	0.0	11.8	0.0
US\$101-500 m	21.4	27.3	17.6	29.4	9.1
>US\$501 m	21.4	18.2	23.5	29.4	9.1
Investments linked to infrastructure					
0%	39.3	9.1	58.8	-	-
1-5%	21.4	18.2	23.5	35.3	-
6-10%	17.9	36.4	5.9	29.4	-
11-15%	7.1	9.1	5.9	11.8	-
16-20%	3.6	9.1	0.0	5.9	-
>21%	10.7	18.2	5.9	17.6	-
Type of infrastructure investment					
Loans	39.3	72.7	17.6	64.7	-
Bonds	17.9	9.1	23.5	29.4	-
Equity	10.7	18.2	5.9	17.6	-

Table A5 Characteristics of Survey A respondents (Barbados)

Variable	Percent				
	All	Type of institution		Infrastructure investment activity	
		Banking	Non-banking	Investor	Non-investor
		40.0	60.0	66.7	33.3
Size of investment portfolio					
<US\$10 m	25.0	0.0	37.5	12.5	50.0
US\$11-50 m	8.3	0.0	12.5	12.5	0.0
US\$51-100 m	25.0	25.0	25.0	25.0	25.0
US\$101-500 m	16.7	25.0	12.5	12.5	25.0
>US\$501 m	25.0	50.0	12.5	37.5	0.0
Investments linked to infrastructure					
0%	33.3	25.0	37.5	-	-
1-5%	25.0	0.0	37.5	37.5	-
6-10%	16.7	25.0	12.5	25.0	-
11-15%	8.3	25.0	0.0	12.5	-
16-20%	8.3	0.0	12.5	12.5	-
>21%	8.3	25.0	0.0	12.5	-
Type of infrastructure investment					
Loans	25.0	50.0	12.5	37.5	-
Bonds	50.0	25.0	62.5	75.0	-
Equity	16.7	0.0	25.0	25.0	-

Table A6 Characteristics of Survey A respondents (Trinidad)

Variable	Percent				
	All	Type of institution		Infrastructure investment activity	
		Banking	Non-banking	Investor	Non-investor
		48.0	52.0	72.0	28.0
Size of investment portfolio					
<US\$10 m	16.7	0.0	33.3	5.9	42.9
US\$11-50 m	20.8	25.0	16.7	17.6	28.6
US\$51-100 m	8.3	16.7	0.0	5.9	14.3
US\$101-500 m	25.0	25.0	25.0	29.4	14.3
>US\$501 m	29.2	33.3	25.0	41.2	0.0
Investments linked to infrastructure					
0%	28.0	8.3	46.2	-	-
1-5%	28.0	16.7	38.5	38.9	-
6-10%	12.0	16.7	7.7	16.7	-
11-15%	12.0	16.7	7.7	16.7	-
16-20%	4.0	8.3	0.0	5.6	-
>21%	16.0	33.3	0.0	22.2	-
Type of infrastructure investment					
Loans	36.0	66.7	7.7	50.0	-
Bonds	20.0	66.7	38.5	72.2	-
Equity	52.0	25.0	15.4	27.8	-

Table A7 Status of the Caribbean water sector: Descriptive statistics

	Mean	Percent		
		Highly satisfied	Satisfied	Not satisfied
Population coverage	2.19	28.6	61.9	9.5
Water resource development/management	1.95	19.0	57.1	23.8
Water and wastewater quality	1.90	10.0	70.0	20.0
Continuity of supply/service	1.86	19.0	47.6	33.3
Number and level of skilled professionals	1.86	19.0	47.6	33.3
Physical assets (e.g. pumps, storage)	1.75	10.0	55.0	35.0
Performance of regulatory body	1.71	5.9	58.8	35.3
Number and frequency of customer complaints	1.62	4.8	52.4	42.9
Long-term strategic planning	1.57	4.8	47.6	47.6
Rehabilitation and maintenance programme	1.35	5.0	25.0	70.0
Tariff to recover operation and maintenance costs	1.33	0.0	33.3	66.7
Level of investment other than government	1.21	0.0	21.1	78.9
Unaccounted for water	1.19	4.8	9.5	85.7
Government budget allocation	1.11	0.0	11.1	88.9
Level of revenue recovery	1.05	0.0	4.8	95.2

Table A8 Frequency table for UPS grouping

	Percent				
	All	Banking	Non-banking	Investor	Non-investor
Jamaica					
20-30	3.7	9.1	0.0	5.9	0.0
31-40	14.8	0.0	25.0	11.8	20.0
41-50	11.1	0.0	18.8	5.9	20.0
51-60	44.4	45.5	43.8	41.2	50.0
61-70	25.9	45.5	12.5	35.3	10.0
Barbados					
20-30	0.0	0.0	0.0	0.0	0.0
31-40	6.7	0.0	11.1	0.0	0.0
41-50	26.7	16.7	33.3	37.5	25.0
51-60	20.0	16.7	22.2	25.0	25.0
61-70	46.7	66.7	33.3	37.5	50.0
Trinidad					
20-30	12.0	8.3	15.4	11.1	14.3
31-40	16.0	16.7	15.4	16.7	14.3
41-50	52.0	41.7	61.5	44.4	71.4
51-60	16.0	25.0	7.7	22.2	0.0
61-70	4.0	8.3	0.0	5.6	0.0

Table A9 M-W test comparing UPS by organisation category

Country		Utility perception scale
Jamaica	Mann-Whitney U	40.500
	Wilcoxon W	176.500
	Z	-2.346
	Asymp. Sig. (2-tailed)	.019
	Exact Sig. [2*(1-tailed Sig.)]	.017 ^a
Barbados	Mann-Whitney U	16.000
	Wilcoxon W	61.000
	Z	-1.302
	Asymp. Sig. (2-tailed)	.193
	Exact Sig. [2*(1-tailed Sig.)]	.224 ^a
Trinidad	Mann-Whitney U	45.500
	Wilcoxon W	136.500
	Z	-1.771
	Asymp. Sig. (2-tailed)	.077
	Exact Sig. [2*(1-tailed Sig.)]	.077 ^a

a. Not corrected for ties.

b. Grouping Variable: Organisation category

Table A10 M-W test comparing UPS by investment activity

Country		Utility perception scale
Jamaica	Mann-Whitney U	59.000
	Wilcoxon W	114.000
	Z	-1.306
	Asymp. Sig. (2-tailed)	.191
	Exact Sig. [2*(1-tailed Sig.)]	.204 ^a
Barbados	Mann-Whitney U	14.000
	Wilcoxon W	50.000
	Z	-.341
	Asymp. Sig. (2-tailed)	.733
	Exact Sig. [2*(1-tailed Sig.)]	.808 ^a
Trinidad	Mann-Whitney U	41.500
	Wilcoxon W	69.500
	Z	-1.304
	Asymp. Sig. (2-tailed)	.192
	Exact Sig. [2*(1-tailed Sig.)]	.198 ^a

a. Not corrected for ties.

b. Grouping Variable: Infrastructure investment activity

Table A11 Frequency table for investment prospects of the sector

	Percent				
	All	Banking	Non-banking	Investor	Non-investor
Jamaica					
Poor	3.6	0.0	5.9	0.0	9.1
Doubtful	28.6	18.2	35.3	29.4	27.3
Acceptable	25.0	45.5	11.8	35.3	9.1
Good	28.6	27.3	29.4	29.4	27.3
Excellent	14.3	9.1	17.6	5.9	27.3
Barbados					
Poor	0.0	0.0	0.0	0.0	0.0
Doubtful	6.7	0.0	11.1	0.0	25.0
Acceptable	33.3	16.7	44.4	50.0	25.0
Good	53.3	83.3	33.3	50.0	50.0
Excellent	6.7	0.0	11.1	0.0	0.0
Trinidad					
Poor	4.0	0.0	7.7	0.0	14.3
Doubtful	20.0	16.7	23.1	11.1	42.9
Acceptable	16.0	25.0	7.7	16.7	14.3
Good	44.0	33.3	53.8	50.0	28.6
Excellent	16.0	25.0	7.7	22.2	0.0

Table A12 M-W test comparing investment prospects of the sector by organisation category

Test Statistics ^b		
Country		Investment prospects based on perception of utility
Jamaica	Mann-Whitney U	89.000
	Wilcoxon W	242.000
	Z	-.219
	Asymp. Sig. (2-tailed)	.827
	Exact Sig. [2*(1-tailed Sig.)]	.853 ^a
Barbados	Mann-Whitney U	18.500
	Wilcoxon W	63.500
	Z	-1.110
	Asymp. Sig. (2-tailed)	.267
	Exact Sig. [2*(1-tailed Sig.)]	.328 ^a
Trinidad	Mann-Whitney U	66.000
	Wilcoxon W	157.000
	Z	-.688
	Asymp. Sig. (2-tailed)	.491
	Exact Sig. [2*(1-tailed Sig.)]	.538 ^a

^a. Not corrected for ties.

^b. Grouping Variable: Organisation category

Table A13 M-W test comparing investment prospects of the sector by investment activity

Test Statistics ^b		
Country		Investment prospects based on perception of utility
Jamaica	Mann-Whitney U	81.500
	Wilcoxon W	234.500
	Z	-.583
	Asymp. Sig. (2-tailed)	.560
	Exact Sig. [2*(1-tailed Sig.)]	.578 ^a
Barbados	Mann-Whitney U	14.000
	Wilcoxon W	24.000
	Z	-.378
	Asymp. Sig. (2-tailed)	.705
	Exact Sig. [2*(1-tailed Sig.)]	.808 ^a
Trinidad	Mann-Whitney U	25.500
	Wilcoxon W	53.500
	Z	-2.392
	Asymp. Sig. (2-tailed)	.017
	Exact Sig. [2*(1-tailed Sig.)]	.021 ^a

^a. Not corrected for ties.

^b. Grouping Variable: Infrastructure investment activity

Figure A2 Respondents' rating of factors that would influence their investment decision in the sector

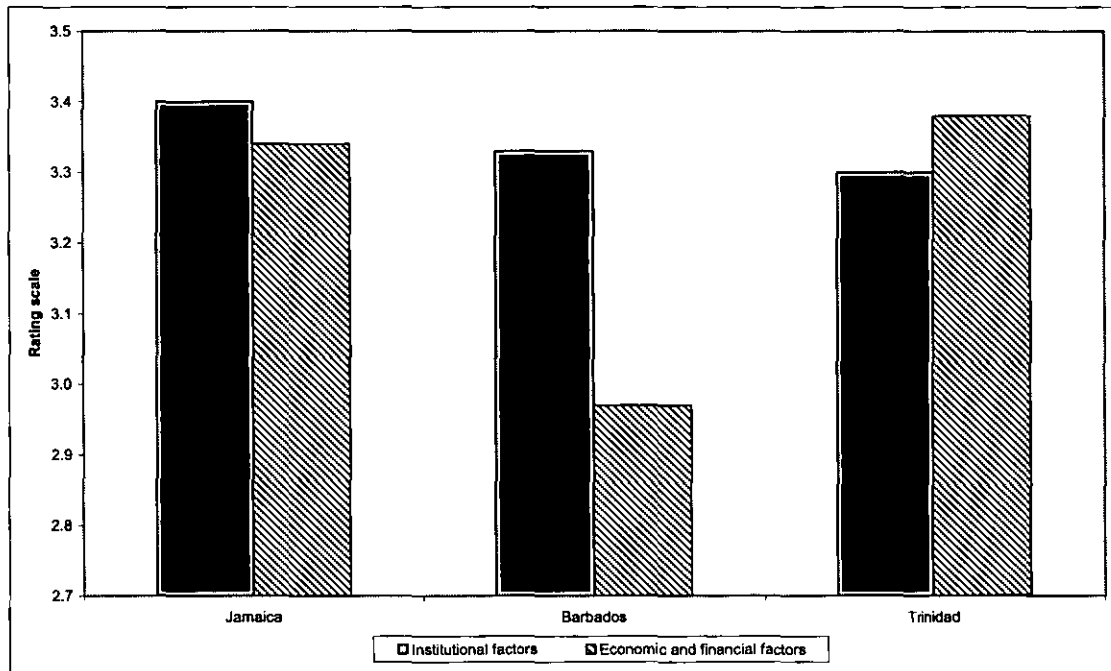


Table A16 Descriptive statistics of factors that influence the investment decision

	Mean		
	Jamaica	Barbados	Trinidad
Institutional factors			
Good capital investment planning	3.65	3.73	3.42
Supportive government legislation	3.59	3.13	3.28
Institutional reform	3.44	3.60	3.36
Separation of roles	3.19	3.20	3.24
Tariffs to represent true cost	3.19	3.00	3.36
Economic/financial factors			
Credit enhancement mechanisms	3.70	3.29	3.64
Infrastructure bonds	3.58	3.80	3.72
Infrastructure development fund	3.46	3.15	3.48
Preferential financing to on-lend	3.38	2.60	3.09
Debt write-off by government	3.26	2.67	3.24

Figure A3 Rating of operational models for private investment in the sector

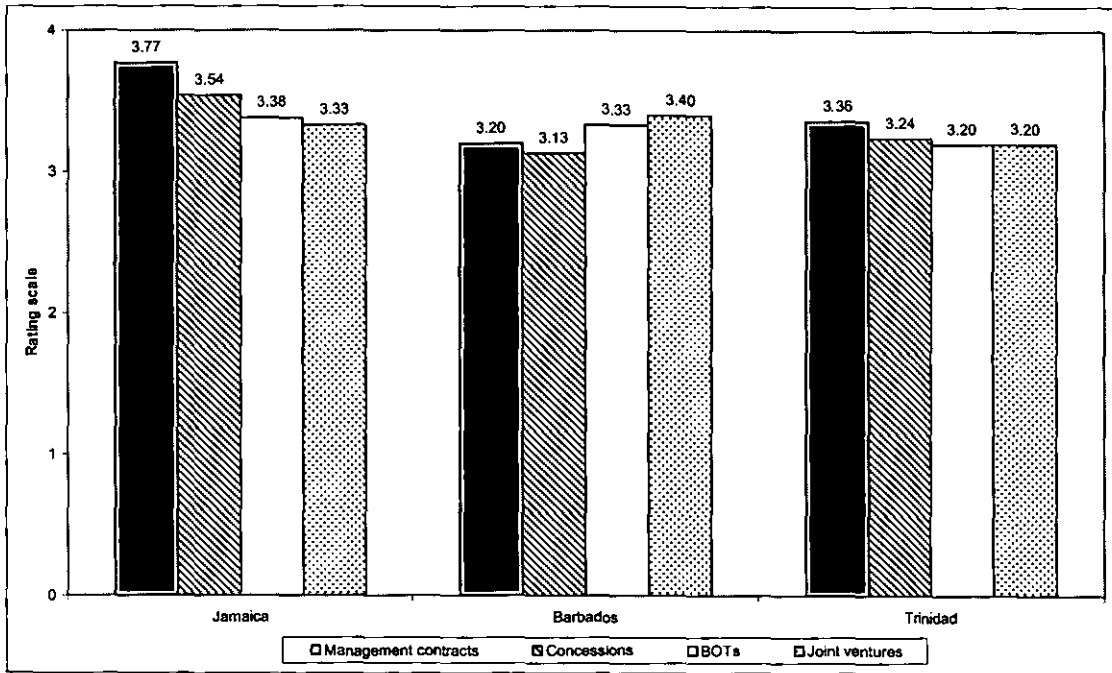


Figure A4 Rating of size-related responses to improve investment prospects

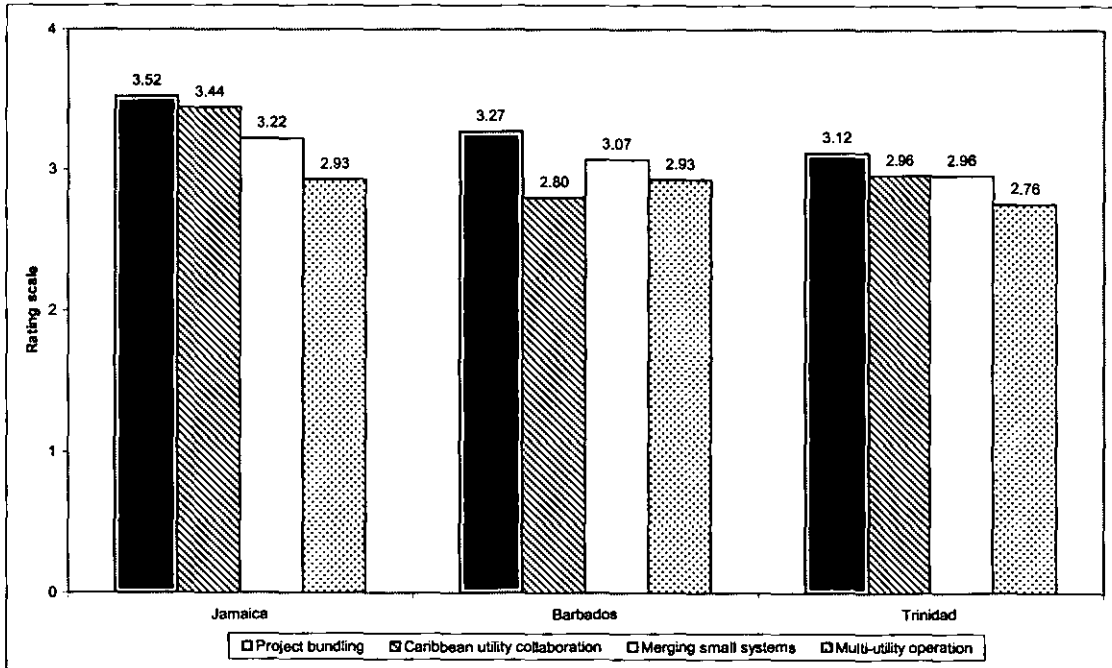


Table A17 Descriptive statistics of sources for new investment information

Sources	Mean	Percent			
		Most important	Important	Slightly important	Least important
Organisation's commercial network	3.50	58.3	33.2	8.3	0.0
Project sponsors	3.08	33.2	50.0	8.3	8.3
Host country government/utility	2.92	25.0	50.0	16.7	8.3
Published information	2.67	8.3	50.0	41.7	0.0
Specialist agencies and consultants	2.50	8.3	41.7	41.7	8.3
International organisations	2.42	8.3	58.3	0.0	33.2
Country's investment promotion agency	2.25	8.2	33.3	33.3	25.0

Table A18 Descriptive statistics of criteria for screening new investment proposals

Screening criteria	Mean	Percent			
		Most important	Important	Slightly important	Least important
Nature of project	3.58	58.3	41.7	0.0	0.0
Past experience	3.50	50.0	50.0	0.0	0.0
Available finance	3.50	58.3	33.4	8.3	0.0
Project location	3.50	58.3	33.4	8.3	0.0
Project size	3.17	33.3	50.0	16.7	0.0
Available information	3.00	16.7	66.6	16.7	0.0

Table A19 Descriptive statistics of reasons for investing abroad

Reasons	Mean	Percent			
		Most important	Important	Slightly important	Least important
Fits business strategy	3.67	66.7	33.3	0.0	0.0
Political and economic stability in target markets	3.33	33.3	66.7	0.0	0.0
Larger market growth potential	3.08	33.4	50.0	8.3	8.3
Gain competitive advantage	2.75	25.0	33.3	33.3	8.4
International support for privatisation	2.75	33.3	33.3	8.4	25.0
Information about opportunities abroad	2.64	18.1	36.4	36.4	9.1
Emergence of new markets	2.64	9.1	54.5	27.3	9.1
Ease of foreign market penetration	2.64	0.0	63.6	36.4	0.0
Approached by overseas governments/clients	2.45	27.3	18.1	27.3	27.3
Utilise excess capacity	2.00	0.0	27.3	45.4	27.3
Lower cost of doing business abroad	1.55	0.0	0.0	54.5	45.5

Table A20 Descriptive statistics of investors' location preferences

Location	Mean	Percent		
		High	Average	Low
Asia	2.67	75.0	16.7	8.3
Europe	2.33	58.3	16.7	25.0
North America	2.17	33.3	50.0	16.7
LAC	2.00	16.7	66.7	16.7
Oceania	1.92	16.7	58.3	25.0
Africa	1.33	8.3	16.7	75.0

Table A21 M-W test comparing rating of factors regarding choice of investment destination (International investors vs. Caribbean utility managers)

Test Statistics ^b							
	Good investment grade rating	Utility performance indicators	Consumer payment discipline	Credit enhancement mechanisms	Transaction costs	Adequate market size	Positive market signals
Mann-Whitney U	118.000	54.000	106.500	91.000	111.000	96.500	87.500
Wilcoxon W	349.000	132.000	337.500	169.000	342.000	327.500	318.500
Z	-.329	-2.881	-.771	-1.415	-.598	-1.233	-1.540
Asymp. Sig. (2-tailed)	.742	.004	.441	.157	.550	.217	.124
Exact Sig. [2*(1-tailed Sig.)]	.782 ^a	.006 ^a	.471 ^a	.200 ^a	.593 ^a	.274 ^a	.152 ^a

a. Not corrected for ties.

b. Grouping Variable: Respondent

Test Statistics ^b						
	Potential for horizontal integration	Administrative efficiency	Government honouring commitments	Political stability	Regulatory independence	Information available
Mann-Whitney U	92.500	103.500	81.000	104.000	92.000	98.000
Wilcoxon W	170.500	334.500	312.000	335.000	323.000	329.000
Z	-1.352	-.907	-1.887	-.896	-1.372	-1.174
Asymp. Sig. (2-tailed)	.176	.365	.059	.370	.170	.240
Exact Sig. [2*(1-tailed Sig.)]	.213 ^a	.405 ^a	.096 ^a	.427 ^a	.213 ^a	.308 ^a

a. Not corrected for ties.

b. Grouping Variable: Respondent

Table A22 Descriptive statistics of promotion strategy for water and sanitation

Promotion strategy	Mean	Percent			
		Most important	Important	Slightly important	Least important
Image building for the sector	3.19	38.1	47.6	9.5	4.8
Investment generation	3.00	28.6	52.4	9.5	9.5
Pre and post investment services	2.86	28.6	38.1	23.8	9.5

Table A23 Descriptive statistics of factors affecting small investments

	Mean	
	Survey B	Survey C
Small customer base	2.36	3.24
High transaction costs compared to size of investment	3.09	2.90
Diseconomies of scale and scope	2.82	2.80
Higher cost of borrowing due to lower absolute size	2.91	2.67
Appropriate technologies for size requirements	2.64	2.52
Limited counterpart professional/technical capabilities	2.18	2.15
Tariff inadequate for revenue generation	2.09	3.57
Interference from government and/or state enterprise	2.00	3.05
Greater overall risk at a smaller scale	2.73	2.75

Table A24 Descriptive statistics of options for improving small-scale investment opportunities

	Mean	
	Survey B	Survey C
Project bundling	3.42	3.19
Shared professional expertise across projects	3.00	3.33
Financing options to reduce cost	2.92	3.20
Aggregated systems to increase revenue base	2.91	2.85
Multi-utility operation	2.17	2.55

Table A25 Benefits of regional cooperation

Benefits	Mean	Percent			
		Strongly agree	Agree	Disagree	Strongly disagree
Increased bargaining power	3.24	42.9	47.6	0.0	9.5
Economies of scale	3.24	42.9	42.8	9.5	4.8
Pooled resources to attract external funding	3.10	42.9	33.3	14.3	9.5
Shared transaction costs	3.10	28.6	57.1	9.5	4.8
Risk diversification	2.95	23.8	52.4	19.0	4.8
Overcome capacity constraints	2.95	19.0	61.9	14.3	4.8

Table A26 Regional approach to water and sanitation

Options	Mean	Percent			
		Strongly agree	Agree	Disagree	Strongly disagree
Exchange of information	3.81	81.0	19.0	0.0	0.0
Technical training	3.76	76.2	23.8	0.0	0.0
Research/project development	3.57	57.1	42.9	0.0	0.0
Standardisation of performance indicators	3.52	52.4	47.6	0.0	0.0
Professional services	3.43	42.9	57.1	0.0	0.0
Investment promotion and sourcing	3.29	47.6	38.1	9.5	4.8
Regulation	3.24	42.9	47.6	0.0	9.5
Procurement	3.19	38.1	42.9	19.0	0.0
Operations and maintenance	3.05	19.0	66.7	14.3	0.0
Support services	2.90	15.0	60.0	25.0	0.0

Table A27 Challenges for regional cooperation in water and sanitation

Challenges	Mean	Percent			
		Critical factor	Major factor	Minor factor	Not a factor
Political support	3.48	57.1	33.4	9.5	0.0
Different national interests	3.43	61.9	23.8	9.5	4.8
Funding dependent on national governments	3.43	57.1	33.3	4.8	4.8
Support from local stakeholders	3.19	42.9	38.1	14.2	4.8
Difficulty in enforcing regional agreements	3.10	38.1	38.1	19.0	4.8
Satisfactory allocation of investment	3.00	14.3	71.4	14.3	0.0
Inadequate regional institutional structure	2.90	28.6	38.1	28.5	4.8
National rivalry and competition	2.52	23.8	28.6	23.8	23.8

Table A28 Basis for regional grouping

Factors	Mean	Percent			
		Strongly agree	Agree	Disagree	Strongly disagree
Similar issues to be addressed	3.43	47.6	47.6	4.8	0.0
Level of development in the sector	3.14	28.6	57.1	14.3	0.0
Already working together on similar issues	3.05	33.3	38.1	28.6	0.0
Strong history of cooperation	3.00	33.3	38.1	23.8	4.8
Geographical proximity	2.67	23.8	28.6	38.1	9.5

Table A29 K-W test comparing the UPS across case locations

	Utility perception scale
Chi-Square	16.693
df	2
Asymp. Sig.	.000

a. Kruskal Wallis Test

b. Grouping Variable: Country

Table A30 M-W test comparing the UPS in Jamaica and Barbados

	Utility perception scale
Mann-Whitney U	159.500
Wilcoxon W	537.500
Z	-1.130
Asymp. Sig. (2-tailed)	.258

a. Grouping Variable: Country

Table A31 M-W test comparing the UPS in Jamaica and Trinidad

Test Statistics ^a	
	Utility perception scale
Mann-Whitney U	163.500
Wilcoxon W	488.500
Z	-3.189
Asymp. Sig. (2-tailed)	.001

a. Grouping Variable: Country

Table A32 M-W test comparing the UPS in Barbados and Trinidad

Test Statistics ^b	
	Utility perception scale
Mann-Whitney U	57.500
Wilcoxon W	382.500
Z	-3.636
Asymp. Sig. (2-tailed)	.000
Exact Sig. [2*(1-tailed Sig.)]	.000 ^a

a. Not corrected for ties.

b. Grouping Variable: Country

Table A33 Matrix of Spearman's rho correlation coefficients between UPS grouping and investment prospects in the sector

Correlations				
			Utility perception scale grouping	Investment prospects based on perception of utility
Spearman's rho	Utility perception scale grouping	Correlation Coefficient	1.000	.299*
		Sig. (2-tailed)	.	.014
		N	67	67
	Investment prospects based on perception of utility	Correlation Coefficient	.299*	1.000
		Sig. (2-tailed)	.014	.
		N	67	68

*. Correlation is significant at the 0.05 level (2-tailed).

Table A34 Matrix of Spearman's rho correlation coefficients between UPS grouping and investment prospects in the sector by investment activity

Correlations						
			Utility perception scale grouping	Investment prospects based on perception of utility		
Infrastructure investment activity	Investor	Spearman's rho	Utility perception scale grouping	Correlation Coefficient	1.000	.137
			Sig. (2-tailed)	.	.381	
			N	43	43	
			Investment prospects based on perception of utility	Correlation Coefficient	.137	1.000
			Sig. (2-tailed)	.381	.	
			N	43	43	
Non-investor		Spearman's rho	Utility perception scale grouping	Correlation Coefficient	1.000	.621**
			Sig. (2-tailed)	.	.003	
			N	21	21	
			Investment prospects based on perception of utility	Correlation Coefficient	.621**	1.000
			Sig. (2-tailed)	.003	.	
			N	21	22	

**. Correlation is significant at the 0.01 level (2-tailed).

NWC: Capital works programme 2004/05

Project	Cost/(J\$M)	Cost/(US\$M)	Source of funding
Major water supply and wastewater projects			
KMA water supply & rehab	5185	84.5	GOJ, NWC, JBIC
Kingston water & sanitation	3050	49.7	GOJ, NWC, Others
Martha Brae/Rio Bueno	1952	31.8	GOJ, NWC, Others
Great River/Lucea	2440	39.7	GOJ, NWC, Others
Port Antonio water & sewerage	2379	38.8	GOJ, NWC, EU
Milk River WS Phase 2	82	1.3	GOJ, NWC, EU
Christiana/Spaulding Phase 2	195	3.2	GOJ, NWC, EU
Hope Bay/St. Margaret's Bay Phase 2	122	2.0	GOJ, NWC, EU
Shettlewood WS Phase 2	140	2.3	GOJ, NWC, EU
Essex Valley	84	1.4	NWC, Others
Rural WS Phase I	767	12.5	GOJ, NWC, IDB
Rural WS Phase II	553	9.0	GOJ, NWC, EU
Harbour View sewerage TP	366	6.0	GOJ, NWC, Others
Soapberry Phase 1A	2745	44.7	GOJ, NWC, Others
Water supply rehabilitation			
Constant Spring WTP	120	2.0	NWC
Hope WTP	50	0.8	NWC
Mona WTP	30	0.5	NWC
Seaview WTP	50	0.8	NWC
Pressure reducing & isolating valve replacement	35	0.6	-
Berkshire Hall WTP	10	0.2	NWC
Guys Hill TP	10	0.2	NWC
Kellits WTP	15	0.2	NWC
Greater Mandeville WS	120	2.0	NWC
Christiana/Devon/Coleville	8	0.1	NWC
New Fores/Bull Savannah WS	10	0.2	NWC
Santa Cruz Phase 1A	40	0.7	NWC
Roaring River WS	25	0.4	NWC
Askenish WS	80	1.3	NWC
Bogue WTP	5	0.1	NWC
Pottinger Spring	5	0.1	NWC
White River WTP	5	0.1	NWC
Mains replacement (islandwide)	120	2.0	NWC
Pumping equipment rehabilitation (islandwide)	60	1.0	NWC
Source metering (islandwide)	50	0.8	NWC
Water storage tanks (islandwide)	25	0.4	NWC
Wells assessments and refurbishing (islandwide)	40	0.7	NWC
Other water supply rehabilitation (islandwide)	30	0.5	NWC
Wastewater treatment plant rehabilitation			
Bushy Park Housing	15	0.2	NWC
Hayes No. 1 Housing	15	0.2	NWC
Hayes No. 2 Housing	20	0.3	NWC
Mineral Heights Housing	25	0.4	NWC
Boone Hall	10	0.2	NWC
Elletson Flats	15	0.2	NWC
Hughenden	20	0.3	NWC
Anchovy	8	0.1	NWC
Woodstock	10	0.2	NWC
Bridgeport	16	0.3	NWC
Ensom City Housing	25	0.4	NWC
Horizon Park	15	0.2	NWC
Independence City	20	0.3	NWC
Tawes Pen Housing	15	0.2	NWC
Vanzie Lands	10	0.2	NWC
Llandilo Housing	8	0.1	NWC
Other wastewater treatment plant rehabilitation	20	0.3	NWC
Sewerage Rehabilitation			
Duhaney Park	20	0.3	NWC
Stadium Gardens/Swallowfield	10	0.2	NWC
Liguanea/Mona Road	40	0.7	NWC
Other KSA sewerage rehabilitation	35	0.6	-
Ruthven Road	30	0.5	NWC
Wiggon Loop Sewerage Extension	30	0.5	NWC
Old Passagefort	15	0.2	NWC
Portmore	20	0.3	NWC
Montego Bay	20	0.3	NWC
Pump station refurbishing (islandwide)	50	0.8	NWC
Other sewerage rehabilitation (islandwide)	20	0.3	NWC

Key to sources of funding: European Union (EU); Government of Jamaica (GOJ); Inter-American Development Bank (IDB); Japan Bank for International Cooperation (JBIC); National Water Commission (NWC).

Source: NWC (2004b)

Water supply licence (Jamaica)

<p>SCHEDULE 1</p> <hr/> <p style="text-align: center;">Location of Service See Attachment 1 for Location Map</p> <hr/> <p>SCHEDULE 2</p> <hr/> <p style="text-align: center;">Special Conditions of Licence</p>	<p><i>The Office</i> may from time to time, introduce additional or vary these service standards and will have regard to the performance of <i>the Licensee</i> in meeting these standards at the tariff review.</p>
<p>A. <u>Water Quality Standards</u></p> <p>1. At least 95% of water samples must be collected from water production sources for testing;</p> <p>2. At least ninety-five percent (>95%) of water samples must be negative with coliform bacteria; and</p> <p>3. The level of residual chlorine should be about 0.5mg/l and present in at least 95% of samples.</p>	<p>E. <u>Billing</u></p> <p><i>The Licensee</i> shall provide bills to its customers on a monthly basis (based on meter reading) detailing the volume of water consumed for the period and all other relevant charges and specifying the conditions for disconnection for non payment.</p> <p>The Licensee shall ensure that all supplies are metered.</p>
<p>B. <u>Environmental Standards</u></p> <p><i>The Licensee</i> shall conform to all and any standards that may be established by NRCA.</p>	<p>F. <u>Reports to the Office</u></p> <p><i>The Licensee</i> shall provide the following reports to <i>the Office</i> annually within three months of the end of each financial year (hereinafter referred to as the "relevant period"):</p>
<p>C. <u>Water Pressure</u></p> <p><i>The Licensee</i> shall ensure that the pressure of water to customers is in the range of 20 – 60 psi, and take all reasonable steps to ensure that customers receive an adequate supply of water at all times.</p>	<p>1. Audited Profit and Loss Account and Balance Sheet for the relevant period</p> <p>2. Audited Cash Flow Statement for the relevant period</p> <p>3. Water supply report for the relevant period detailing:</p> <ul style="list-style-type: none"> a. volume of water produced b. volume of water sold c. assessment of unaccounted-for-water (UFW) d. consumption per customer category e. details of any unmet demand f. water quality reports g. schedules of maintenance programme h. reliability of supply report for the relevant period detailing: <ul style="list-style-type: none"> • number of planned interruptions; • percentage of planned interruptions where the required 24-hour period of notice is not adhered to; • number of unplanned interruptions; • percentage of unplanned interruptions not restored in the required 24-hour period.
<p>D. <u>Quality of Service Standards</u></p> <p><i>The Licensee</i> shall meet, as a minimum the following service standards:</p> <p>Guaranteed Standards</p> <p><i>The Licensee</i> shall give 24 hours' notice to customers for any scheduled interruptions of supply for the purpose of maintenance or otherwise.</p> <p><i>The Licensee</i> shall, in the event of unscheduled interruptions or emergencies restore water supply within 24 hours.</p> <p>Should <i>the licensee</i> fail, at any time, to meet these standards, it shall make a compensatory payment to the affected customers for each breach in an amount equal to the service charge that is payable by the customer. Customer payments are to be effected by means of a credit to the customer's bills.</p> <p><i>The Licensee</i> should additionally use all reasonable endeavours to achieve the following service standards:-</p> <ul style="list-style-type: none"> a. Monthly meter readings b. Processing of billing and non-billing complaints c. Repairing faulty meters d. Reconnection after payment of overdue amounts e. Payment of compensatory payment due to break of guaranteed standard <p><i>The Office</i> may from time to time, introduce additional or vary these service standards and will determine from time to time, the level of compensatory payment to be paid by <i>the Licensee</i> to the customer should <i>the Licensee</i> breach any standard so prescribed.</p>	<p>4. Costs and revenues associated with each customer category</p> <p>5. Customer based reports showing total number of customers per category (that is, industrial, commercial or domestic)</p> <p>6. Number and type of connections to other utilities</p> <p>7. Number of employees</p> <p>8. Total number of new service applications</p> <p>9. Total number of delinquent customers (three billing periods in arrears)</p> <p>10. Water quality reports</p> <p>11. Reports in relation to guaranteed and overall standards</p>
<p>Overall Standards</p> <p>1. The required notification time should be given for at least 90% of planned interruptions.</p> <p>2. At least 90% of emergency lock-offs should be restored within the required time.</p>	<p>F. <u>Provision of Prescribed Services to other Utilities</u></p> <p><i>The Licensee</i> is entitled to provide any combination of the services specified in the <i>Licensed Business</i> to any other licensed service provider or developer by way of a connection or connections to <i>the Licensee's</i> infrastructure.</p> <p>In such cases the parties may enter into negotiation/commercial agreements. Before concluding such agreements, <i>the Licensee</i> must receive the approval of <i>the Office</i>.</p> <p>Specifically, and for the avoidance of doubt, the rates and charges to be applied under this section by <i>the Licensee</i> must be approved by <i>the Office</i>.</p>

SCHEDULE 3

"Test Year" shall mean the latest twelve months of operation for which there are audited accounts and the results of the test year adjusted to reflect:

- a. Normal operational conditions, if necessary;
- b. Such changes in revenues and costs as are known and measurable with reasonable accuracy at the time of filing and which will become effective within twelve months of the time of filing. Costs, as used in this paragraph shall include depreciation in relation to plant in service during the last month of the test period at the rates of depreciation agreed with the Office. Extraordinary or Exceptional items as defined by The Institute of Chartered Accounts of Jamaica shall be apportioned over a number of years not exceeding five years; and
- c. Such changes in accounting principles as may be recommended by the independent auditors to the Licensee.

"Rate Base" means the value of the net investment in the Licensed Business. The Rate Base shall be calculated on the net sewerage system investment made by the Licensee at the time the rates are being set and shall include net investment made by the Licensee in the collection, treatment and disposal of sewage and plant assets. The Rate Base shall include appropriate rate-making adjustments to take into account known and measurable changes in the plant investment base.

The rates for the supply of services by the Licensed Business shall be set such that provides a reasonable opportunity for the Licensee to make a reasonable return on capital employed after taking into account all reasonable costs incurred in the provision of the services.

Revenue Requirement = operating costs + depreciation + taxes + return on investment, with each component defined as follows:

Operating costs: All prudently incurred costs which are not directly associated with investment in capital plant, other operating costs shall include, but not be limited to: salaries and other costs related to employees; operating costs of the licensed business; interest costs on other borrowings not associated with capital investment, if applicable; rents and leases on property associated with the Licensed Business; taxes which the Licensee is required to pay other than income taxes of the Licensee; and other costs which are determined to be reasonably incurred in connection with the Licensed Business.

Depreciation: The depreciation component will be calculated by applying annual depreciation rates, as agreed with the Office from time to time, to the gross value of the individual plant asset accounts.

Taxes: Taxes which are calculated based on the net income of the Licensee (Income Taxes) and payable to the Government of Jamaica shall be a component of the revenue requirement. Loss carry-forwards and any incentives to encourage capital investments are not included in the calculation of income taxes.

Return on Investment: This component is calculated based on the approved Rate Base of the Licensee and the required rate of return which allows the Licensee the opportunity to earn a return sufficient to provide for the requirements of consumers and acquire new investments at competitive costs. The Office shall determine a working capital component of the Rate Base.

The Licensee shall provide schedules that support these specific operating costs, depreciation expenses, and taxes. The return on investment shall be calculated by multiplying the allowed rate-of-return by the Licensee's total investment base (Rate Base) for the test year. The allowed rate of return is the Licensee's Weighted Average Cost of Capital (WACC). The WACC ("K%")

will balance the interests of both consumers and investors and be commensurate with returns in other enterprises having corresponding risks which will assure confidence in the financial integrity of the enterprise so as to maintain its credit and to attract capital. The WACC will be based on the actual capital structure or an appropriately adjusted capital structure which adjustment is required to keep parity of the interests of the consumers and investors and at the time of the filing such capital structure and WACC shall be adjusted by any known and measurable changes which are expected to occur during the test year.

$$\text{Return on Investment} = K\% \times (\text{Rate Base})$$

The Rate Base shall be reduced by contributions made by developers or customers in respect of infrastructural development.

Initial Tariff

On the granting of this License the Licensee shall submit a proposal for the initial tariffs to be charged in respect of services.

Subsequent Tariff

At such intervals as the Licensee may determine but no more often than once in every two years, the Licensee may submit an application for a tariff review. The Application must be supported with data and information as the Office will determine.

Rate Review Process

The Licensee shall file with the Office proposed rate schedules and shall demonstrate that the rates proposed for the various rate categories will generate the revenue requirement for the test year.

The Office shall accept such filing within ten (10) working days following certified delivery of the filing with the Office unless the filing is clearly deficient to the extent that it will not allow the complete evaluation of the Licensee's application including the proposed rate schedules. If the Office determines that the filing is deficient it shall reject such filing within the said ten working days and shall notify the Licensee clearly identifying the deficiencies.

Upon acceptance of the rate filing the Office shall initiate a rate proceeding to conduct its review of the Licensee's proposed rates in which the Office shall have full discretion to accept, modify or reject the proposed rates. The Office shall have full discretion to determine the format and procedure of such proceedings and in making its decision shall observe reasonable standards of procedural fairness and the rules of natural justice and act in a timely manner. The Office's review shall consist of an evaluation of the revenue requirements including prudent operating costs, depreciation expenses, taxes and a return on investment.

In the absence of an order from the Office upon the expiry of ninety (90) days after acceptance of the filing by the Licensee:

- a. rejecting the rates proposed by the Licensee on the merits;
- b. approving the rates proposed by the Licensee;
- c. modifying the rates proposed by the Licensee; OR

if the Office issues an order rejecting or modifying any portion of the Licensee's proposed rates, then upon the occurrence of any of the said events, the Licensee may refer the matter to the Appeal Tribunal as established to finally settle and the parties hereby consent to and agree to be bound by the decision of the Tribunal.

The decision of the Tribunal shall become effective on the day of the Tribunal's ruling.

BWA: Capital expenditure 2004/05

Project	Cost/(BBD\$M)	Cost/(US\$M)	Source of funding
Mains replacement	8.6	4.3	BWA
Bridgetown sewerage system	0.5	0.3	BWA
South coast sewerage system	3.4	1.7	GOB, BWA
West coast sewerage system	3.5	1.8	GOB, BWA
Belle feasibility study	0.5	0.3	GOB, BWA
Water resources development	10.5	5.3	BWA
Meter installation	1.5	0.8	BWA
Special projects and construction	0.9	0.5	BWA
Well pumping	1.1	0.6	BWA
Distribution	1.4	0.7	BWA
Septage handling facility	0.5	0.3	BWA
SCADA	0.3	0.2	BWA

Source: BWA (2004)

WASA: Capital expenditure 2004-06

Project	Cost/(TT\$M)	Cost/(US\$M)	Source of funding
Water sources development			
Wallerfield and Deep Ground well development	63.5	10.1	-
Well rehabilitation in the north and south	22.6	3.6	-
Well development in Tobago	24	3.8	-
Well development at Mayaro/Guayaguayare	15	2.4	-
Development of intakes at Matura and Salybia	55	8.8	-
Development of intake at Louis D'or, Tobago	7.5	1.2	-
Development of intakes at Ortoire and Pilote	20	3.2	-
Distribution expansion			
Booster stations North	5.2	0.8	-
Booster stations South	12.3	2.0	-
Service reservoirs North	10.2	1.6	-
Service reservoirs South	28.6	4.6	-
Service reservoirs refurbishment at Mason Hall	2.5	0.4	-
Wallerfield	21.9	3.5	-
Mayaro grid pipelines	20	3.2	-
Extremities of the pipeline network	20	3.2	-
Leak detection programme			
Pipe replacement Phase I	30	4.8	-
Pipe replacement Phase II	60	9.6	-
Bulk metering	24	3.8	-
Domestic metering	70	11.2	-
Pipeline replacement programme			
Mayaro	10	1.6	-
La Brea	68	10.9	-
Tobago	20	3.2	-
Port-of-Spain	10	1.6	-
San Fernando	10	1.6	-
Rural	10	1.6	-
Sewerage			
Adoption of National Housing Authority WWTP	225	35.9	-
Greater Port-of-Spain	36.5	5.8	-
Implementation of south-west Tobago	100	16.0	-
Refurbish existing plants	36	5.8	-

Source: WASA (2004b)

WASA bond issue



THE WATER AND SEWERAGE AUTHORITY OF TRINIDAD AND TOBAGO (WASA)

TT\$360 MILLION

7.50 % FIXED RATE BONDS DUE 2016

Guaranteed by the Government of the Republic of Trinidad and Tobago

The Agent - Central Bank of Trinidad and Tobago, Eric Williams Financial Complex, St. Vincent Street, Port-of-Spain

"The Securities and Exchange Commission has not in any way evaluated the merits of the securities offered hereunder and any representation to the contrary is an offence."

INFORMATION MEMORANDUM

THE BONDS

The Water and Sewerage Authority of Trinidad and Tobago (the "Authority") proposes to raise up to TT \$360,000,000.00 through the issue of 10 year bonds with a fixed coupon rate of 7.50% per annum (the "Bonds") pursuant to a Trust Deed between the Authority and Republic Bank Limited.

The Bonds will be issued in one tranche on 20 June 2006.

The Central Bank of Trinidad and Tobago will auction the Bonds via the single price auction system.

As far as possible, applicants will be allotted bonds to the fullest extent of their applications.

The auction will be opened at 10.00 a.m. on 09 June 2006 and closed at 1.00 p.m. on 14 June 2006.

TERMS OF ISSUE

1. Authority

These Bonds will be issued pursuant to Section 26 (2) of the Water and Sewerage Act Chap. 54:40 and Section 36(2) of the Exchange and Audit Act Chap. 69:01 of the Revised Laws of Trinidad and Tobago.

2. Use of Proceeds

The proceeds of this issue will be used to refinance an outstanding overdraft facility, which facilitated payments of operating expenditure during the fiscal year. The facility is held at Republic Bank Limited.

These Bonds are eligible for inclusion in the Statutory Fund of Insurance Companies and will be considered as assets in and originating in Trinidad and Tobago within the meaning of Sections 47 (1) and 186 (3) respectively of the Insurance Act, 1980 and will also be accepted without limit for appropriate deposit purposes in accordance with section 29 of the Insurance Act.

3. Date of Issue

The date of issue of the Bonds is 20 June 2006.

4. Agent

The Central Bank of Trinidad and Tobago has been appointed sole and exclusive agent for the raising and management of this issue of Bonds.

5. Method of Payment

The purchase price will be amortized and will be payable semi-annually on 20 June and 20 December.

Payment will be made in Trinidad and Tobago dollars.

6. Security

The principal monies and interest represented by the Bonds will be guaranteed irrevocably and unconditionally by the Government of the Republic of Trinidad and Tobago pursuant to the Guarantee of Loans, (Statutory Authorities) Act, Chap. 71:81 of the Revised Laws of the Republic of Trinidad and Tobago.

7. Interest

Interest is payable semi-annually on 20 June and 20 December. Interest will accrue from 20 June 2006 and the first payment will be made on 20 December 2006. Interest will be calculated at a rate of 7.50% per annum on a 365-day basis.

8. Business Day

In the event that a payment date occurs on a day other than a Business Day, such payment will be made on the Business Day following that date.

9. Redemption

Any bond forming part of this issue, if not previously cancelled or redeemed by purchase in the open market, will be repaid at semi-annual intervals on 20 June and 20 December.

10. Applications and General Arrangements

Applications will be received at the DOMESTIC MARKETS DEPARTMENT, CENTRAL BANK OF TRINIDAD AND TOBAGO, CENTRAL BANK BUILDING, ST. VINCENT STREET, PORT OF SPAIN. Applications must be for \$5,000.00 face value or multiples thereof. No allotment will be made for any amount less than \$5,000.00 face value.

Government Securities Intermediaries appointed by the Central Bank will act as counterparties to the Central Bank in the auction and will thereafter provide a market for the bonds. The public can bid competitively or non-competitively by submitting the relevant application forms along with payment to a Government Securities Intermediary. The maximum allotment that can be obtained through a non-competitive bid is \$20,000.00 face value.

Registration of bondholders will be made by electronic book-entry at the Central Bank of Trinidad and Tobago in the name of each subscriber.

The Prospectus is available at www.centralbank.org.tt. The Trust Deed Application Forms and Transfer of Ownership Forms may be obtained at the offices of all Government Securities Intermediaries.

THE ISSUER

1. Overview

The Water and Sewerage Authority (the "Authority") is a statutory body. It was established in 1963 by an Act of Parliament, the Water and Sewerage

Act Chap. 54:40 of the Revised Laws of the Republic of Trinidad and Tobago. It has responsibility for the following:

- maintaining and developing waterworks and other property related thereto;
- providing water supplies and administering the supply of water;
- promoting the conservation and proper use of water resources;
- maintaining and developing the sewerage system and other property related thereto;
- constructing and developing such further sewerage works as it considers necessary or expedient;
- administering sewerage services;
- expanding the coverage of the sewer system.

The Authority's vision as enunciated in its Strategic Plan is "to be a high quality water utility service provider for the people of Trinidad and Tobago and thereafter to be the center of excellence within the water utility sector in the Caribbean".

The Authority has an active customer database of 328,860 at 2003 April 30, comprising industrial, commercial, agricultural and residential customers and is continuing to expand its operations to meet the growing demand at new industrial sites throughout Trinidad and Tobago.

As part of its corporate responsibility, the Authority monitors and manages the water resources throughout Trinidad and Tobago and is committed to implementing the concept of Integrated Water Resources Management through the recently approved National Water Resources Management Policy.

The sewerage sector is also being developed with the recent commissioning of the largest sewage facility within the region, located at Beetham. In addition, the Authority has recently taken over 24 Sewage Treatment facilities previously operated by the National Housing Authority, its agencies and the Urban Development Company of Trinidad and Tobago (UDECOITL). Adoption of other existing privately owned facilities is being pursued.

The Authority is the most essential utility in Trinidad and Tobago, being the sole provider of water and sewerage services.

The assets for which the Authority has responsibility include:

- 23 surface water treatment facilities
- 53 groundwater treatment facilities
- 48 rural intakes and spring sources
- 120 pumping stations (booster stations)
- Approximately 6,000 kilometers of water mains (pipeline) ranging from 20 mm to 1,350 mm in diameter
- 4 raw water impounding reservoirs: total storage of 68 million megaliters (15 billion gallons)
- 436 wells
- 36 sewage treatment facilities



THE WATER AND SEWERAGE AUTHORITY OF TRINIDAD AND TOBAGO

Information Memorandum

- Approximately 400 kilometers of sewer mains ranging from 125 mm to 1,800 mm in diameter.
- A hydro-meteorological network including 175 rainfall stations, 38 streamflow stations, 10 ground-water monitors, 9 evaporation stations and 4 telemetric repeater stations.

Approximately 933 megalitres (210 million gallons) of water is produced per day, which represents an increase of 217 percent from 441 megalitres (97 million gallons) in 1963. The Authority's water production conforms to the World Health Organization (WHO) guidelines:

- Surface Water.....(65%)
- Groundwater.....(25%)
- Desalinated Water.....(10%)

In terms of the Tobago water sector, the Authority continues to develop new potable water sources to meet the growing demand, with particular reference to the Tourism Sector. Water production over the last five years has risen from 27.3 megalitres (6 million gallons) to 40.9 megalitres (9 million gallons), and is projected to increase to 34.5 megalitres (12 million gallons) within the next year.

Mindful of its responsibility to protect and preserve the environment, the Authority is pursuing the construction of a new sewerage system in southwest Tobago.

2. Financial Information

The Table below highlights the historical financial performance of the Authority over the fiscal years 2000/2001 to 2003/2004 and forecast to 2006/2007.

Line of Years	2000/2001 Audited	2001/2002 Audited	2002/2003 Unaudited	2003/2004 Unaudited	2004/2005 Unaudited	2005/2006 Budget	2006/2007 Forecast
Revenue (Net)	403	401	426	412	431	416	391
Expenses	641	627	618	600	1,244	1,118	1,101
Operating Profit/Loss	238	246	206	212	278	298	292
Finance Exp./Income	106	28	61	111	118	154	166
Net Asset	(18,962)	(13,037)	(10,109)	(10,300)	42,236	91,001	30,082
Value of New Loans/Equity	0	190	465	436	1,248	899	0
Current Ratio	0.31	0.33	0.37	0.37	0.26	0.26	0.28

The Authority's operating revenue sources are derived mainly from the delivery of a potable water production (90 percent) and the provision of sewerage services (7 percent). The Sewerage Sector in particular has potential for major revenue growth. The current fiscal year's revenues are budgeted at \$308 million. The Industrial Customer segment accounts for more than 42 percent of total rates and charges.

Current tariff rates have been set by the Public Utilities Commission (predecessor of the Regulated Industries Commission) in 1993.

Operating Expenses

The Authority's operating expense structure is detailed as follows:

Expenses	\$000's	%
Emp/Services	172,154	33.20
Goods & Services	195,892	36.81
Contracted to an Purchaser	174,176	32.62
Finance	243,572	45.84
Other	111,923	20.96
Total	517,717	100.00

Financing Expenses

At 2003 April 30, the Authority had 13 loans, with a total principal value of \$4,033,740,897. Of these, 11 are bonds with a maturity profile between 2015 and 2020. In fiscal 2004/05, the Authority's debt service obligations will amount to \$310 million. The significant increase in debt service obligations over the last five years are due to the fact that the moratoria on interest and principal have come to an end.

Financial Strategies

The Authority continues to implement strategies geared towards improving its operating ratio. In addition, investment continues to expand in new technologies aimed at improving its operational efficiencies, customer service and financial performance.

The Authority introduced a performance-based system of budgeting over the course of the last two years. In further pursuit of enhanced cost management, it has also refocused its finance function on management information reporting.

3. Strategic Plan

The Authority's Strategic initiatives are guided by the Government's Three-Year Water Sector Strategic Plan as the first step in a long-term development program in pursuit of the Government's 2020 Vision development targets. The 2020 Vision water infrastructure program is estimated to cost \$2.7 billion. A Three-Year Investment Program (\$1.2 billion) is a critical component of the Water Sector Strategic Plan. This Program will now and in the immediate future significantly improve the delivery of water and wastewater services to all customers in Trinidad and Tobago. The long term focus will be on critical areas of the infrastructure, to address the undensized and deteriorated pipe network, leakage reduction, rehabilitation of production sources, reconstruction of the sewerage sector and complementary institutional strengthening initiatives.

A complete Master Plan will be developed as a working framework for an integrated approach to the long-term development of the water and sewerage sector. Other initiatives include the re-engineering of the Authority's Systems, Processes and Procedures to support continuous improvement to customer services. Further to this, the Authority will work with its stakeholders to build consensus with respect to the restructuring of the Authority's Operations.

4. Regulatory Framework

The Authority operates in a regulated market and is committed to delivering its services to customers in keeping with the applicable standards. The Public Utilities Commission in the past has regulated Rates and Charges and the Regulated Industries Commission (RIC) has now taken over that role. It is also mandated to establish and maintain operating standards.

At present the Authority and the RIC are jointly developing an implementation schedule for operating standards proposed by the RIC. Tariff reviews and regulatory standards, which are managed by the RIC, are integral levers for moving the organization into the future as defined by the Government's Water Sector Strategic Plan.

The Authority continues to abide with other key regulatory standards, which affect the impact of its operations on the physical and social environment.

5. Organizational Structure

A Board of Commissioners appointed by the Cabinet of the Government of the Republic of Trinidad and Tobago and an Executive Management Team headed by the Chief Executive Officer are responsible for the management of the Authority.

The members of WASA's Board of Commissioners are as follows:

- Dr. Robin Bertrand - Chairman
- Mr. Richard Roach
- Ms. Charmaine Caballero
- Ms. Cheryl Guide
- Mrs. Helen Drayton
- Ms. Margaret Rose
- Mr. Carl Croome

The members of WASA's Executive Management Team are as follows:-

- Mr. Erol Crimes - Chief Executive Officer
- Mr. Dion Abdool - Corporate Secretary
- Mr. Oswyn Edmund - General Manager, Tobago Services
- Mr. Leslie Figo - General Manager, Corporate Services
- Dr. Steve Fletcher - Director, Water Resources (Ag.)
- Ms. Shirley Jack - General Manager, Finance (Ag.)
- Mr. Wayne P. Joseph - General Manager, Operations
- Mr. Gerard Richardson - General Manager, Human Resources (Ag.)
- Mr. Godfrey Ventour - General Manager, Business Services

6. Way Forward

The Authority is embarking on a Water and Wastewater Master Plan, which will be pivotal to improving the service to our

customers through the implementation of new technologies and systems. This plan will lay the framework for institutional and infrastructural development (including the replacement of the pipeline network) in achievement of the Government's 2020 Vision Objectives.

GENERAL INFORMATION

- The Authority has obtained all necessary consents and authorizations in connection with the issue and performance of the Bonds. The issue of the Bonds is authorized under the Water and Sewerage Act, Chap. 54:40.
- The Bonds are eligible for inclusion in the Statutory Fund of Insurance Companies and will be considered as assets in and originating in Trinidad and Tobago within the meaning of Sections 47(1) and 186(3) respectively of the Insurance Act 1980.
- Copies of the Trust Deed may be inspected on any business day (Saturday and public holidays excluded) from 9.00 a.m. to noon at the offices of the Authority and the Central Bank of Trinidad and Tobago.
- The Authority is not involved in any litigation or arbitration proceedings relating to claims or amounts which are material in the context of the issue of the Bonds nor so far as the Authority is aware are any such litigation or arbitration proceedings pending or threatened.

FURTHER PARTICULARS

This Prospectus is filed with the Securities and Exchange Commission (pursuant to Section 6 of the Securities Industry Act, 1993 ("SIA"), for the purpose of giving information to investors about the Bonds.

The Authority is responsible for the information contained in this Prospectus and to the best of its knowledge and belief all such information is in accordance with the facts and does not omit anything which is likely to materially affect the investment.

Each recipient of this Prospectus is expected to make his own independent assessment of the securities described herein after making such investigation and consulting with such advisors, as he may deem necessary. Each recipient shall determine his interest in participating in this transaction upon the basis of that independent assessment.

No person is authorized to give any information or make any representation not contained in this Prospectus and any information or representation not contained herein must not be relied upon as having been authorized by or on behalf of the Authority. The Prospectus is being distributed specifically with reference to the Bonds and may not be reproduced or used in whole or in part for any other purpose.

List of Government Securities Intermediaries

AGFA Finance and Merchant Bank
Caribbean Security Interests Brokers Limited
Chlorox Merchant Bank Limited
First Citizens Bank Limited
First Citizens Bank Limited
Intercommercial Bank and Merchant Bank*
Republic Finance and Merchant Bank Limited
STT Merchant Bank and Finance Company Limited
FirstCaribbean International Banking and Financial Corporation Limited
SouthTrust & Merchant Bank Trinidad and Tobago Limited
Trinidad and Tobago Trust (Retail) Corporation

