
GUIDING PRINCIPLES FOR SUCCESSFUL REFORMS OF URBAN WATER SUPPLY AND SANITATION SECTORS

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ACRONYMS

BOD	Board of Directors
Capex	Capital Expenditure Program
CBO	Community Based Organization
DAWASA	Dar es Salaam Water and Sewerage Authority (Tanzania)
DAWASCO	Dar es Salaam Water and Sewerage Operating Company (Tanzania)
DJB	Delhi Water Board (India)
IBNET	International Benchmarking Network for Water and Sanitation Utilities
IFI	International Financing Institutions
JMP	UNICEF/WHO Joint Monitoring Program
LRMC	Long Run Marginal Cost
MD	Managing Director
MDG	Millennium Development Goals
NGO	Non-Governmental Organization
NRW	Non-Revenue Water
O&M	Operation and Maintenance
ONEP	<i>Office national de l'Eau potable</i> (Morocco)
NWSC	National Water and Sewerage Corporation (Uganda)
OBA	Output based Aid
ONEA	<i>Office national de l'Eau potable et de l'Assainissement</i> (Burkina Faso)
PPP	Public-Private Partnership
SDE	<i>Sénégalaise des Eaux</i> (Senegal)
SEEG	<i>Société d'Exploitation des Eaux de Guinée</i> (Guinea)
SOE	State-Owned Enterprise
SONEG	<i>Société des Eaux de Guinée</i> (Guinea)
SONES	<i>Société des Eaux du Sénégal</i> (Senegal)
SSP	Strategic Sanitation Plan
SISS	<i>Superintendencia de Servicios Sanitarios</i> (Chile)
TORs	Terms of Reference
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization
WSS	Water Supply and Sanitation

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INTRODUCTION

The primary objective of this report is to provide practical guidance to World Bank teams advising on the design and implementation of reforms of urban water supply and sanitation (WSS) sectors.

A Structured Methodology to Help Think Outside of the Box. The reform of urban WSS sectors is needed to increase access to the infrastructure, improve efficiency of operations, and enhance the reliability, sustainability and affordability of the service. Obviously, there is no “one-size-fits-all” solution: policies and institutional arrangements that have worked well, for example, in a French speaking West African country may not be directly replicable in an English speaking South Asian country. However, if solutions have to be tailored to local circumstances, issues to be addressed are often similar. Because of this similarity, this report proposes a structured methodology for engaging in the reform process and for building a broad consensus on the design of its key components. By presenting what is usually accepted as best practices and under which circumstances they have successfully been implemented, the report also aims at encouraging stakeholders involved in the reform process to “think outside of the box” of existing policies and institutional arrangements.

A Sourcebook. Several reports have recently been published by the Bank on specific topics related to urban WSS. Bank teams involved in operations may not always be aware of such reports, let alone publications by other institutions, even if the new website of the Bank Water practice makes a large volume of information available. Also, Bank teams involved in operations often do not have sufficient time to read lengthy papers and extract what is needed to advise on specific reforms. This report is also meant to be a sourcebook, pointing Bank teams to relevant Bank publications and indirectly to publications by other institutions, as well as summarizing key issues covered while proposing a logical framework for establishing a link between them.

Improving the Outputs of Consultants. Bank teams are seldom responsible for directly advising governments on the reform process. The performance of consultants engaged by governments, and sometimes by the Bank, to carry out such task has been variable either because of irrelevant experience, ambiguous terms of reference (TORs) or inadequate guidance provided during reviews of consultants’ reports. This report should help to draft more focused TORs.¹ Also, by presenting examples of what has worked or not worked in similar cases, it should assist Bank teams in reviewing consultants’ findings and formulating constructive recommendations.

Analytical Work and Specific Cases. This report includes three main chapters to discuss how to: (i) measure the performance of an urban WSS service; (ii) explain apparent performance gaps, if any; and (iii) design and implement reforms to increase access to the infrastructure, improve the efficiency of operations and enhance the reliability, sustainability and affordability of the service. As already mentioned, this report builds on several pieces of analytical research already published (or about to be published) by the Bank on topics such as stakeholder consultation, governance of public service providers, service efficiency, public-private partnerships, financing, and economic regulation. The report also illustrates the various topics covered with specific cases of reforms, or consequences of lack of reforms, presented in boxes or referred to in footnotes.

¹This report does not include examples of TORs but instead provides elements for preparing TORs tailored to the needs of specific urban WSS sectors. Attempts to develop databases of good quality TORs have mostly failed in the past.

EXECUTIVE SUMMARY

One of the Millennium Development Goals (MDG) is to halve by 2015 the proportion of the urban population who were without sustainable access to safe drinking water and basic sanitation in 1990. The UNICEF/WHO Joint Monitoring Program (JMP) tracks progress toward the goal country by country. Data published by the JMP show good progress of ratios measuring access to drinking water, which in urban areas mostly means piped water, with actual figures for 2004 close to notional interim targets in almost all regions. However, ratios measuring direct access to piped water through individual connections decreased in Sub-Saharan Africa and Southern Asia between 1990 and 2004. Sub-Saharan Africa and Southern Asia are off target for access to sanitation, which includes sewers as well as on-site facilities. Several regions, including Sub-Saharan Africa, Southern Asia, and South-Eastern Asia are even way off target when it comes to direct access to sewers through individual connections.

WSS Infrastructure and WSS Service. For practical reasons, the JMP data measure access to water supply and sanitation (WSS) infrastructure. By including the words sustainable, safe and basic in their definition, the MDG suggests that one should also ensure that access to infrastructure is translated into service. This is seldom the case when policies, incentives or institutional arrangements are inadequate. In many cases, despite well-developed infrastructure, WSS service is:

- Not reliable with: (i) piped water being available on an intermittent basis and thus of bacteriological quality that cannot be guaranteed, as pathogens enter water distribution pipes each time they empty; and (ii) raw sewage regularly overflowing in storm water drains due to sewer blockages or poorly functioning pumping stations;
- Not financially sustainable with collected user charges insufficient to recover operation and maintenance (O&M) costs, let alone capital costs, leaving operations mostly dependent on fiscal transfers;
- Not environmentally sustainable with water sources being rapidly depleted, often as a result of poor piped WSS service that forces customers to tap local aquifers for complementing water supplies, or polluted by the indiscriminate discharge of waste water into receiving bodies; and/or
- Not affordable by low income groups, despite low tariff levels and complex tariff structures intended to protect them against high water bills. Insufficient revenues inevitably result in a poor service and force households and businesses to rely on expensive and often unsafe substitutes.

Reforming WSS Sectors to Achieve the MDG. This report focuses primarily on improving the service provided by official WSS service providers, which because of limited coverage or poor performance do not always have the monopoly of provision usually associated with WSS in urban areas. Substitutes to the official piped service in the form of individual infrastructure (backyard wells or boreholes), equipment (pumping, storage, disinfection, and so forth), or reliance on small entrepreneurs (tankers, water vendors, sludge handlers, and so forth) often play an important role and affect the MDG data. Although the correlation between reforms of official WSS service providers and achievement of the MDG in urban areas is not formally established yet, there is no doubt that engaging in reforms, i.e., improving the sector's accountability framework and implementing best practices, highly increases the chances of providing access to a reliable, sustainable and affordable service to a larger segment of the urban population. Several countries in Latin America, Eastern Asia, Middle East and North Africa, or Sub-Saharan Africa have, during the last two decades, implemented in-depth reforms of their urban WSS sectors and are showing positive trends towards achieving the MDG. Many other countries, in particular in Southern Asia, are yet to engage in this process.

Diagnostic of the WSS Service. Chapter 1 rapidly analyzes the data published by the JMP for monitoring the evolution of access to urban WSS infrastructure. It also reviews the indicators developed by the International Benchmarking Network for Water and Sanitation Utilities (IBNET) for measuring efficiency, reliability, financial sustainability, environmental sustainability, and affordability of piped WSS service. In many countries however, it is difficult, if not impossible, to carry out a meaningful analysis of the quality of piped WSS service given the lack of reliable data on parameters as basic as numbers of connections, water production, sales and non-revenue water (NRW), or the financial situation of service providers. Implementing a program aimed at generating reliable technical, commercial and financial data is often one of the first issues to be addressed to help monitor the progress of performance improvement programs and design improved policies. Chapter 1 also emphasizes the need for understanding the role of substitutes when the official piped WSS service is deficient.

The Reasons for a Poor WSS Service. Chapter 2 summarizes the methodology proposed for assessing the accountability framework of urban WSS sectors, defined as the set of mandates of its key actors, contractual arrangements that clarify both interaction between actors and the instruments used by each actor to implement their mandates. It focuses on five key functions of the urban WSS sector: (i) policy formulation; (ii) asset management and infrastructure development; (iii) service provision; (iv) financing of operations; and (v) economic regulation of the service. It recommends paying particular attention to incentives, either productive or counterproductive, that influence the performance of the WSS service. It also suggests identifying vested interests that may be affected by moves towards better practices. Providers of substitutes to the piped WSS service and officials and staff who engage in corrupt practices could become vocal lobbies against reforms that would, if successfully implemented, affect their revenues.

Nine Key Issues to be Addressed. Chapter 3 summarizes recommendations for designing and implementing reforms of WSS sectors and focuses on:

- Involving stakeholders in WSS reforms;
- Revisiting WSS policies;
- Changing the culture of public WSS service providers;
- Optimizing WSS asset management and infrastructure development;
- Improving WSS service provision through internally developed programs;
- Improving WSS service provision through partnerships with the private sector;
- Financing WSS operations in a sustainable and affordable manner;
- Regulating the WSS service in a transparent and predictable manner; and
- Implementing WSS reforms.

Involving Stakeholders in WSS Reforms. Reforming a non-performing urban WSS sector often leads to emotional debates that could rapidly get out of control if not properly framed. The above described diagnostic of service quality and operations efficiency aims at providing rational arguments to engage into constructive dialogues with key stakeholders such as consumers, non-governmental organizations, management and staff of WSS service providers, providers of substitutes, politicians, the media, private operators and financiers. Addressing the valid concerns of affected stakeholders is crucial for building a broad consensus on the reform agenda. Also, identifying the losers in the reform process is as essential as identifying the winners to estimate the potential economic return of the reform.

Revisiting WSS Policies. Options for structuring urban WSS sectors should be investigated as part of the reform process. This might include decentralizing or aggregating operations, splitting or combining drinking water production, distribution and wastewater collection and disposal operations or merging

them with other network services, such as electricity distribution. Water resource management issues that affect the urban WSS service, such as trading of water entitlements, or standards that apply to effluent quality should also be clarified. While revisiting policies, particular attention should be paid to service provision to the poor, and in particular to those who live in informal settlements, and the regulation of substitutes to the official piped WSS service.²

Changing the Culture of Public WSS Service Providers. Recent Bank reports on improving the performance of public WSS service providers emphasize the need for increasing autonomy, accountability, and customer orientation of public WSS service providers. This report recommends that service providers be corporatized, and that selection procedures and operation of the boards of directors, management team and staff of such corporatized entities be clarified. Contractual commitments between service providers and governments, which often remain their main financing source, and within a corporatized entity itself should be considered. Changing the culture of public WSS service providers also include developing instruments for increasing accountability to consumers (information, consultation, participation, recourse and redress) and for building the capacity of the various actors (training, professional networks, and certification of professionals). The accountability framework should help identify the weak points of the culture—risks of fraud and corruption in human resource management, commercial activities, infrastructure development, and provision of substitutes—so that a credible plan to minimize the effects of those weaknesses can be designed.

Optimizing WSS Asset Management and WSS Infrastructure Development. Infrastructure development is one aspect that needs special attention since significant inefficiencies can result from inadequate demand assessment, planning, design, procurement and project implementation procedures, as well as substantial diversion of public funds through fraudulent or corrupt practices. Responsibility for infrastructure development should normally be vested with corporatized entities that own and maintain WSS assets and are responsible for servicing the debt attached to the financing of their extension rather than with central engineering agencies: it is the best way of ensuring that infrastructure development plans correspond to customer needs and are affordable based on revenues of WSS operations.

Improving the Provision of the WSS Service through Internally Developed Programs. Governments or boards of directors of public WSS service providers may opt to improve the quality of the service and the efficiency of operations through internally developed programs. A plan to outsource non-core functions of the technical, commercial and financial activities should be developed as part of this exercise. Improving technical operations usually requires a special focus on reducing non-revenue water (NRW) and energy consumption, improving procurement of goods and parts and increasing staff productivity. Enhancing commercial operations normally necessitates an overhaul of customer relations, metering, billing and collection procedures. A special focus on public customers, who could represent a large share of sales revenues, and low-income customers is often needed. Findings and recommendations of independent audits of financial statements and financial management procedures should form the basis of financial management improvement programs.

Improving WSS Service Provision through Partnerships with the Private Sector. The findings and recommendations of several Bank notes and toolkits on public-private partnerships (PPPs) are summarized in this report, which focuses mostly on: (i) the key steps for designing and implementing successful PPPs; (ii) the limits of PPPs for raising commercial financing; (iii) the allocation of risks and responsibilities between public and private parties; (iv) the development of institutions to manage PPPs; and (v) the selection of private operators.

² Other key policy issues, such as corporatization of WSS service providers, WSS service standards, metering, disconnection for non-payment, cost recovery objectives and pricing principles, public-private partnerships are covered in other sections of this report.

Financing WSS Operations in a Sustainable and Affordable Manner. The cost of WSS service eventually has to be financed by customers, taxpayers or a mix of both. Gradually transferring the burden of financing the full cost of the service to customers and building the creditworthiness of service providers so that financial markets can eventually be accessed make sense in developing countries whose governments are often faced with fiscal constraints and debt ceilings. There is often a long way to go for moving an urban WSS sector from a loss-making situation, where user charges are insufficient to cover operation and maintenance (O&M) costs, to a sustainable cost recovery situation where user charges allow coverage of O&M costs, depreciation of assets on a revalued basis, a return on capital sufficient to finance interest on debt and remunerate the equity invested, and a proper mitigation of the foreign exchange risk. Easing the transition often means that the development of the infrastructure has to be financed by a mix of cash generation, debt, and grants. When development grants are justified, they should be designed to encourage efficiency and in any case be phased out in the short to medium terms. The best way for mitigating the foreign exchange risk is to ensure that local financial markets are able to provide debt in local currency on terms compatible with a sector whose assets are depreciated over long periods; obviously this issue cannot be addressed only by improving urban WSS policies.

Regulating the WSS Service in a Transparent and Predictable Manner. Economic regulation of WSS services, broadly defined as the rules and organizations that set, monitor, enforce and change the allowed tariffs and service standards for WSS service providers, has also been the subject of several recent Bank reports and publications. While economic regulation has often been associated with PPPs, it is mostly about stopping the monopoly abuse of WSS service providers that could provide a bad quality service and charge price above costs to increase their profits or cover their inefficiencies; thus public service providers should be regulated as should private ones. This report summarizes recommendations for regulatory arrangements when the service is provided by a private or a public operator and discusses the pros and cons of regulation by contract and regulation by regulator. It also lists the key operating principles of a regulator, if created. This section finally summarizes best practice for setting WSS tariffs and tariff structures and designing subsidies that do reach those who need them.

Implementing WSS Reforms. This report suggests a prioritization of issues to be addressed when confronted with urban WSS sectors characterized by limited infrastructure coverage, low efficiency and accountability of service providers, and poor reliability, sustainability, and affordability of service delivery:

- First, the financial situation of the sector should be fixed: this could require a mix of balance sheet cleaning, debt restructuring, cost saving programs, commercial activities improvements and, if necessary, gradual tariff increases. The often-made statement that tariffs cannot be increased before the quality of service improves is usually a non-starter: service improvement is likely to take several years and lumpy tariff increases are unlikely to be acceptable once the quality of service has actually improved.
- Second, the autonomy of service providers should be built with the main objective of moving service provision away from short-term political agendas: this usually requires the corporatization of service providers.
- Third, the responsibility for developing the infrastructure should be transferred to corporatized service providers: since the latter would be responsible for servicing the debt, this should increase the chance of implementing investment programs affordable by sales revenues.
- Fourth, plans for improving the quality of the service and accountability to consumers should be developed: this could require internal contracting, outsourcing of some activities of the service provision or comprehensive partnerships with the private sector.

- Fifth, the consultation effort should be maintained throughout the reform process: managing expectations, addressing valid stakeholder concerns and ensuring that vested interests are not attempting to derail it are essential for successful design and implementation.

If credible actions plans reflecting the above are submitted, the chances of mobilizing financing for rehabilitating and expanding the infrastructure at favorable terms should greatly be increased.

1. MEASURING THE PERFORMANCE OF THE WATER SUPPLY AND SANITATION SERVICE

Identifying the performance gaps of the WSS service should be the first step when initiating reforms of an urban WSS sector. Measuring access to WSS infrastructure, as done for example by the UNICEF/WHO Joint Monitoring Program is necessary but not quite sufficient since, in too many cases, infrastructure fails to translate into service. Indicators developed by the International Benchmarking Network for Water and Sanitation Utilities (IBNET) help to measure the efficiency, reliability, sustainability and affordability of the WSS service. However, IBNET indicators do not document the role substitutes to piped WSS play when the official WSS service provider is deficient. Chapter 1 discusses the issues of measuring access to WSS infrastructure, the quality of the service, and understanding the role of substitutes to piped WSS.

1.1 Access to the WSS Infrastructure

Data Available from the UNICEF/WHO JMP. Annexes 1 and 2 summarize data published by the JMP³ for nine regions.⁴ For urban water supply, the JMP differentiates between direct access to piped water through individual connections and access to an improved water source that could, in addition, include shared private or public water points or other safe sources. For urban sanitation, the JMP differentiates between access to sewers through individual connections and access to basic sanitation that could also include on-site sanitation such as septic tanks for black waters, latrines for excreta and soak pits for grey waters. In Annexes 1 and 2: (i) the performances of select large countries in each region have been singled out, as obviously they influence the region's overall performance; and (ii) the actual 2004 performance has been assessed against a 2004 indicative interim target,⁵ and highlighted when the actual performance is more than four percentage points below the indicative interim target. Data reported by the JMP for coverage and connection ratios are based on multi-purpose household surveys, a practice that is much more reliable than the earlier one of self reporting by ministries in charge of the WSS sector. In particular the standardized methodologies of the USAID's Demographic Health Surveys and UNICEF's Multiple Indicator Cluster Surveys minimize the risk of different interpretations of how to account, for example, for households which buy their water from connected neighbors.⁶

Water Supply. Annex 1 clearly shows that Sub-Saharan Africa as a whole is lagging behind, both for access ratios and connection ratios and that among countries with a total population above 30 million in 2004 only South Africa is on track for access (but still slightly behind for connections). Nigeria's performance is worrisome with a 2004 connected population (9.3 million) lower than that reported for 1990 (10.2 million). Annex 1 also shows that the connection ratios have indeed decreased since 1990 in the largest countries of Southern Asia (Bangladesh, India and Pakistan). A similar remark can be made for the South-Eastern Asia region where Indonesia and Myanmar are lagging behind for both access and connection ratios and the Philippines is lagging behind for the access ratio.

Sanitation. Annex 2 shows that Sub-Saharan Africa and Southern Asia are currently off target for access to sanitation. These two regions as well as South-Eastern Asia are more than 20 percentage points

³ UNICEF/WHO Joint Monitoring Programme for Water Supply and Sanitation. <http://www.wssinfo.org>.

⁴ Northern Africa; Sub-Saharan Africa; Eastern Asia; Southern Asia; South-Eastern Asia; Western Asia; Latin America and Caribbean Islands; Oceania; Commonwealth of Independent States (ex USSR).

⁵ The 2004 indicative target is calculated using a linear progression between the 1990 performance and the 2015 MDG target.

⁶ Some countries could include them in the category "with access through a direct connection," others in the category "with access to an improved water source."

behind targets when it comes to direct access to sewers through individual connections. Even some large countries of the Latin America and the Caribbean Islands region (Argentina, Brazil) would appear to be behind schedule on direct connection.

1.2 WSS Infrastructure versus WSS Service

For practical reasons, the JMP publishes data that can be tracked by routine surveys and that mostly identify the type of WSS infrastructure to which consumers have access. By including the words **sustainable** and **safe** drinking water and **basic** sanitation in their definition, the MDG suggests that the efficiency, reliability, financial and environmental sustainability, and affordability of the WSS service should also be documented to provide a more accurate picture of the situation.

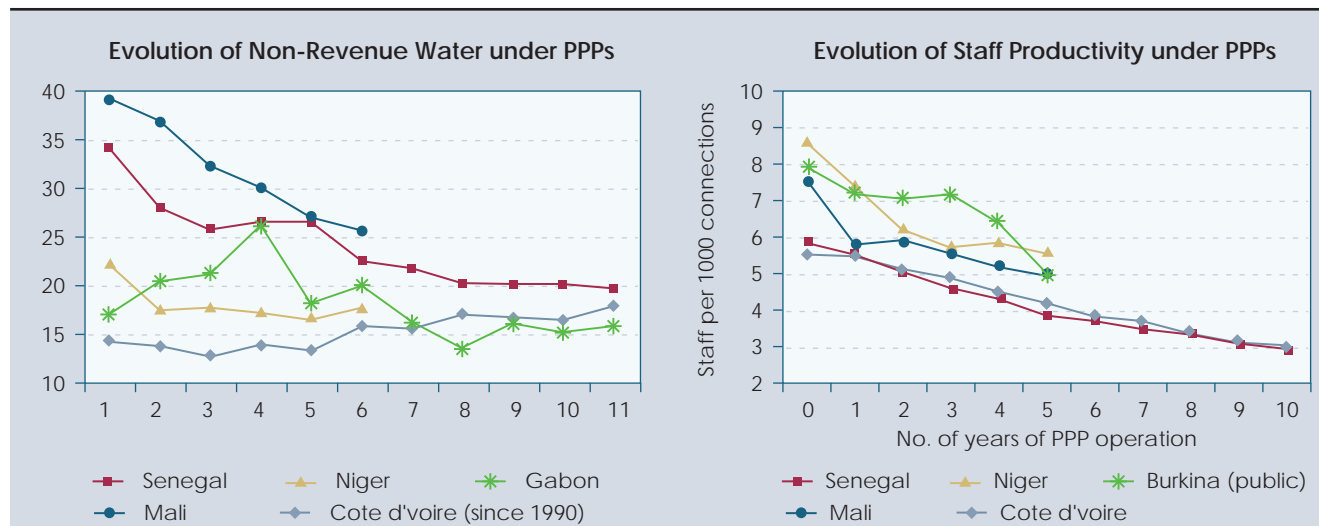
Performance of Piped WSS Service. Since 2005, The International Benchmarking Network for Water and Sanitation Utilities⁷ (IBNET) has developed a series of indicators to help carry out a complete physical check-up of formal providers of piped WSS services. Annex 3 gives the complete list of IBNET indicators aimed at measuring:

- **Service coverage:** (i) access through direct connections and shared water points; (ii) access to sewers; (iii) water production; and (iv) water consumption;
- **Efficiency:** (i) non-revenue water (NRW); (ii) metering practices; (iii) staffing ratio; and (iv) cost structure;
- **Reliability:** (i) continuity of the water supply service; (ii) quality of water distributed; (iii) number of water pipe breaks and of sewer blockages; and (iv) complaints by customers;
- **Financial sustainability:** (i) billing and collection; (ii) cost structure; (iii) operating cost coverage and debt service ratio; and (iv) value of gross fixed assets by activity;
- **Environmental sustainability:** (i) level of treatment received by the waste water generated; and
- **Affordability:** (i) annual bill for average consumption of six cubic meters per month (six m³/month) for households with direct or shared connections; and (ii) residential fixed component of the WSS bill.

Generating Reliable Data on WSS Service. When reliable data are generated, the above indicators do give a good snapshot of the quality of the service and of the performance of service providers and a good picture of their evolution over time. As an example, Graph 1 gives the evolution of NRW and staffing ratios for select Western and Central African countries that have implemented public-private partnerships (PPPs) during recent years and where both the public and private partners had an obligation to report on their performance. In many cases however, it is difficult or even impossible to find reliable data on parameters as basic as: (i) the numbers of water or sewer connections, since many illegal connections are suspected to exist; (ii) water production, sales and NRW, since bulk water and individual meters are inexistent or deficient; (iii) volumes of waste water collected and treated; or (iv) on the actual financial situation, since financial statements are either not issued or not independently audited. Designing and implementing a program aimed at generating reliable technical, commercial and financial data is often one of the first issues to be addressed to help monitor the progress of performance improvement programs and formulate informed policies.

⁷ The International Benchmarking Network for Water and Sanitation Utilities is a project funded by the Department for International Development of the UK and implemented in partnership with the World Bank and the Water and Sanitation Program. It contains information on more than 2,000 utilities in 85 countries. <http://www.ib-net.org>.

Figure 1 Select Western and Central African Countries



Source: Fall et al. 2006

1.3 Substitutes to the Piped WSS Service

IBNET focuses on piped WSS service and the performance of official service providers. In cities where the latter are deficient, substitutes (such as backyard wells or boreholes, roof tanks fed by booster pumps, in house disinfection equipment, tankers, water vendors, independent distribution networks and sludge removers) play an important, if not a key, role not only for non-connected households and businesses, but also for those who need to complement a piped WSS service of poor quality (Box 1). Substitutes could have an important impact on the economy of the urban WSS sector as they capture a share of the overall WSS budget that could possibly be used to improve the piped service and extend it to unserved areas (Box 1 and Annex 5). Substitutes could also impact the environment, as unauthorized abstraction of groundwater often translates into the rapid depletion of local aquifers and the indiscriminate dumping of sludge contributes to the pollution of receiving water bodies. Providers of substitutes to piped WSS are an important group of stakeholders to be included in the design of reforms, and possibly compensated, as their revenues are likely to be affected by its implementation.

Box 1 Delhi (India): The Cost of Substitutes to Piped Water

In 2005, the public WSS utility Delhi Jal Board (DJB) provided piped WSS services to about 16 million people through 1.5 million water connections and 1.3 sewer connections. A comprehensive survey of about 8,000 households, 1,000 industrial enterprises and 500 commercial establishments carried out in 2006 in two zones of the city showed that while most customers in legal settlements received water twice a day for a total of about three to four hours, 95 percent of them used large overhead roof tanks, 75 percent booster pumps usually fitted directly on distribution pipes, and 50 percent indoor filtration and disinfection equipment. 35 percent of households in underserved areas relied exclusively on tankers and spent more than two hours per day collecting water. Households in legal settlements spent an average US\$4.1/month on substitutes to piped water (of which US\$1.3 were for investment and US\$2.8 for operation), a figure to be compared with their average DJB bill of US\$3.1/month. Households in underserved areas spent a total of US\$4.2/month to cope with the poor public service, including time spent for collecting water. While customers in Delhi spend about US\$110 million/year to develop and operate substitutes to the piped WSS service, only about US\$80 million/year of DJB operating costs of US\$120 million/year are recovered from collected user charges that the government has so far been reluctant to increase because of alleged affordability issues.

Source: Misra 2008

2. UNDERSTANDING THE REASONS FOR APPARENT PERFORMANCE GAPS

Benchmarking is too often associated with allocating marks to the performance of WSS utilities with the objective of ranking their performance. According to IBNET, the main objective of benchmarking is rather to search and identify best practice with the objective of implementing appropriate best practices and improving performance. IBNET differentiates between metric benchmarking, measuring performance against various indicators (Chapter 1) and process benchmarking, understanding the legal, policy or institutional factors that lead to apparent performance gaps. Process benchmarking utilizes metric benchmarking as a basis for bridging performance gaps and for achieving best performance, taking local circumstances into account. Chapter 2 focuses on process benchmarking, i.e., the analysis of the environment within which the WSS sector operates, and emphasizes the need for understanding its overall accountability framework. Chapter 2 also discusses how vested interests could affect performance.

2.1 Engaging in Process Benchmarking

Accountability Framework, Key Functions and Governance. Assessing the performance of a WSS sector requires a good understanding of:

- The overall accountability framework within which its key actors operate. In this report, the accountability framework is defined as the set of: (i) mandates of the various actors; (ii) contractual arrangements that define relations between actors, and (iii) instruments used by actors to implement their mandates;
- The conditions under which the following key functions are performed: (i) formulation of WSS policies; (ii) management of assets and development of infrastructure; (iii) provision of service; (iv) financing of the development of the infrastructure; and (v) regulation of the service; and
- The governance of WSS service providers.

Template for Assessing the Accountability Framework. A template for assessing the accountability framework of WSS sectors and the governance of public service providers has recently been developed to better frame process benchmarking exercises.⁸ The template was designed to cover a wide range of institutional arrangements, from corporatized public utilities with national coverage to simple municipal departments with no or limited autonomy (this is why this report uses the wording WSS service provider rather than WSS utility), and service providers that carry out all activities in house, to service providers that outsource most of them to professional operators as part of public-private partnerships (PPPs). Teams should refer to this template in particular for preparing TORs of consultants engaged for investigating the current situation.

The template regroups a long list of topics to be covered under the following main headings:

- **Policy environment:** to clarify the existing legal environment, mandates, contractual arrangements and instruments;
- **Functioning of service providers:** to assess existing governance, human resources management and financial reporting arrangements;

⁸ Locussol and van Ginneken 2008

- **Development of infrastructure:** to describe conditions under which asset management plans, demand assessments, infrastructure development plans, and financing applications are currently prepared and projects implemented;
- **Provision of service:** to review procedures currently followed for technical and commercial operations, including arrangements for providing the service to low-income households, as well as experiences with outsourcing;
- **Financing of infrastructure development:** to clarify procedures currently followed by governments, government-owned lending institutions, local financial markets, and international financing institutions for appraising financing applications and monitoring execution of the financing; and
- **Economic regulation of service:** to explain current tariff setting mechanisms, performance monitoring and operations of the regulator (if applicable).

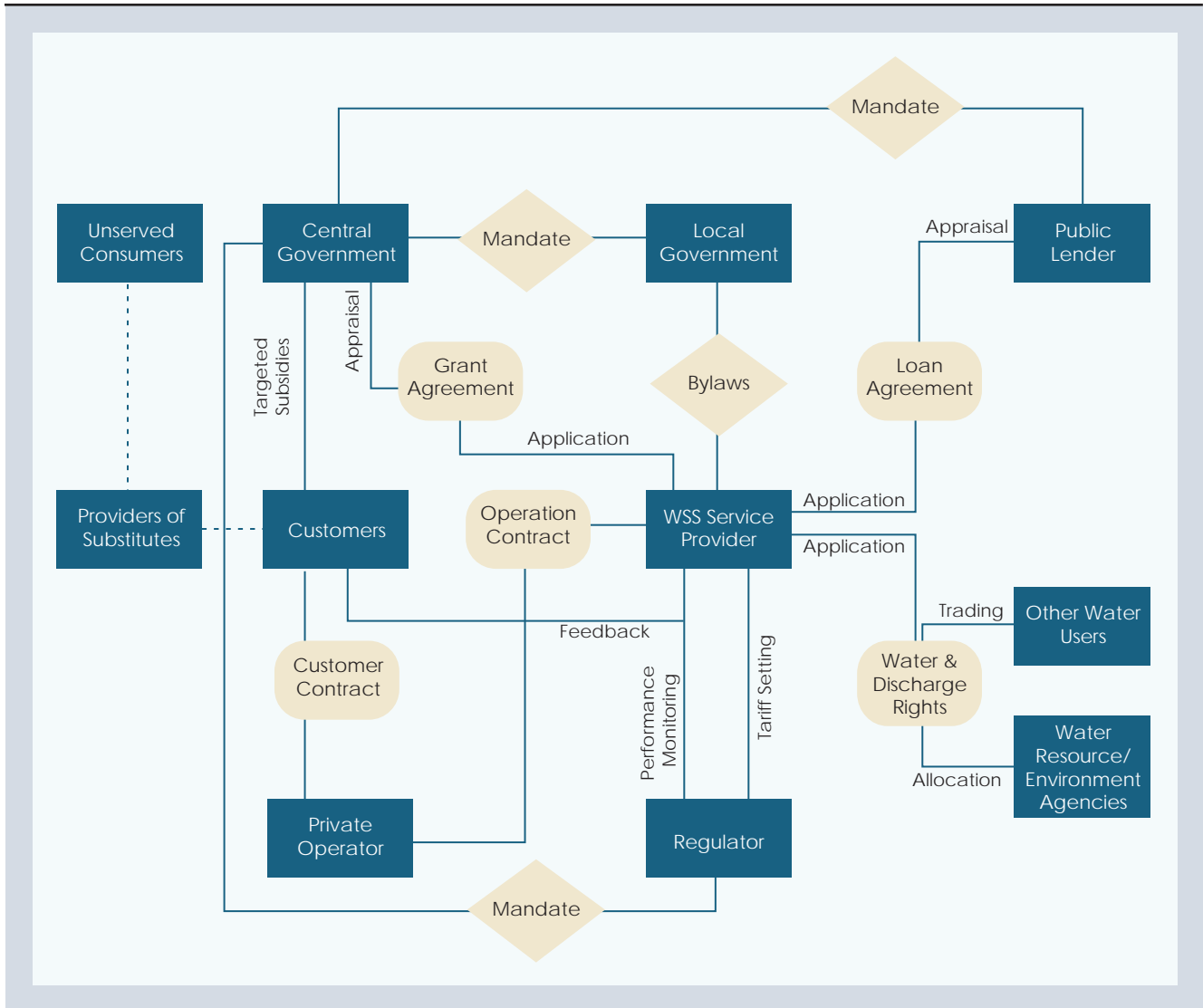
Enhancing the accountability framework, i.e., ensuring that the mandate of each actor is clear and understood by all parties, the contractual relations are enforceable and the instruments used for implementing the mandates reflect good practice constitutes the core of the reform of urban WSS sectors.

To better illustrate the concept of accountability framework, Graph 2 and Table 1 present an unbundled (hypothetical) urban WSS sector where:

- A central ministry in charge of the urban WSS sector primarily: (i) sets policies and standards; (ii) provides grant financing to autonomous utilities to support specific public-good projects (such as pollution abatement); and (iii) directs targeted subsidies to low income residential customers to limit the impact of WSS bills on household budgets;
- Provincial governments, responsible for urban WSS in their territories, delegate the provision of the service to provincial public WSS utilities;
- Provincial public utilities, which own the fixed assets and are responsible for their development, finance new infrastructure from a mix of cash generated from operations, targeted grants provided by the central government, and debt;
- A specialized public lending institution, whose main mandate is to provide debt financing to local governments, raises funds from the central government, international financing institutions, and local financial markets;
- Provincial public WSS utilities are encouraged to sub-contract the technical and commercial operations of service to professional operators within the framework of ten-year *affermage*⁹ contracts;
- Customers are under direct contract with service operators, not with provincial utilities;
- The central government mandates an independent regulator for: (i) setting customer tariffs in line with its cost recovery and water demand management policies, (ii) monitoring the quality of service, and (iii) efficiency of infrastructure development and operations;

⁹This report uses the French word *affermage* because its best translation, i.e., lease contract is confusing. In an *affermage*, revenues from collections are shared between the operator and the owner of the contract; in a lease contract, the operator is supposed to pay a fixed leasing fee to the owner of the contract, meaning that the commercial risk taken by the operator is somewhat higher. Indeed, there are only a few examples of true lease contracts in urban WSS, such as in some small towns of the Philippines.

Figure 2 Actors, Mandates, Contracts and Instruments



Source: Locussol and van Ginneken 2008.

- A separate central government agency, responsible for allocating water resources and rights to discharge effluents in receiving water bodies, oversees the trading of water entitlements between water users; and
- A series of small scale and mostly informal WSS service providers cater to the needs of the population living in informal settlements where current urban development regulations forbid extension of the piped WSS infrastructure.

The accountability framework, defined as the mandates of the various actors, the way they interact with each other, and the quality of instruments used, obviously affects the quality of service and the efficiency of operations. Unlike the hypothetical urban WSS sector presented above, in many cases key functions are regrouped under a single entity, limiting accountability of actors and the transparency of their operations. For example:

Table 1 Actors, Mandates, Contracts and Instruments

<i>Actor</i>	<i>Mandates</i>	<i>Contracts</i>	<i>Instruments</i>
Central urban WSS ministry	<ul style="list-style-type: none"> • Setting urban WSS policies • Providing grant financing for specific WSS projects • Providing targeted subsidies 		<ul style="list-style-type: none"> • Appraisal of grant financing applications • Poverty surveys
Provincial government	<ul style="list-style-type: none"> • Overseeing urban WSS service in its territory 	<ul style="list-style-type: none"> • Delegation agreement (bylaws) 	<ul style="list-style-type: none"> • Chairmanship of the WSS utility's Board of Directors
Public WSS utility, mostly acting as "developer"	<ul style="list-style-type: none"> • Managing and developing WSS infrastructure • Providing WSS service 	<ul style="list-style-type: none"> • Delegation agreement (bylaws) • <i>Affermage</i> contract • Financing agreements • Water entitlements 	<ul style="list-style-type: none"> • Asset management plans • Demand assessments; infrastructure development plans; financing applications • Design, procurement, implementation supervision • Audits of operator's activities • Consolidated financial statements • Dispute resolution mechanisms • Reporting to regulator
Professional WSS service "operator"	<ul style="list-style-type: none"> • Operating and maintaining WSS assets • Meter reading, billing and collection • Interacting with customers 	<ul style="list-style-type: none"> • <i>Affermage</i> contract • Customer contracts 	<ul style="list-style-type: none"> • Technical operating manuals • Commercial operating manuals • Operating financial statements • Dispute resolution mechanisms • Reporting to utility and regulator
Customers	<ul style="list-style-type: none"> • Paying for WSS service 	<ul style="list-style-type: none"> • Customer contracts 	<ul style="list-style-type: none"> • Customer surveys • Dispute resolution mechanisms
Public lending agency	<ul style="list-style-type: none"> • Providing debt financing for WSS infrastructure projects 	<ul style="list-style-type: none"> • Financing agreements 	<ul style="list-style-type: none"> • Appraisal of financing applications • Supervision of compliance with conditionality
Regulatory body	<ul style="list-style-type: none"> • Setting customer tariffs • Monitoring WSS operations efficiency • Monitoring WSS service quality • Applying penalties 		<ul style="list-style-type: none"> • Customer surveys • Economic and financial models • Technical audits of reporting by developer and operator
Water resource agency	<ul style="list-style-type: none"> • Allocating water entitlements • Monitoring water quantity and quality • Setting and collecting bulk water tariffs • Monitoring trading of water entitlements • Applying penalties 	<ul style="list-style-type: none"> • Water entitlements 	<ul style="list-style-type: none"> • River basin and aquifer models • Water abstraction and quality monitoring • Economic and financial models • Dispute resolution mechanisms
Other water users	<ul style="list-style-type: none"> • Paying for bulk water abstraction 	<ul style="list-style-type: none"> • Water entitlements 	<ul style="list-style-type: none"> • Trading of water entitlements • Dispute resolution mechanisms
Small scale service providers	<ul style="list-style-type: none"> • No official mandate • Catering for consumers who are not served by the official WSS service provider 	<ul style="list-style-type: none"> • No official contracts • Informal agreements with served customers 	<ul style="list-style-type: none"> • Pre-financing of equipment and infrastructure • Operation of the service • Full recovery of capital and O&M costs from user charges

Source: Locussol and van Ginneken 2008.

- The functions of policy formulation, tariff setting and financing are often placed under the responsibility of a central ministry in charge of the urban WSS sector, which often is also in charge of allocating water abstraction and effluent discharge rights;
- The operations of the WSS service provider are not ring-fenced and still fall under the responsibility of a local government; or
- The functions of WSS asset ownership and infrastructure development and WSS service provision are carried out by the same entity.

Two cases located at both ends of the performance spectrum illustrate what rather compact (Box 2) and unbundled (Box 14) accountability frameworks could result in. As mentioned throughout this report, there is no “one-size-fits-all” solution: if unbundled accountability frameworks have usually performed better than compact ones, there are examples where they have been short-circuited by a powerful actor (Box 13). Likewise, there are examples of rather compact frameworks that have led to significant performance improvement by translating the notion of contracts, usually associated with relations between a public owner and a private contractor, into enforceable internal arrangements between departments of the same public WSS service provider (Box 6).

2.2 Presenting the Results of Metric and Process Benchmarking

Reporting on the Findings of the Benchmarking Exercises. The above-mentioned template suggests that the format used for reporting on the findings of metric and process benchmarking be presented in a way that helps build a consensus on the key problems to be solved before building a consensus of the solutions to be implemented. If consultants are employed to carry out benchmarking exercises,

Box 2 Delhi (India): Blurred Accountability Framework, Poor Service Quality and Suspected Vested Interests

In 2005, the WSS service provided in Delhi was of poor quality and the operations of the public provider Delhi Jal Board (DJB) were highly inefficient. Water was delivered at most a few hours per day and physical and commercial losses represented a high share of the water produced. Also, DJB collected user charges sufficient to cover only about 70% of its O&M costs. In recent years, DJB had survived thanks to the financial support provided by the local government for both operations and capital expenditures. As this financial support had been passed on as loans, DJB balance sheet carried a debt estimated, in the absence of independent audits of its financial statements, at about US\$1,100 million.

In Delhi, all key functions are in the hands of the Chief Minister of the local government who at the same time: (i) sets WSS policies and standards; (ii) chairs DJB’s board of directors, but loosely monitor DJB’s performance because of the paucity of the data generated; (iii) approves budget allocations to support operating costs, without attaching any conditionality for improving performances, and finances infrastructure development, implemented without reference to any medium-term development plan; and (iv) sets the WSS customer tariff, primarily with a short term electoral agenda in mind.

The case for reforming the piped WSS service that is neither reliable nor financially and environmentally sustainable, nor affordable despite low tariffs, would appear compelling. However, attempts to address some of the issues DJB is faced with, such as reducing NRW, increasing the permanence of the water supply and initiating a financial recovery were skillfully derailed by a local NGO claiming to be primarily concerned with governance issues. The shelving of this initiative actually served the vested interests this NGO may have unintentionally been the spokesperson of. In Delhi, vested interests are suspected to include: (i) large providers of substitutes to piped WSS services who might have no interest to see the quality of the piped WSS service improve; (ii) staff involved in commercial activities who might obtain kickbacks from customers for falsifying billings, expediting repair works or new connections, or not reporting illegal connections; and (iii) staff involved in procurement and construction activities who might receive kickbacks to influence contract awards or allow lower quality of construction.

Source: World Bank 2005 and Davis 2003

their reports should be summarized. In most cases, it should be possible to give a good snapshot of the quality of service and performance of WSS service providers, as well as identify the main performance gaps of those providers and the shortcomings of the accountability framework of the sector, including counterproductive incentives built in the system, in a few pages. A graph depicting the current accountability framework should also be prepared to support the presentation. Annex 4 gives an example of a summary benchmarking exercise.

Presenting the Overall Economy of the WSS Sector, Incentives and Vested Interests. The template also recommends that another short report be prepared for presenting the overall economy of the WSS sector, in particular when substitutes to the piped service are known to play an important role and/or when corrupt practices are suspected. This report should identify the counterproductive incentives exacerbated by weaknesses in the current accountability framework, identify the potential vested interests and spot evidence (or suspicion) of corrupt practices in the fields of infrastructure development, commercial operations or human resources management, with the main objective of providing to reform champions the relevant arguments they may need during consultations with vested interests. A graph showing the estimated current flow of funds could help identify areas of reforms and help estimate their potential financial returns. Because of its sensitive content, this assessment may not necessarily need to be public; Annex 5 gives an example of a vested interest assessment.

3. DESIGNING AND IMPLEMENTING SUCCESSFUL URBAN WATER SUPPLY AND SANITATION SECTOR REFORMS

Reforming a non-performing urban WSS sector usually requires *clarifying the sector's accountability framework* and thus: (i) the mandates of its various actors; (ii) the contractual relations between actors; and (iii) instruments used by actors to carry out:

- The **key functions** of: (i) policy formulation; (ii) infrastructure development; (iii) service provision; (iv) financing of operations; and (v) regulation of the service,
- With the **main objectives** of: (i) improving access to WSS infrastructure; (ii) increasing efficiency of operations; and (iii) enhancing reliability, sustainability and affordability of service.

Chapter 3 elaborates on the above concepts and uses the accountability framework shown in Figure 2 as the logical link between recommendations for designing and implementing reforms of urban WSS sectors. More specifically, Chapter 3 focuses on:

- Involving stakeholders in WSS reforms;
- Revisiting WSS policies;
- Changing the culture of public WSS service providers;
- Optimizing WSS asset management and WSS infrastructure development;
- Improving WSS service provision through internally developed programs;
- Improving WSS service provision through partnerships with the private sector;
- Financing WSS operations in a sustainable and affordable manner;
- Regulating the WSS service in a transparent and predictable manner; and
- Implementing reforms.

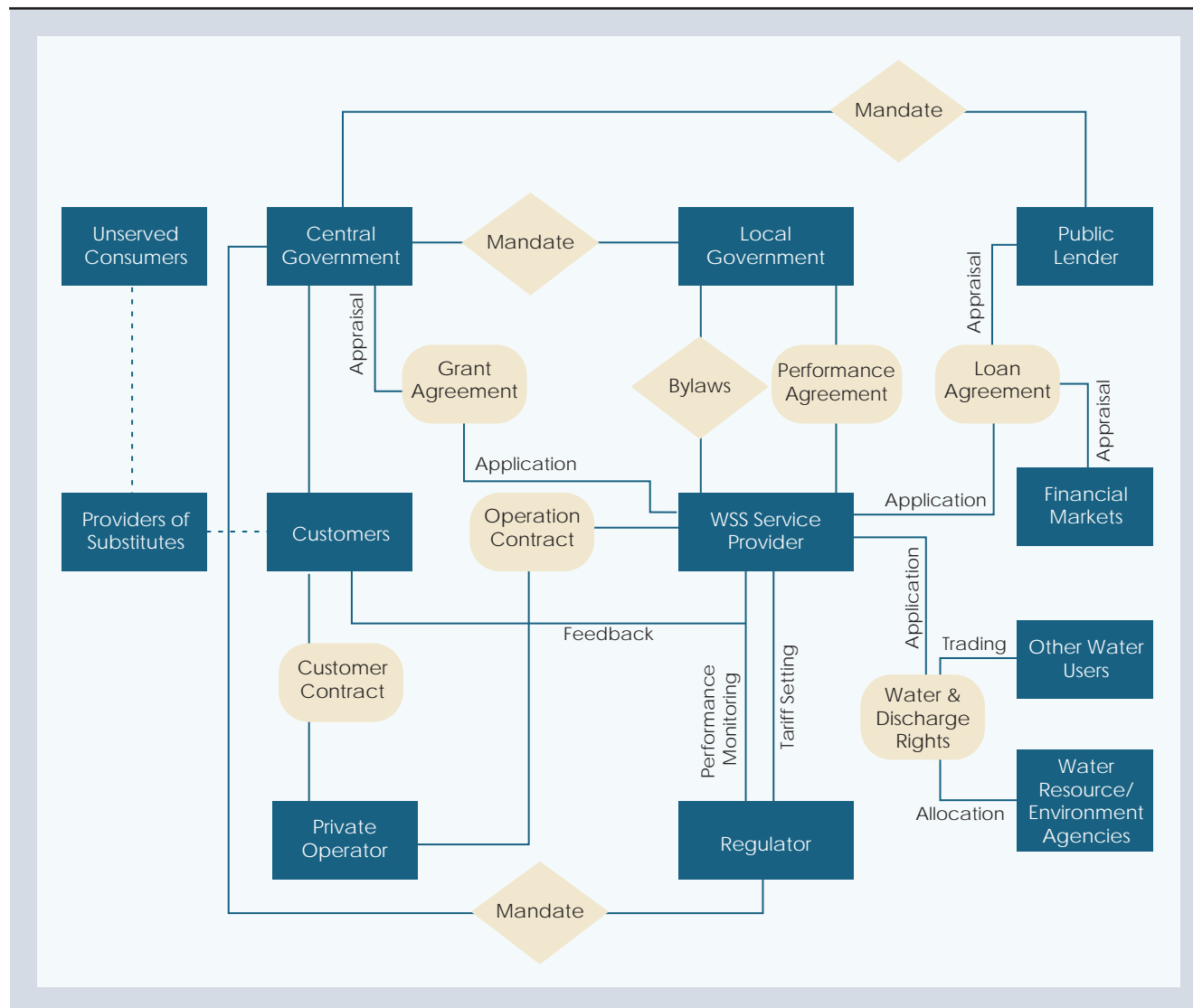
3.1 Involving Stakeholders in WSS Reforms

Reforming a non-performing urban WSS sector, i.e., improving the accountability framework within which the various actors operate, often leads to emotional debates that could rapidly get out of control if not properly framed. The metric and process benchmarking exercises described above aim at providing the rational arguments needed to engage in constructive dialogue with key stakeholders such as consumers, non-governmental organizations, management and staff of WSS service providers, providers of substitutes, politicians, the media, private operators, and financiers. Vested interests should also be consulted as key stakeholders since they are likely to be among the losers in the reform process and may be tempted to derail it.

Designing the Consultation Process. Consultations with stakeholders should not be a one-way/top-down communication exercise, but rather be designed to provide information to stakeholders and associate them with the decision making process while ensuring that their legitimate concerns are reflected in the final design. The *Toolkit on Approaches to Private Participation in Water Services*¹⁰ provides detailed recommendations for interacting with stakeholders and identifying potential winners and losers when PPPs are considered; these recommendations also apply if the reform does not envisage PPPs. Facilitators in the consultation process should be perceived as neutral as possible. In particu-

¹⁰World Bank 2006

Figure 3 Key Actors of Urban WSS Sectors



Source: Developed by the authors

lar, the role of development partners has to be defined on a case-by-case basis in order to build on their comparative advantages. Vocal groups ideologically opposed to reforms of urban WSS sectors have inappropriately linked some development partners such as the World Bank with steep tariff increases, privatization of public goods, massive lay-offs or exclusion of the poor; the direct implication of these partners in the consultation process could alienate such groups.

Consumers. Consumers constitute a fairly heterogeneous category: obviously already connected middle income households benefiting from a highly subsidized tariff have different expectations than middle income households relying primarily on expensive substitutes, or poor households living in informal settlements where current regulations forbid the extension of the formal piped WSS infrastructure. All categories of consumers should be consulted through structured surveys or focus group meetings in order to better assess their preferences and willingness to pay for the WSS service. However, it may

Box 3 The Cost of Non-Permanent Water Supply

A critical look at the findings of consumer surveys is always needed. For example, in South Asian cities where the poor quality of the piped water supply has forced most customers to heavily invest in substitutes to complement their supply and mimic a permanent water service, the demand for a "24/7" public piped water service may not be overwhelming. This could give inefficient and somewhat complacent WSS service providers the level of comfort they need to justify poor performance and opposition to service standards they believe to be an unaffordable imported concept. Intermittent water supply has significant externalities, such as wastage of water, need to over-design the distribution infrastructure, obligation to develop and operate expensive substitutes, and incidence of water borne diseases due to questionable bacteriological quality of distributed water. Causing WSS service providers to take measures, including the sub-contracting of distribution operations to professional operators, with the objective of improving the permanence of piped water service makes full sense from the economic point of view, even more so that WSS infrastructure is often designed to meet generous per capita consumption, inflated by tariffs that do not even recover O&M costs. So far, little analytical research has been carried on the cost of non-permanent water supply.

Source: Developed by the authors.

sometimes be necessary to take a step back when analyzing the results of such surveys to assess if consumers' wishes are sustainable options (Box 3). As part of the consultation process, particular attention should be paid to public customers who sometimes represent a significant share (typically between 15 and 25 percent in African countries) of the revenue of WSS service providers.¹¹

Non-Governmental Organizations. NGOs are a diverse category that includes community-based organizations (CBOs), groups concerned with broader interests such as governance, urban poverty or environmental protection, as well as groups that use the opportunity offered by open forums to gain some publicity. One of the main issues in dealing with NGOs is to identify on whose behalf they speak, what are their ultimate objectives, and whether their expressed concerns are legitimate. CBOs often provide a useful channel for consulting consumers, in particular in poorly served low-income areas.

Management and Staff of WSS Service Providers. Managers and staff employed by public WSS service providers may, for example, feel threatened by the setting up of a periodic individual performance evaluation system or the outsourcing of activities to private operators. Managers, staff, and staff representatives (or unions when they exist) of public WSS service providers often have good ideas about what needs to be done for improving the quality of service and efficiency of WSS operations. Also, managers and staff employed by other actors, in particular the central engineering agencies,¹² may feel negatively affected by a realignment of mandates for developing WSS infrastructure or the decentralization of procurement responsibilities. Successful reform depends on building on the knowledge of all workers and maintaining their morale by ensuring that their legitimate concerns are addressed.

Providers of Substitutes to Piped WSS. Small entrepreneurs, such as water vendors, tankers or sludge handlers are likely to lose their main source of revenue if piped WSS infrastructure is extended to non-served areas. Profits of larger businesses, such as drilling companies, manufacturers of rooftop tanks and suppliers of booster pumps are likely to be affected if the quality of WSS service improves. Consultations with providers of substitutes should help identify options for taking into account their legitimate interests and for mitigating the negative effects of reforms on activities that would disappear once the quality of piped service has improved.

¹¹ Ensuring that consumption is properly budgeted, bills are paid in a timely manner, and agreement on the disconnection of defaulting public customers should be normally part of the consultation process.

¹² Such as WSS Directorates, State Water Boards and Public Health Engineering Departments.

Politicians. One of the key assumptions of this report is that the government responsible for the urban WSS service, whether central, regional or local, is willing to engage in reforms for improving its quality and the efficiency of its providers, even if the need for adjusting tariffs, outsourcing activities, right-sizing staff and/or regulating provision of substitutes could have short term electoral consequences. It is essential that politicians not directly involved in the process, such as mayors if the reform is designed at the central level or politicians in the opposition, be consulted to ensure early support or avoid the legitimacy of the reform being questioned when changes of leadership occur following elections.

Media. The media is often the most direct link between the government and stakeholders. Journalists should be encouraged to go beyond reporting anecdotes on poor service quality or petty corruption and instead expose key issues facing the urban WSS sector and options for addressing them. The timing of the consultation with the media is important since the search for sensational articles could create major misunderstandings. When the main options of the reform have been identified, as much information as possible should be made available to the media to increase transparency of the process and credibility of the consultation.

Private Operators. When PPPs are considered as elements of the reform, formal consultation with international operators and, if relevant, the local private sector is essential to delineate the contractual arrangement and the pace at which the quality of WSS services is likely to improve. Initial discussion forums to identify a realistic allocation of risks and responsibilities as well as reasonable medium term objectives, followed by pre-bid meetings should help design win-win partnerships.

Financiers. Consultation with government owned lending agencies, when they exist, should help clarify the issues of guarantees to be provided by the government under which the responsibility of WSS services falls. Also, early consultations with international financing institutions (IFIs) and bilateral financing agencies could identify the main conditionality attached to their support. If commercial financing were sought as part of a PPP, early consultation with commercial lenders would be necessary to avoid the scheme being held up at a later point.

Winners and Losers. Winners in the reform process should normally be the consumers who currently obtain a poor quality service and rely on expensive and unsafe substitutes. Other winners could include: (i) the staff of public WSS service providers: their competence should increase as a result of corporate culture changes; (ii) public finances: subsidies to the urban WSS sector should be eliminated and replaced by income taxes paid by service providers; or (iii) the environment: depletion and pollution of local water sources resulting from unregulated reliance on substitutes to piped WSS should be reduced. The most difficult part of the consultation process lies in identifying stakeholders who may be negatively affected by the reform and in designing mitigation packages that take their legitimate concerns into account:

- Already connected customers who benefit from subsidized tariffs may be affected by more equitable tariff structures: willingness to pay surveys, including detailed analysis of the cost of substitutes (Box 1), comparison with other cities and/or countries in similar situations could bring some rationale to the debate.
- Staff of public WSS service providers may be affected by right-sizing efforts, whether or not PPPs are implemented: early discussions with staff representatives and unions should help build re-trenchment packages in the cost and financing plan of the reform;
- Providers of substitutes who should eventually disappear: the capacity of the private sector to adapt to market conditions should help mitigate the effects of reforms that are unlikely to happen overnight.

- Engineering lobbies¹³ may feel threatened by policies aimed at shifting the focus to improving the WSS service away from adding more WSS infrastructure or at decentralizing the responsibility for the provision of the WSS service: associating them with benchmarking exercises is one way to educate them on the real issues the WSS sector is faced with.
- Politicians, managers and staff involved in corrupt practices may lose the dividends of the illegal businesses they are the invisible owners of: while improving procedures to eliminate or reduce corruption linked to infrastructure development and commercial operations is an obligation, launching an hostile take over of the shares of these invisible shareholders by compensating them for leaving might actually yield a fairly high return.

3.2 Revisiting WSS Policies

Section 3.2 primarily discusses: (i) possible structures for urban WSS sectors; (ii) environmental concerns related to the urban WSS service; (iii) the provision of the WSS service to the poor; and (iv) “substitutes” to the official piped WSS service.

Horizontal Structure of the Urban WSS Sector. Placing the responsibility of providing the WSS service at the local level usually improves the accountability of service providers to their customers (Section 3.3). Several considerations should, however, be taken into account before decentralizing poorly performing central WSS service providers or, on the contrary, aggregating inefficient local providers. They include: (i) technical conditions, such as reliance on the same water source; (ii) environmental conditions, such as the need for managing and protecting water sources of the same catchments area; (iii) transport conditions between the main city and secondary centers; (iv) administrative boundaries; (v) actual capacity of local governments; (vi) economies of scale; (vii) need for maintaining or eliminating geographical cross-subsidy schemes; and (viii) cost of transaction when assets and liabilities have to be transferred from one entity to another.¹⁴ In addition, if a PPP is considered, the financial attractiveness of operations in the service area should be kept in mind.

Vertical Structure of the Urban WSS Sector. Ensuring an overall quality of service from water sources to customers and from customers back to the water bodies, and rationalizing infrastructure development are reasonable arguments for maintaining water production, transmission, distribution and waste water collection and treatment activities in the mandate of WSS service providers. However, in cases where water sources are scarce, it may make sense to split water production and water distribution because of the magnitude of the investment involved to develop large reservoirs and long transmission lines (Box 4). Taking wastewater activities out of the mandate of a WSS service provider may also be justified to make the water supply service financially more attractive when a PPP is considered to improve the performance of the latter.¹⁵ Splitting water supply and wastewater activities, however, usually results in unbalanced developments of the two sub-sectors¹⁶ and consolidation may be justified when the water supply service has become financially sustainable. Two related issues should also be addressed when revisiting the vertical structure of the WSS sector: (i) the responsibility for on-site sanita-

¹³ In addition to public agencies listed above, engineering lobbies could also include private consulting firms, contractors and suppliers traditionally associated with the WSS sector.

¹⁴ There is obviously no “one-size-fits-all” arrangement: a WSS service provider with national coverage makes more sense in, for example, Côte d’Ivoire, where a well developed road network allows easy transportation of repair crews and parts from the capital city to remote secondary centers than, for example, in Madagascar where the situation is the opposite, even if in both cases the capacity of the local governments is relatively limited.

¹⁵ This is the case, for example, in Senegal (*affermage* contract) and in Ghana (management contract).

¹⁶ Tunisia is a notable exception.

tion on which large shares of the urban population are still likely to rely in the medium term; and (ii) the responsibility for storm water drainage in cities equipped with unitary sewers.¹⁷

Cross-sector Structure. There are examples of successful integration of WSS service with other municipal services, such as solid waste collection and disposal or network infrastructure such as electricity. Economies of scale, in particular for commercial activities, and possible cross-subsidies between activities are arguments usually presented to justify such arrangements. However, issues related to cost allocation, tariff setting and lower management focus (WSS operations typically have a lower profitability than electric power ones) are good reasons for considering multi-sector monopolies with caution.¹⁸ The co-existence of different structures and institutional arrangements adapted to specific circumstances, geographical divides and cultural differences could be envisaged in some countries (Box 4).

Water Rights and Water Entitlements. Most national water legislations specify that the government owns the water resources and mention the priority of water provision for human consumption. In practice this means that the quantity of water allocated to urban WSS service providers may have to be increased by the government to the detriment of other users. Although water resource management is a topic that goes well beyond the scope of this report, the option of allocating rights to own part

Box 4 Morocco: Co-Existence of Several Structures and Institutional Arrangements in the Urban WSS Sector

In Morocco, local governments are responsible for WSS service in their territories. The provision of service in urban areas is, however, characterized by several structures, institutional arrangements, and cost recovery and financing policies.

Long term concessions of the water distribution, waste water collection and disposal and electric power distribution have been awarded during the last ten years in the larger urban centers of Casablanca, Rabat-Sale and Tangiers-Tetouan. The private concessionaires, who include international operators as investor/manager, finance regular extensions of the networks from cash generation and debt provided by the local financial markets. Tariffs are regularly adjusted in accordance with the concession contracts. Cross-subsidies between electric power and WSS operations seem to have allowed a sustained program of extension of the sewer networks.

Municipal statutory bodies (*Régies autonomes*) have similar responsibilities in 12 large cities; however as their tariffs are not automatically adjusted and as they no longer enjoy sovereign guarantees for the debt contracted, network extensions are often limited to those financed by private developers. An ambitious program aimed at facilitating access to debt financing by the *régies* is being implemented.

Office national de l'Eau potable – ONEP, a public water supply utility with a national coverage, acts at the same time as: (i) supplier of bulk water for the Atlantic coastal region concentrating several large urban centers (including Casablanca and Rabat-Sale) through an integrated network of reservoirs and long transmission lines; (ii) supplier of bulk water for several of the 12 larger cities; (iii) operator, under contract with municipal governments of the water supply service in about 300 smaller urban centers; and (iv) operator of the waste water service in about 40 of these smaller centers. ONEP is an efficient public operator, now able to export its know-how (it was recently awarded the *affermage* contract for the urban WSS service in Cameroon).

At the lower end of the spectrum are **direct operations** by the municipal government of some smaller towns of waste water collection and disposal that usually result in sub-standard service.

Source: World Bank and KfW 2008

¹⁷ In Dhaka, Bangladesh, a city where flood protection and storm water drainage are major issues, the WSS service provider is responsible for the underground storm water drains and the municipal government for surface storm water drains.

¹⁸ The tendency has been to split electricity and WSS activities as part of utility reforms in several Western African countries (Togo, Niger or Benin).

of the water resource—a water entitlement—to urban WSS service providers, industries and irrigated agriculture should be considered as part of WSS sector reforms. Once water entitlements are clarified, users requiring additional quantities of high value water, such as cities or industries, should be able to meet growing demand by acquiring entitlements of those using water for lower value purposes, such as low value agriculture. The trading of water entitlements would be a consensual, and thus politically attractive, approach to water resource allocation. Water entitlements should increase the pressure for improving the generation of data needed for effectively managing the water resources and limit the risk of overexploiting aquifers, as those who own the entitlements would have a strong interest in ensuring their sustainability.

Individual Groundwater Abstraction. Individual abstraction of groundwater in cities with a poor quality piped water service has often resulted in an irreversible degradation of local aquifers through depletion or seawater intrusion. It could also have highly negative effects on the environment.¹⁹ Revisiting the granting of groundwater abstraction rights, monitoring quantities of water pumped and taxing groundwater usage at its economic value are issues to be addressed during the design the reform. While it may not be feasible to monitor every single backyard open well tapping superficial aquifers, the focus should be on deep boreholes operated by large industrial and real estates and the private water tanker industry.²⁰

Effluent Quality Standards. Effluent quality standards should be set at levels consistent with ambient water quality improvement objectives, overall quality of the wastewater collection service and the financial constraints of the WSS service providers. It makes little sense to impose tertiary treatment to the limited portion the waste water that reaches treatment plants, while the remainder is still disposed of in water bodies, because the WSS service provider does not generate sufficient revenue to maintain sewers and recurrent power failures affect the operation of sewage pumping stations.²¹

Service to the Poor. While WSS service providers in a healthy financial situation should be able to extend the WSS service to all customers in their service area, the chances of reaching the poorest segments of the population may be limited if no targeted interventions are specifically designed. Detailed preferences and willingness to pay assessments to be carried out as part of poverty mapping exercises should help adapt service standards, tariff structure and collection arrangements for this category of customers. Two principles should be kept in mind: (i) it often makes more sense to subsidize access to piped WSS service than consumption, as actual connection costs often represent a significant share of the annual income of households in the first and second quintiles; and (ii) tariff structures that include bands below O&M costs, with the objective of reducing WSS bills of small residential customers, do create a disincentive for a financially responsible WSS provider—whether public or private—to serve customers to whom these bands should apply. Particular attention should be paid to the type of WSS service to be provided in informal settlements, where extension of formal piped networks may be forbidden by law; consultations with CBOs should explore options to ensure that minimum quantities of water reach households and basic sanitation needs are met.

¹⁹ In the mid 1990s in Jakarta (Indonesia), large real and industrial estates relied mostly on their own groundwater supplies while better off residential customers usually used their backyard borehole as main water source and their connection to piped water only as emergency supply. Extensive individual groundwater use led to significant land subsidence along with major flood protection and storm water drainage problems in a mega-city that barely lies above sea level.

²⁰ Abidjan (Côte d'Ivoire) lies on a powerful and well protected aquifer that is its only source of water; the drilling of individual boreholes (mostly by industries) is strictly regulated, the volumes of water abstracted are closely monitored and the abstraction fees are collected.

²¹ This is the case, for example, in Delhi, India.

Regulation of Substitutes to the Official Piped WSS Service. Providers of substitutes are key actors who provide the service in areas not covered by the official WSS service provider or who complement an official service of poor quality.²² The reform should thus clarify the regulations that apply to the provision of mobile services (i.e., tankers, water vending, or sludge handling) and fixed ones (i.e., independent water distribution networks and sometimes sewers). Issues such as the legal environment, compensation in case of expropriation, tariff and service area restrictions, technical and operating standards and financing of capital expenditures should normally be clarified (Box 5).

3.3 Changing the Culture of Public WSS Service Providers

Owners, managers and staff of public WSS service providers may sometimes have the feeling that they can be immune from the consequences of their poor performance. Section 3.3 focuses on key issues to be addressed for changing the culture of public WSS service providers, whether they remain directly responsible for the service or they sub-contract part or all of it to professional operators. Section 3.3 summarizes the findings and recommendations of several Notes and Sourcebooks recently published by the Bank that cover issues of corporatization of public WSS service providers, corporate culture, use of performance agreements, instruments for increasing consumer accountability and ways of deterring corruption.²³

Characteristics of Well Performing Public Water Utilities. The recent Bank note on this topic analyzes the environment within which well performing public WSS service providers operate. It identifies three key indicators of success:

Box 5 Latin America: Regulation of Independent Water Entrepreneurs

A recent review highlighted the diversity of services, market niches and business models developed by small water entrepreneurs in cities of six Latin American countries. Services ranging from mobile provision, mostly by tanker trucks, to independent distribution networks are provided to a substantial share of urban households; in addition to low income households and areas where the extension of networks is slow to materialize, small scale providers also cater for niche markets that coexist with and/or complement municipal water utility services. The review underlined that government policies, in particular the enforcement of exclusive utility licenses and other regulatory constraints, influence the development of small distribution networks more than consumer demand.

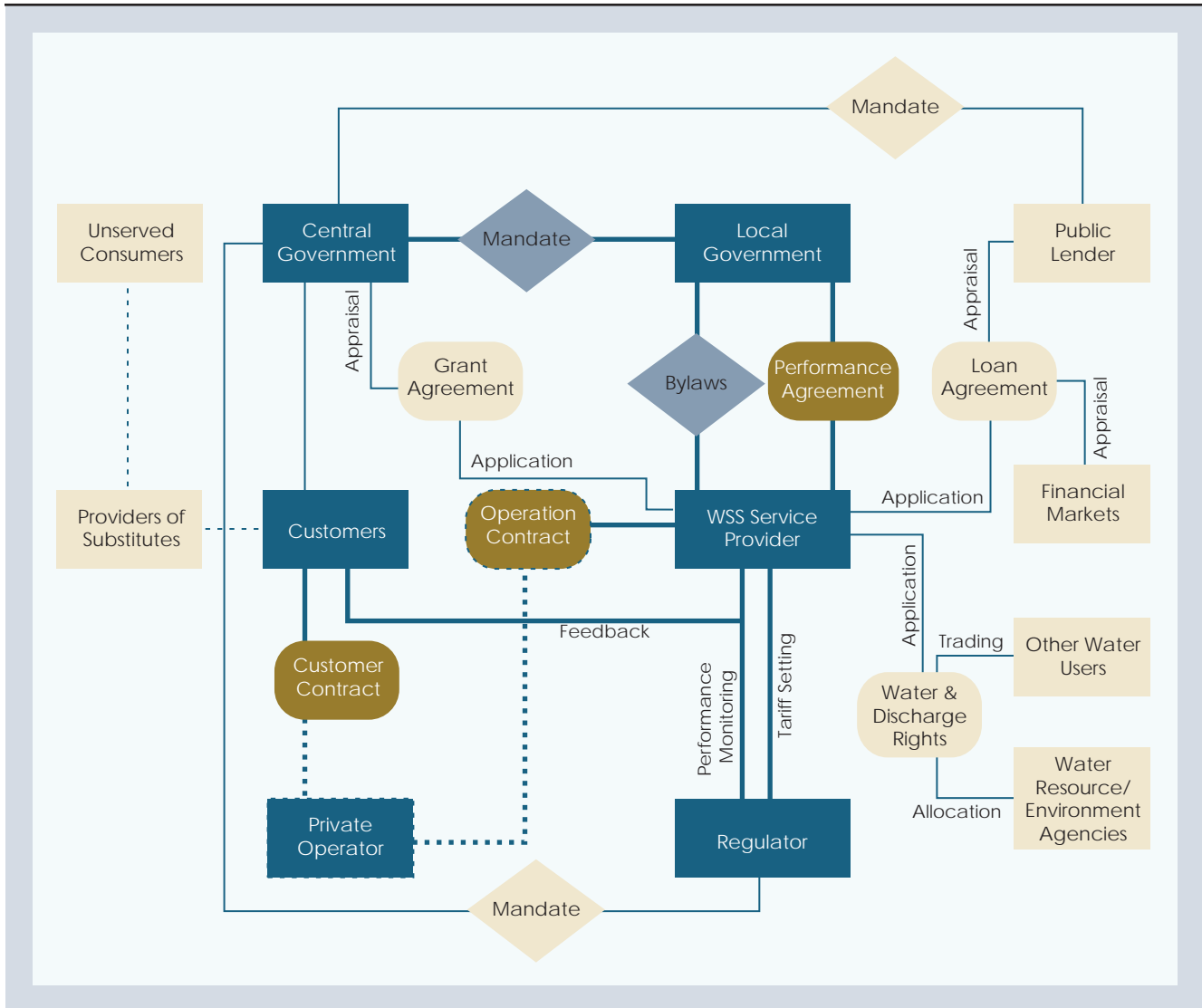
First, regulatory frameworks developed for large monopolies leave independent service providers in a legal limbo: as they are neither completely legal nor explicitly illegal, officials may be tempted to obtain bribes from them to allow their business. Second, independent service providers often face unfair monopoly practices from official WSS service providers which often benefit from operating subsidies and development grants and can propose connection fees and tariffs below actual costs to block the extension of independent piped systems that have to be fully financed from user charges. Third, risks of confiscation of individual water sources (bulk supply from the official service provider, or individual boreholes or wells) or expropriation of piped infrastructure, in particular when the service area of the official WSS service provider is extended, constitute major impediments for raising the financing needed to extend independent piped systems. Fourth, tariff regulations that apply to piped water (but not to the bottled water industry) usually only allow the recovery of O&M costs of independent service providers. This translates to the need to finance extensions of distribution networks mostly through high up-front customer contributions rather than from cash surpluses generated from sales. Finally, the obligation to comply with technical standards, such as pipe material, and strict water quality standards developed for official WSS service providers often limit activities of independent service providers.

Source: Solo 2003.

²² In Chennai (India) thousands of tankers supplied a city of six million people for the entire month of May 2004 because the city could not distribute piped water through its distribution network primarily as result of an inefficient water resource management.

²³ Baietti et al. 2006, van Ginneken 2008, Muller 2008, and World Bank 2008.

Figure 4 Changing the Culture of Public WSS Service Providers



Source: Developed by the authors

- **Autonomy**, i.e., the ability to manage WSS operations professionally without arbitrary interference by others. Rules that apply to setting salary scales and WSS tariffs, raising financing and procuring goods and works are good indicators of autonomy;
- **Accountability**, i.e., the obligation to be answerable for the use of public resources and overall performance. Obligations to achieve and report on agreed performance levels or submitting independently audited financial statements are good indicators of external accountability. Rules that apply to staff performance evaluation are good indicators of internal accountability; and
- **Consumer orientation**, i.e., the willingness and capacity to listen to clients and work to better meet their needs. Options offered for service delivery or bill payment, arrangements for seeking customer feedback and percentage of complaints satisfactorily addressed are good indicators of consumer orientation.

Key Topics in Public Water Utility Reform. Building on the findings of the above note and those presented in another Bank note on “Improving Water Services by Making Utilities Accountable to Their Users”, a third Bank note discusses key topics for reforming public water utility reform. It covers issues such as:

- **Corporatization**, i.e., the process of transforming a department embedded within a municipality or a ministry into a public organization with its own corporate identity;
- **Performance agreements** between a government and public WSS service providers to hold the latter accountable for the use of public funds and for performance;
- **Consumer accountability** through information, consultation, participation, recourse and redress instruments; and
- **Capacity building** of all actors of the WSS sector.

Clarifying the Mandate of Public WSS Service Providers. When designing the reform of urban WSS sectors, the mandate of service providers often needs to be clarified. In particular the following should be confirmed: (i) service area;²⁴ (ii) scope of activities (water production, distribution, sewerage and so forth); (iii) service standards with which the provider is expected to comply; (iv) rules that apply to financial management, procurement and employment; (v) pricing and cost recovery principles; (vi) financing sources that can be mobilized; (vii) reporting obligations and regulatory arrangements; and/or (viii) allowed PPPs. In case the functions of WSS infrastructure development and service operation are separated and carried out by two different *public* entities,²⁵ the exact mandate of each entity should be clarified.

Corporatizing Public WSS Service Providers. The success of reforms depends largely upon the change of behavior of the government that owns the public WSS service provider. Corporatization of public WSS service providers should be considered because it is an important first step towards moving incentives away from short-term political objectives. Statutory bodies (or parastatals), to be created in application of specific urban WSS laws, or public enterprises, whose shares are all owned by the government, to be incorporated under the country’s company law are usual options. The funding of the corporatized WSS service provider should be specified in the articles of incorporation, as should the distribution of dividends (if any), in particular when the service provider is owned by an aggregation of local governments. The issue of ownership of WSS assets should also be clarified, especially in countries that usually do not allow the transfer of assets financed by central government funds to lower levels of governments, parastatals or public companies. Placing WSS assets in concession under the corporatized WSS service provider is an option to consider.²⁶ The corporatization process should also clarify:

- The composition, appointment criteria and compensation of the members²⁷ and chairperson of the Board of Directors (BOD) as well as the code of conduct and treatment of conflicts of interests;
- Conditions under which the BOD should recruit the Managing Director (MD) and key managers. The preference should be given to competitive selection from the market rather than

²⁴ In decentralized WSS sectors, it is important to clarify if urban WSS service providers are also responsible for the WSS service in peri-urban and rural areas.

²⁵ This is the case in Nairobi, Kenya, or Dar es Salaam, Tanzania, for example.

²⁶ This is the case in many French and Spanish speaking countries. Most Asset Holding Companies created in Western and Central African countries as part of the reform of the urban WSS sectors are in fact concessionaire of the WSS service for a set duration.

²⁷ The representation of consumer associations, the business community and financiers able to analyze a financial statement should be encouraged.

from pools of civil servants.²⁸ In addition to the code of conduct and conflicts of interests, the managers' contracts should specify performance to be achieved and bonuses for exceeding them; and

- Conditions under which the management should recruit the staff and offer contracts within the framework of the overall compensation package approved by the BOD. As reforms of urban WSS sectors often result in changes of statute of the WSS service provider staff, the issue of transfers of benefits, such as annual leave and pension rights, should be looked at in detail.

Successful reforms can result in spectacular changes in the culture of public WSS service providers under the impetus of performing BOD and management team (Box 6). The above mentioned notes identify a few key elements for achieving this change: (i) formulating a strong mission statement and ensuring that managers and staff identify with it; (ii) clarifying procedures for each technical, commercial and financial task; (iii) establishing quality control procedures; (iv) setting realistic performance targets to departments, managers and staff and evaluating their achievement during scheduled meetings; (v) paying bonuses to managers and staff for achieving of exceeding performance targets; (vi) clarifying rules for promotion; (vii) instituting healthy competition between departments; and (viii) improving internal communication processes to convey management decisions to staff and obtain staff and staff representatives feedback.²⁹ Obtaining ISO certification provides a proof that the WSS service provider operates according to internationally accepted standards.³⁰

Using Performance Agreements. The reform could envisage the signing of Performance Agreements between the government and public WSS service providers. The note on "Key Topics in Public Utility Reforms" lists several options:

Box 6 Uganda: Changing the Culture of the National Water and Sewerage Corporation (NWSC)

At the end of 1997, NWSC was a highly inefficient public WSS utility, with NRW and collection ratios of 54 percent and 70 percent respectively and a staffing ratio of about 36 staff per 1,000 water connections. Although the customer tariff was one of the highest in the region, NWSC was posting an operating deficit of about UgSh2.0 billion (US\$0.4 million). Also, as NWSC connection fees were exorbitant, its customer base was stagnant and the infrastructure extensions built in the early 1990s remained idle. The government, unwilling to approve another tariff increase, accepted to temporarily freeze NWSC's debt and caused NWSC to enter into a Performance Agreement setting clear short term performance objectives. The BOD, MD and management team were replaced. Two attempts to increase operating revenues in the capital city of Kampala through "service contracts" with private operators did not yield expected results. NWSC then embarked on a decentralization of its operations, with NWSC management in turn entering into performance agreements with all area managers. Increased internal accountability for results, enhanced customer orientation and clear financial incentives in case performance objectives were achieved led NWSC, whose service area now includes about 1.7 million people located in 22 urban centers including Kampala, to significantly improve 2007 metric indicators (figures between bracket are the 1998 performance indicators): (i) service coverage 71 percent (47 percent); (ii) NRW: 32 percent (54 percent); (iii) connections metered: 100 percent (65 percent); (iv) total connections: 181,000 (51,000); (v) staffing ratio: 7/1,000 water connections (36/1,000); (vi) sales: 40 million m³/year (22); (viii) operating result: UgSh6.5 billion (minus Ugsh2 billion). NWSC now provides management consultancy services in several neighboring countries. With a much improved financial situation, NWSC envisages issuing revenue bonds on the local market to finance further extensions of its distribution networks.

Sources: Baietti et al. 2006, Berg and Muahirwe 2006.

²⁸ If necessary, assistance should be sought from specialized recruiting consultants for preparing job description, short listing and interviewing candidates and for fixing contract terms to meet that of similar managerial positions in the country.

²⁹ Private WSS service providers often distribute shares to their staff to create an ownership feeling and involve staff in the decision making process.

³⁰ The private WSS service provider of Senegal (SDE) has obtained an ISO 9001 version 2000 certification in 2003.

- **Business plans**, which usually translate into annual improvement plans, often as part of a longer-term program. They are good tools for clarifying distribution of responsibilities among parties and building the planning capacity of those involved;
- **“Contrats plans,”** which typically clarify commitments and the obligations of the two parties for a period of four to five years. Experiences with *contrats-plan* in Africa, a region where this concept was introduced in the early 1980s have been mixed, although there are a few successes.³¹ The enforceability of agreements between public entities is limited, in particular when the defaulting party is a government that does not honor its commitments to adjust tariffs, provide financing, or pay its bills. If a *contrat plan* is envisaged, it should be short, commitments of each party should be clearly specified, performance targets should be realistic, and the number of indicators to measure performance should be limited. Also, provisions should be made for independent audits of the performance of both parties and for resolving disputes;
- **Performance based intergovernmental transfer systems**, which have sometimes been developed in countries with decentralized WSS sectors. Service providers have to compete for public funds whose availability is linked to the implementation of reforms and achievements of specific performance targets; and
- **Performance agreements with managers and staff** including the payment of bonuses if performance targets are achieved have proven to be the key for changes of corporate culture.

Increasing Consumer Accountability. Changing the culture of the WSS service provider almost always requires improving accountability to customers. The recent Bank note on this topic lists the various tools to be considered as part of the reform:³²

- **Information** through making annual reports available, distributing fliers with WSS bills or providing answers to most commonly asked questions at service centers or on-line;
- **Consultation** aimed at obtaining consumer feedback through structured surveys, public hearings or advisory committees. The credibility of the consultation process depends very much upon actions taken to address concerns expressed by those consulted;
- **Participation** for example by having consumers represented at the BOD or in regulatory committees; and
- **Recourse**, (the possibility of calling WSS service providers to account for the service) and if justified to **redress** (obtain an appropriate response either internally or through an ombudsman).

Consumer accountability cannot be achieved through a single tool. A well-functioning mechanism should be effective and judged by the results it produces; inclusive by ensuring that all categories of consumers are consulted (including those who do not have access to piped WSS service); and efficient so as to not result in high costs to consumers. The mechanism should also be sustainable and integrated into normal operational management and associated with organizational excellence.

Building the Capacity of the Various Actors. Reforms are likely to require a massive capacity building effort of the owners, managers and staff of WSS service providers as well as other stakeholders who could influence its design and implementation, such as NGOs and the media. Capacity could be built using instruments ranging from classroom training, on-the-job training, establishing networks of professionals to specialized support through PPP, and twinning. The main targets of the capacity building effort could be:

³¹ Senegal, Niger and Uganda.

³² Muller, Simpson, and van Ginneken 2008.

- **Governments and members of the BODs** (and if relevant NGOs and the media): on topics such as urban WSS policy good practice, planning, financing, procurement, pricing and regulation of WSS services, and PPPs;
- **Managers:** on the above topics plus human resources development, team building, and communication; and
- **Operational managers and staff,** on topics such as (i) WSS infrastructure development (design, procurement, construction supervision and so forth) and related environmental and social issues; (ii) operational efficiency (NRW reduction, energy savings, outsourcing and so forth); (iii) commercial operations and customer management; (iv) accounting and financial reporting; (v) and quality control. Particularly in countries with decentralized WSS service providers, the investigation of the possibility of instituting a formal certification of the competence for specialized technicians and managers could increase recruitment transparency and favor an active staff market.

Detering Corruption in WSS Service Provision. The Bank has recently prepared a *Sourcebook*³³ that proposes approaches and instruments for assessing and addressing governance weaknesses and corruption from an urban WSS sector perspective. The *Sourcebook* clarifies the dynamics of corruption, analyzes the various levels of governance and suggests options for second best solutions when dealing with countries with low administrative capacity and/or political will. It also suggests methodologies for carrying out country level and sector assessments, detecting corruption at the provider level and analyzing implications of different sector structures on the focus and impact of corruption. Involving governance specialists to carry out confidential vested interest assessments (Annex 5) is essential to help judge the magnitude of issues to be addressed while designing reforms. Fraudulent and corrupt practices could affect commercial operations (metering, billing, collection, and connections), technical operations (supply of chemicals and parts), human resources management (market for lucrative positions³⁴ and employment of ghost staff), assets of the WSS service provider (illegal use of equipment or land of the WSS service providers), provision of substitutes to piped WSS service (dividends distributed by tankers or vendors to keep their business in poorly served areas) and, of course, capital development projects (planning, design, procurement, and construction supervision). When a public or private operator aiming at maximizing its profit provides the WSS service, the risk of corrupting the regulatory function for obtaining higher tariffs also needs to be assessed. Indeed, the main conclusion of the *Sourcebook* is that the best way for discouraging fraud and corruption is to implement sound industry practices while redefining the mandates of the various actors, drafting and enforcing contractual commitments and designing and implementing operating procedures. Reforms to be considered for limiting fraudulent and corrupt practices linked to WSS infrastructure development and to commercial activities are proposed in Sections 3.4 and 3.5 respectively.

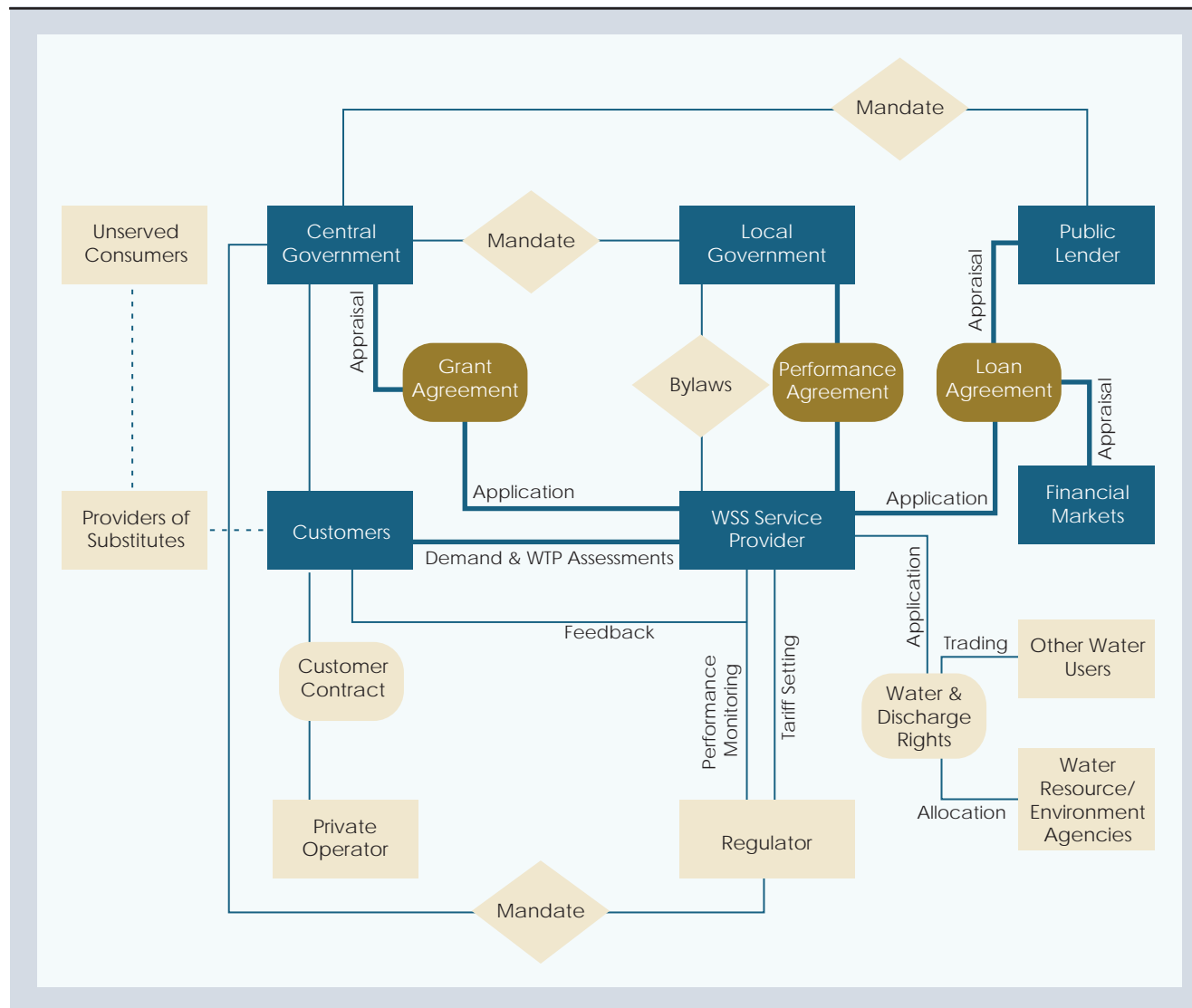
3.4 Optimizing WSS Asset Management and WSS Infrastructure Development

Infrastructure development is one aspect that needs a particular attention: it could lead to significant inefficiencies as a result of inadequate planning, design, procurement, and project implementation procedures as well as to the diversion of public funds through corrupt practices. Since engineering lobbies are likely to be affected by reforms of the way the WSS infrastructure is developed key stakeholder support can be built by associating these entities with the new design.

³³ World Bank 2008.

³⁴ In countries where corruption is the fact of sophisticated systems, lucrative managerial positions are open for bid, sometimes for fairly large amounts (J. Davis 2003).

Figure 5 Optimizing WSS Infrastructure Development



Source: Developed by the authors

Responsibility for WSS Infrastructure Development. The development of the WSS infrastructure should normally be the responsibility of the entity that manages WSS assets (either their owner or their concessionaire) and services the debt attached to their financing, rather than that of central engineering departments with no or limited financial obligations (Box 7). Detailed financial forecasts should be prepared to help identify capital expenditure (Capex) programs that can be afforded by future revenues of operations, taking into account constraints imposed by the likely evolution of demand for WSS services, socially acceptable WSS tariffs and realistic improvement of WSS operations. When separation of WSS infrastructure development from provision of the WSS service is considered for enhancing the accountability framework, the creation of an asset-holding company³⁵ (AHC) could

³⁵ Asset-holding companies have been created successfully in African countries that have implemented *affer-mage* contracts with private operators (Guinea, Senegal, Niger and Mozambique) or that have split the responsibility of asset development and service provision between two public companies (Kenya).

be envisaged since it should help clarify the actual financial situation of the WSS operation (Box 12). The use of the word “asset-holding company,” first introduced when the Bank started supporting the implementation of *affermage* contracts in the late 1980s, has often led to misunderstandings. An AHC is in fact the utility, i.e., the entity eventually responsible for the quality of the service, in particular when the performance of the operator does not meet contractual obligations.³⁶ Again, there is no “one-size-fits-all” solution, and the creation of AHCs should be considered with caution in highly decentralized urban WSS sectors where the small size of each individual WSS operations could justify some kind of aggregation.³⁷

Focusing on Asset Management. The downward spiral in which many urban WSS sectors are caught is well known: (i) low WSS tariffs do not generate revenues sufficient to maintain WSS assets in working condition; (ii) assets in bad condition translate into a poor quality WSS service; (iii) a poor quality service gives decision makers a good excuse for not increasing tariff; and (iv) deferred maintenance diverts large shares of the Capex for rehabilitating existing infrastructure rather than for extending it to un-served areas.³⁸ Stopping this spiral and building the capacity for preparing WSS assets management plans and budgets for preventive maintenance and regular replacement of equipment, pipes and civil works should be one of the main objectives of the reform process. As part of this exercise, assets revaluation may have to be carried out and depreciation rules may have to be adjusted to be consistent with expected life durations. If the legislation does not allow this, it may be wise for the WSS service provider to issue pro-forma financial statements based on industry good practices to support request for tariff adjustments.

Box 7 Côte d'Ivoire: Addressing the mid 1980s Financial Crisis

In the mid 1980s, the urban water supply service in Côte d'Ivoire, successfully operated by a professional private operator since 1959 under an *affermage* contract with the central government, was the reference in Western Africa. The government's *Direction de l'Hydraulique humaine* also had been able to mobilize significant financing to develop the infrastructure. However, the combination of the absence of a public entity to act as owner of the assets and of a government policy to finance the rapid development of the infrastructure exclusively on debt led to a severe financial crisis, when the US dollar, in which a large part of the debt was denominated, steeply appreciated against the local currency in which the revenues were generated. Debt overexposure could have been avoided, had a consolidated balance sheet of water supply operations been issued: the debt/equity ratio was way off industry good practice. Côte d'Ivoire eventually addressed the issue by transferring the responsibility for the Capex to the private operator, whose contract was transformed into a hybrid concession/*affermage*, and by shifting its financing policy from 100 percent debt to 100 percent cash generation. Although the customer tariff decreased as a result of the renegotiation of the *affermage* contract and the shift of financing policies, between 1988 and 2006, operations have been able to generate enough revenues to service a restructured debt and finance the extension of the water supply service to an additional four million people. Most neighboring countries that implemented PPPs in the early 1990s and were faced with the need for investing heavily decided to create public asset holding companies with the main objectives of managing the assets, developing the infrastructure, and ensuring that both the Capex and its financing plan could be afforded by revenues to be generated by the private operator.

Source: Fall et al. 2008.

³⁶ This is what happened in Dar es Salaam, Tanzania, when the AHC terminated in 2005 the *affermage* contract awarded to a private operator in 2003.

³⁷ In France where each of the 36,000 municipal governments is responsible for the WSS service in its territory, *syndicats de communes* are created on a voluntary basis to pool limited resources; when the operation of the WSS service is sub-contracted to a private operator, the *syndicat* plays the role of AHC.

³⁸ In some African countries, water production units are rehabilitated every 10 to 15 years, i.e., each time an externally financed large WSS project is implemented.

Improving Demand Assessments. Standardized per capita water demand and standardized technologies recommended by central engineering agencies have often resulted in over-designing WSS infrastructure. Customer surveys should be carried out prior to planning infrastructure extension to identify preferred services, consumption patterns, and elasticity of demand to pricing.

- **Levels of water service.** The demand for individual (or courtyard) water connections by low income households is usually influenced by the amount of initial connection fee and the monthly bill: well-designed customer surveys should provide inputs to the design of the WSS tariff structure.
- **Water consumption patterns.** Typical customer behaviors should be investigated during surveys. For example, it is not unusual for low income urban water customers to use piped water only during a few hours during the day or only during the dry season and to rely on free water harvested from roofs during the rainy season,³⁹ or for better off customers to use public piped water as an emergency supply in case their individual supply fails.⁴⁰
- Elasticity of water demand to pricing is rather difficult to assess in situations where the WSS service is of poor quality and user charges below O&M costs. The use of comparisons with cases that present similarities can prove useful.⁴¹
- **Demand for sanitation services.** The demand for sanitation services is influenced by hygiene promotion, a responsibility that seldom falls under urban WSS service providers. When assessing demand and willingness to pay for sanitation services, a wide range of technical options and their associated capital and operating costs should be presented. Options typically range from on-site installations (from simple latrines for excreta and with soak pits for grey waters to septic tanks for black waters) which are almost always built by small private entrepreneurs, to sewerage networks developed and operated by WSS service providers. When presenting sewer options, it may be necessary to clarify who would bear the cost of upgrading indoor plumbing, if applicable, in addition to that of connection to sewers. The preparation of strategic sanitation plans using the findings of detailed customer preference and willingness to pay surveys for selecting affordable sanitation options is an approach to be preferred to the preparation of traditional sewer master plans that could result in idle infrastructure (Box 8).

Planning Infrastructure Development. The technical, environmental, social, financial and economic criteria to be used to identify the least cost solution should be clarified up-front. In addition to service standards and consumption levels derived from customer surveys and drinking water and effluent quality standards, technical criteria should define design specifications (minimum delivery pressure, storage capacity, minimum velocity in sewers and so forth), environmental and social costs to be taken into account and methodology used for carrying out economic comparisons. Standard terms of reference (TORs) for planning exercises should be prepared in countries with decentralized WSS service providers, with appropriate training provided to strengthen the capacity of both the service providers and the local consulting industry. As mentioned above, key stakeholders should be involved in the review of the infrastructure development plan so that concerns about environmental, social, or economic consequences could be reflected in the final design. Infrastructure development plans, complemented by outlines of the implementation plan, operation plan (Sections 3.5 and 3.6), and financial forecast (Section 3.7) should constitute the backbone of financing applications.

³⁹ This is often the case in small African towns.

⁴⁰ As still is the case in Jakarta, Indonesia.

⁴¹ In Côte d'Ivoire and Senegal, two Western Africa countries with well performing urban water services, water is supplied on a 24/7 basis in all urban centers served for per capita productions below 100 lpcd. In these countries, the WSS service providers recover full O&M and capital costs from users and are allowed to disconnect customers in arrears.

Box 8 Burkina Faso: the Ouagadougou Strategic Sanitation Plan

In Burkina Faso, the national WSS utility ONEA is responsible for both water supply and waste water collection and disposal in urban centers. In the early 1990s, it embarked on the definition of a strategic sanitation plan (SSP) for the capital city Ouagadougou after detailed surveys of beneficiary preferences and willingness to pay. Sewers were limited to a small part of the city center, while on-site sanitation was actively promoted and artisans trained to satisfy demand for appropriate technologies in the other parts of the city. The construction of the small sewer system and stabilization ponds was financed from external sources; 75 percent of construction costs of on-site sanitation and 100 percent of operation costs were (and still are) borne by beneficiaries. ONEA however finances 25 percent of the construction costs of on-site sanitation, and 100 percent of marketing and artisan training from a sanitation tax that applies to the water bill. Ouagadougou is one of the very few cities in Sub-Saharan Africa to have developed a sustainable arrangement for demand-based sanitation services.

Source: World Bank 2005.

Improving Project Designs. Central engineering agencies enjoying de facto monopolies for preparing WSS projects implemented by decentralized WSS service providers have often been associated with over-design, in particular when their fees are based on a percentage of the project cost,⁴² or design unbalance, with a strong focus placed on production and trunk infrastructure and little attention paid to the end users. WSS service providers should as a general rule: (i) select specialized consultants according to transparent short listing and competition on quality and cost procedures; and (ii) remunerate consultants either on a time spent or lump sum basis. Again, standard TORs should be prepared to assist decentralized WSS service providers take over this responsibility. It may be appropriate to develop programs to strengthen the capacity of the local consulting industry on specific topics. Restrictions on technical specifications should be discussed as part of the reform process: while some may initially be justified on, for example, pipe materials, meter technologies or treatment processes, they should periodically be revisited by independent committees that should include external expertise.

Increasing Procurement Efficiency and Transparency. While it is likely that public WSS service providers would still have to comply with government procurement rules, the focus of the reform should be on increasing the efficiency and transparency of internal procedures. For this, internal guidelines and standard bidding documents, requests for proposals and formats for bid evaluation reports should be prepared, and training provided to senior staff in charge of procurement. As a matter of principle, specialized consultants should be employed for drafting technical specifications, replies to requests for clarification during the bidding period, and bid evaluation reports. To the extent possible, reliance on central public procurement agencies or prior clearances by such agencies should be limited to very large contracts for which an independent review could add value.

Supervising Project Implementation. Specialized consultants should also be employed to supervise construction activities, certify payment requests, and commission works; their remuneration should be based on time spent rather than on a percentage of the contracts supervised. For large projects, it is preferable that external technical auditors employed by the WSS service provider carry out technical audits of the performance of construction supervisors.

Deterring Corruption in WSS Infrastructure Development. If corruption is suspected,⁴³ infrastructure development is likely to be a main source of diversion of public funds (Box 9). While designing the reform, it would be necessary to understand if corruption is mostly the fact of a few individuals or that of fairly sophisticated systems that levies commissions at each step of the project cycle. The extent

⁴² This is the case in many Indian States.

⁴³ World Bank 2008.

to which corruption affects WSS infrastructure development could be assessed by comparing prices obtained by public and private developers for similar goods and works and the characteristics of the consulting and construction industries.⁴⁴ The robustness of anti-corruption measures proposed could be tested against the willingness to implement best practice in infrastructure development such as:

- Estimating demand for services on the basis of consumer surveys, preparing infrastructure development plans, meeting least cost solution criteria, and submitting such plans to public reviews;
- Sub-contracting design and construction supervision activities to consultants selected according to transparent procedures and remunerated on the basis of actual outputs or time spent;
- Fully documenting restrictions on technical specifications;
- Sub-contacting procurement activities to consultants and independently preparing bid evaluation reports or reviews of complaints filed; and
- Closely monitoring the performance of consultants in charge of construction supervision to assess the quality of work and justification of variation orders.

3.5 Improving WSS Service Provision through Internally Developed Programs

Section 3.5 focuses on internally developed programs to improve the quality of the WSS service and the efficiency of operations. It covers issues that usually have to be addressed as part of the reform, such as overhauling organizational set-ups of WSS service providers, reducing staff costs through outsourcing, and reducing costs by improving technical, commercial, procurement and financial operations

Overhauling Organizational Set Ups. Again, there is no “one-size-fits-all” solution for organizing an urban WSS service provider. It is however likely that departments of various importance dealing with public relations, technical operations, asset management and infrastructure development, commer-

Box 9 Corruption in WSS Infrastructure Development

The *Sourcebook* regroups typical “red flags” of likely corruption in WSS infrastructure development in three categories:

Red flags for bribes and kickbacks, which usually include: (i) multiple sole source awards or clusters of awards just below thresholds for competitive procurement; (ii) bid specifications too narrow, too vague, or favoring particular suppliers or contractors; (iii) unreasonably short time frames for submitting bids; (iv) disqualifications of bidders for dubious reasons or awards of contracts to apparently non-qualified consultants or contractors; (v) unexplained delays in issuing bid evaluation reports; (vi) awards to supplier and/or contractor who did not submit the lowest bid; (vii) limited numbers of bidders with losing bidders becoming sub-contractors of winning ones or officials insisting on the use of specific sub-contractors or suppliers.

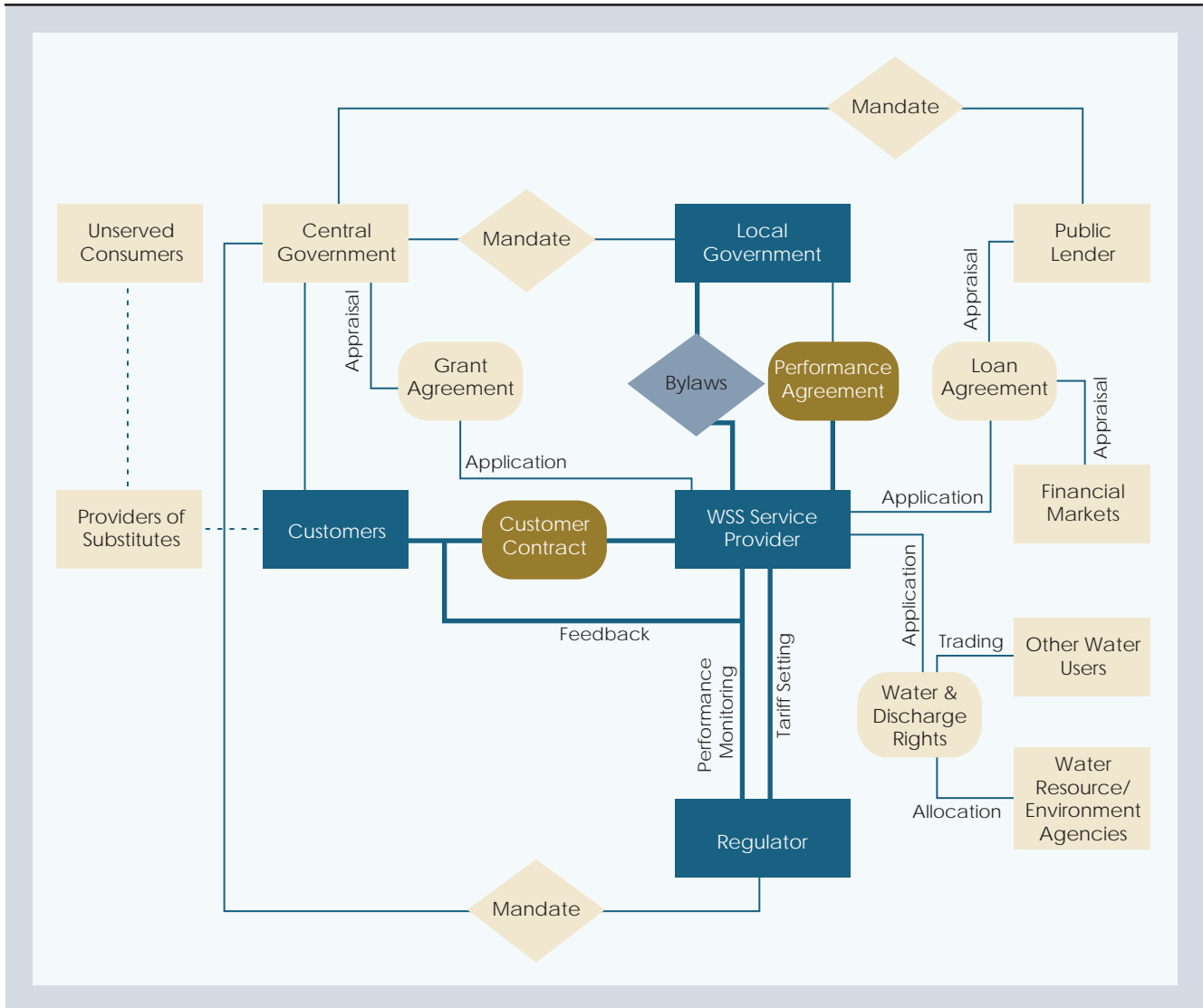
Red flags for bid rigging, in addition to the above listed red flags, include: (i) unreasonable pre-qualification criteria; (ii) unjustified disqualifications of lowest bidders; (iii) selections of lowest bidder followed by negotiations of large variation orders; and (iv) pattern of rotating winning bidders among the same companies.

Red flags for fraud usually include: (i) loose supervision by absentee teams; (ii) delays or refusals to allow independent inspections of goods delivered or construction sites; and (iii) repeated failed quality and operational tests.

Source: World Bank 2008.

⁴⁴ If some consulting firms and contractors work only for public clients and other only for private clients, and if, in addition, prices obtained by the former are systematically higher than that obtained by the latter, it is a good indication that the public clients are not behaving appropriately.

Figure 6 Improving WSS Service Provision Internally



Source: Developed by the authors

cial operations, procurement, financial operations, human resources development, and internal audit may have to be strengthened, reorganized, or created. Specialized management consultants of experienced WSS service providers willing to export their know-how may have to be associated with the definition of the optimal structure, level of decentralization, procedures, rules that apply to financial commitments or reporting, as well as a realistic implementation timetable.

Outsourcing Plan. Staff costs are often one of the largest operating costs of a public WSS service provider, even if in most cases staff compensation packages are low when compared with that of the private sector. In developing countries, staffing ratios of public WSS service providers vary widely, but countries that have successfully implemented efficiency gains programs have caused their WSS service providers to achieve performances, measured by staff per 1,000 connections, that compare with that of developed countries (Figure 1) through a combination of customer base ex-

pansion and outsourcing and, more rarely, staff lay-off. Indeed, many public WSS service providers themselves still carry out non-core activities, such as security of facilities, maintenance of vehicles and buildings, and construction that can be provided much more efficiently by sub-contracted specialized companies. Outsourcing programs should be defined as part of the above mentioned overhauls of organizational set ups. Programs to assist affected staff, such as transfers to sub-contractors or assistance to launch businesses could be envisaged. When staff reduction cannot be avoided, normal attrition should first be considered. Consulting with staff representatives or unions on the design of separation packages and providing assurances that financing is available for such packages would be necessary.

Procurement and Limitation of Corruption Linked to Procurement Activities. Designing programs to out-source non-core tasks should give an opportunity to revisit procurement procedures related to day to day operations: recurrent procurement is usually an area where significant inefficiencies occur as the result of inadequate procedures, improper supervision, or corrupt practice. As a matter of principle, bids for the supply of goods (chemicals, spare parts, meters, and so forth) and the provision of out-sourced services should be called for regularly, technical specifications should be updated from time to time, and pre-qualification of contractors, if necessary, should be carried out in accordance with transparent criteria. Audits of procurement procedures should also be regularly carried out.

Improving Technical Operations is likely to require: (i) an overhaul of the detailed operating procedures for water production, transmission, and distribution as well as wastewater collection and treatment; (ii) the training of middle management to comply with the new procedures, given that a WSS service provider depends on their technical capacity and satisfactory performance; and (iii) the generation of reliable data on the key parameters of the WSS service⁴⁵ so that informed decisions can be made to design asset management plans and monitor their outcomes. Particular attention should be paid to reducing non-revenue water (NRW) and energy consumption.

NRW Reduction. Ensuring that public WSS service providers develop and implement NRW reduction programs with the objective of limiting operating costs and delaying the need for further extension of water production units is one of the many challenges of urban WSS reforms. A recent Bank Note on the challenge of reducing NRW in developing countries clarifies many issues on this topic and the role performance-based service contracts could play.⁴⁶ Table 2 below summarizes the main components of NRW.

- **Commercial losses** can be reduced by implementing a meter installation/replacement program and by limiting metering inaccuracies and data handling errors. Rotating meter readers to limit petty corruption, distributing bonuses for identifying illegal connections and using commercial software that cannot be tampered with are also options to consider.
- **Physical leaks** on transmission or main distribution lines are usually taken care of because they are visible; the same usually applies to storage tanks overflows.⁴⁷ However, most physical leaks are located on service connections (including the connecting point to the distribution pipe) and are usually less (or not) visible. In the many cities where the development of secondary and tertiary distribution networks has been neglected and customers have installed long legal

⁴⁵ Quantities of water produced, distributed and sold; quantities of waste water collected and treated; energy and chemical consumptions; operation of storage tanks; pressure at which water is delivered at critical points of the distribution system; overflows of sewers; drinking water quality at production plants and at select distribution spots; and effluent quality.

⁴⁶ Kingdom, Liemberger, and Marin 2006.

⁴⁷ When storage tanks are actually used: in many South Asian cities, storage tanks are often bypassed and water is usually pumped directly in distribution networks a few hours per day.

or illegal connections of poor quality material and construction, physical leaks can only be efficiently limited by replacing “spaghetti” networks. The magnitude of such programs is often underestimated in WSS asset management plans.⁴⁸ Also, as physical leaks are roughly proportional to the pressure at which the water is delivered, a pressure management program may have to be included in the NRW reduction program, if the rehabilitation and extension of distribution networks are expected to result in increased pressures.

Measuring NRW as a percentage of the water produced could be controversial (Box 10); NRW indicators expressed in m³/day/connection or m³/day/km of distribution pipes are more representative of the main causes of NRW. Also, estimating NRW when water is distributed on an intermittent basis is fairly complex;⁴⁹ physical leaks should in theory be proportional to the number of hours of distribution, and the volume to be quoted should be for a permanent supply, not only for the hours of supply, even if this does not take into account the fact that if the water were to be distributed permanently it would likely be at a lower pressure.

Energy Efficiency. Energy is also one of the largest operating costs of a WSS service provider. Limiting physical losses to reduce pumping costs is an efficient way of addressing the issue. Technical audits of pumping plants should also be carried out to identify the need for replacing outdated equipment and/or adapting pumping programs to the characteristics of the pumping equipment and electricity tariff structures. Financial incentives available through the Carbon Fund should be systematically considered.

Improving Commercial Operations usually requires: (i) establishing clearer relations between WSS service providers and customers and embedding rights and obligations of both parties in an updated “customer contract;” and (ii) overhauling metering, billing, and collection procedures.

Table 2 Main Components of Non-Revenue Water

System Input Volume	Authorized Consumption	Billed Authorized Consumption	Billed Metered Consumption	Revenue Water
			Billed Un-metered Consumption	
		Unbilled Authorized Consumption	Unbilled Metered Consumption	Non-Revenue Water
			Unbilled Un-metered Consumption	
	Water Losses	Commercial Losses	Unauthorized Consumption	
			Metering Inaccuracies and Data Handling Errors	
		Physical Losses	Leakage on Transmission and Distribution Mains	
			Leakage and Overflows at Utility’s Storage Tanks	
Leakage on Service Connections up to Customer Meter				

Note: Shaded boxes highlight losses of commercial origin.

Source: Kingdom, Liemberger, and Marin 2006.

⁴⁸For example, in African cities, the low density of connections (typically of 30 to 60 per km of distribution pipe) usually translates in large programs of construction of tertiary pipes and standardized connections that cannot only be implemented over long periods.

⁴⁹This is the case in most South Asian cities.

Box 10 The Non-Revenue Water Paradox

Traditionally, NRW has been measured as a percentage of the water production and NRW targets have been set in reference to international best practices in similar circumstances. However this indicator does not really reflect the fact that: (i) the number of physical losses is linked more to the number of connections (where about 70 percent of them are usually found) and the length of the distribution network; and (ii) the volume of physical losses is linked more to the pressure at which water is delivered than to the volume of water introduced in the distribution network. Similarly, commercial losses depend as much upon the number of connections served as upon the volume of water consumed. In cities that implement aggressive programs to connect low-income households, the average per connection consumption tends to decline significantly over time and measuring NRW as a percentage of the production could be misleading.

The table below presents a case where in 10 years:

(i) the number of residential connection was multiplied by 2.5; (ii) the average consumption per connection decreased from 0.75 to 0.525 m³/day/connection; (iii) the average losses per connection decreased from 0.20 to 0.15 m³/day/connection; and (iv) the average loss per km of distribution pipe decreases from 8 to 6 m³/day/km. While these indicators translate a good performance in terms of increasing access and improving efficiency, NRW, expressed in percentage of the production increased from 27 percent to 30 percent in 10 years!

Year 0	m ³ /day	Year 10	m ³ /day
Consumption		Consumption	
100,000 conn. @ 0.75 m ³ /day	75,000	250,000 @ 0.525 m ³ /day	131,250
Losses		Losses	
100,000 conn. @ 0.20 m ³ /day	20,000	250,000 conn. @ 0.15 m ³ /day	37,500
1,000 km @ 8 m ³ /day	8,000	3,250 km @ 6 m ³ /day	19,500
Production	103,000	Production	188,250
Total Losses	28,000	Total Losses	57,000
NRW	27 %	NRW	30 %

Source: Developed by the authors.

Customer Relations. A recent Bank Note proposes options for improving water utilities accountability to their customers.⁵⁰ WSS service providers should ensure that customers are offered several WSS service options and understand the impact of the tariff structure on the initial connection costs and periodic WSS bills. Customer contracts should clarify that the WSS provider is allowed to disconnect customers in arrears and required to promptly reestablish the service upon payment. WSS service providers should be requested to: (i) monitor the handling of customer complaints; (ii) seek feedback from customers on the quality of the service provided; and (iii) make independent assessments of its performance for handling complaints available to the public. Particular attention should be paid to two categories of customers:

- **Government agencies** and State Owned Enterprises (SOEs), which often represent a large share of the billing: agreeing on an action plan to improve budgetary and payment procedures may require specific negotiations with the Treasury and/or the ministry responsible for SOEs; and
- **Low-income households** to whom subsidized connections and lower tariffs or subsidies for life-line consumption should be offered to encourage access to and minimum consumption of piped WSS service (Section 3.8). The criteria used for identifying such customers should be clarified. Also, the issue of periodicity of billing should be addressed and the economic feasibility of meter using a pre-payment technology should be analyzed where the customers' irregular revenues could affect bill collection.

Metering. Too many WSS service providers still estimate their production on the basis of the number of hours on their pumping stations. Accurate bulk metering is necessary in any case; the rehabilitation of

⁵⁰ Muller, Simpson, and Ginneken 2008.

existing meters, or their replacement by better performing ones, should be a priority of infrastructure development programs. Many developing countries have implemented successful individual metering programs, but many still believe that metering the consumption of each individual account should be a remote objective. In cities where individual metering is inexistent or deficient, customers to be metered should be prioritized.⁵¹ One would have to be realistic about the pace of implementation of a comprehensive metering program, as installing meters often requires a reconstruction of the connection itself, which could be a major task when this requires replacing long connections by shorter ones hooked on properly built tertiary distribution networks (see discussion on NRW reduction). The dependability of meters proposed for installation should be investigated, in particular where plans call for water to be distributed on an intermittent basis for many years.

Billing, Collection and Limiting Corruption Linked to Commercial Activities. Limiting the human handling of data will eliminate meter reading and billing errors, whether involuntary or resulting from fraudulent practices; audits by specialized consultants should help identify equipment, software and procedures to achieve this. Several well-tested software are available on the market, and it is often preferable to purchase an off-the-shelf product rather than developing home grown ones. Various options for the payment of WSS bills by customers, including that using post offices or banks with well-developed networks as payment points should be investigated. As mentioned above, disconnection and reconnection procedures should be the subject of a particular attention, as well-run WSS service providers, whether public or private, cannot afford the accumulation of large accounts receivable.

Financial Management. While designing the reform, audits of financial operations should be carried out to help design and implement programs aimed at: (i) improving accounting procedures including: accounts receivable and payable, inventory records, provision for income taxes, valuation of fixed assets, profit distribution (if applicable), and internal controls; (ii) identify adequate software and hardware to be acquired; (iii) define relevant training programs. This may involve a complete overhaul of accounting procedures. As a general rule, financial statements should be audited by independent auditors rather than by government auditors.

3.6 Improving WSS Service Provision through Partnerships with the Private Sector

Two Toolkits on the design of public-private partnerships (PPPs) in WSS have been published by the World Bank during the last ten years.⁵² Section 3.6 summarizes the main recommendations of the 2006 Toolkit that should be referred to when PPPs are considered as part of the reform of an urban WSS sector. Two reports have recently been prepared by the World Bank to review the actual impact of a large number of PPPs in developing countries on the reliability, sustainability and affordability of the WSS service.⁵³ This section does not summarize their finding; they should also be consulted prior to engaging in a PPP. Finally, many reports by other financing agencies, research institutes or NGOs (listed in the two recent reviews of the PPP experience) have been published on this somewhat controversial topic.

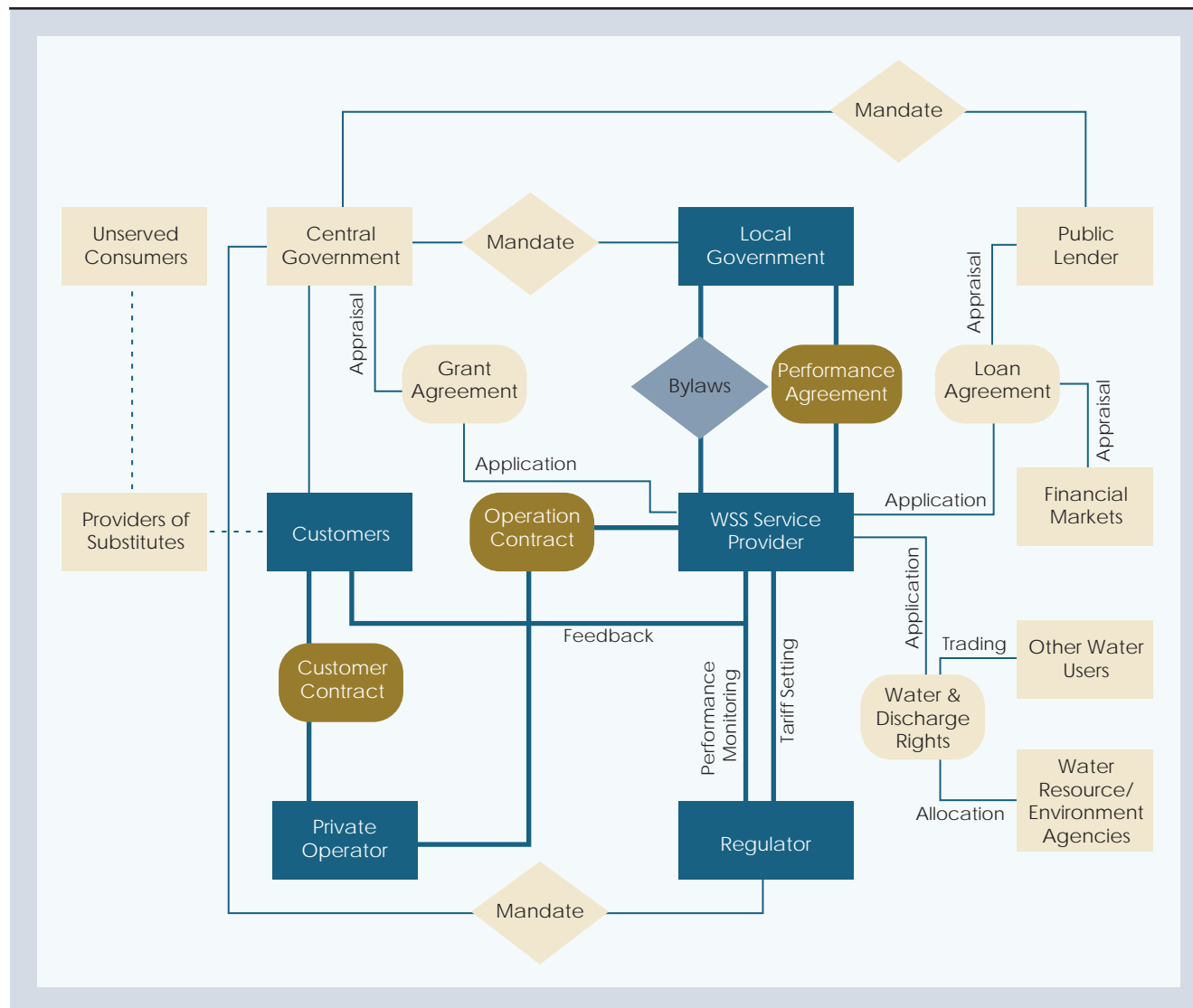
Key Steps for a Successful PPP. The 2006 Toolkit proposes nine steps for designing a successful urban WSS PPP: (i) considering PPP; (ii) planning the process of introducing PPP; (iii) involving stakeholders

⁵¹ In many cities 20 percent to 30 percent of the customers generate 70 percent to 80 percent of the revenues; it makes sense to install meters on these connections first.

⁵² World Bank 2006 and World Bank 1997.

⁵³ Fall et al. 2008 and Marin et al. 2008.

Figure 7 Improving WSS Provision through PPPs



Source: Developed by the authors

in the design of the arrangement; (iv) setting upstream policy; (v) setting service standards, tariffs, subsidies, and financial arrangements; (vi) allocating responsibilities and risks; (vii) developing institutions to manage the relationship; (viii) designing the legal instruments for the arrangement; and (ix) selecting an operator. As successful PPPs are always designed and implemented as an integral part of a reform of the urban WSS sector, there are many overlaps between issues identified in these nine steps and those covered in the various sections of this report. Among others, stakeholder involvement, policy formulation, service standards, tariff setting, subsidy designs, financing arrangements and economic regulation are covered in sections 3.1, 3.2, 3.6 and 3.7. This section mostly focuses on the rationale behind PPPs in WSS, the types of PPPs that can be considered on the basis of an optimum allocation of responsibilities and risks, the arrangement for managing the PPP and the selection of operators.

Considering PPPs for Improving WSS Service or for Raising Financing? The above-mentioned recent review of the PPP experience worldwide concludes that PPPs should primarily be considered for improving the quality of WSS service and efficiency of WSS operations.

- Where there is no major ideological opposition to the concept of private provision of the WSS service and a positive response from the professional private sector can reasonably be expected, involving a private operator in the provision of the WSS service should normally bring the know-how that is often missing to improve the quality of service and achieve efficiency gains because: (i) it should normally be easier to enforce contractual obligations between a public and a private partner than between two public partners;⁵⁴ and (ii) private partners are expected to react swiftly to the financial incentives either explicitly specified or implicitly built in its contract to encourage achievement of performance targets.
- PPPs could also be considered for raising commercial financing, without recourse to sovereign guarantees, to develop the WSS infrastructure if: (i) the credibility of the technical and commercial WSS operations has been proven; (ii) the predictability of the WSS tariff setting mechanisms has been tested; (iii) a debt repayment track record of the WSS service provider has been established; and (iv) as explained in section 3.7, financial markets are able to provide debt in local currency and on terms compatible with the characteristics of a sector whose assets are depreciated over much longer periods than most infrastructure sectors.⁵⁵ Ensuring that local financial markets can meet the needs of the urban WSS sector obviously cannot be achieved solely by reforming the latter.

Types of PPPs. This report focuses mostly on the following types of PPPs:⁵⁶

- **Service contracts** designed for outsourcing specific activities, such as meter reading, collection of bills, leak detection and repair, plant operation or network maintenance are awarded for periods of time of one to five years. The service contractor, whose contract mentions the technical specifications to be complied with, usually receives a fixed payment from the owner of the service contract, which is sometimes complemented by a bonus or a penalty for exceeding or not meeting contractual targets.
- **Management contracts** designed for outsourcing all technical and commercial operations, for a period of time usually limited to about five years. The manager, whose contract also mentions technical specifications and service standards to be complied with, receives remuneration similar to that described above for a service contract.
- **Affermage** contracts also designed for outsourcing all technical and commercial operations; the main differences between a management contract and an *affermage* contract are in: (i) the relation with the customers: in an *affermage*, customers are under contract with the private operator, not the owner of the contract; (ii) the status of the operational staff: in a *affermage*, operational staff are employed by the private operator, not by the owner of the

⁵⁴ As is the case in Kenya, where ownership and operations have been split in Nairobi and Mombasa and the Coastal Region and operation contracts between public owners and public operators have been in effect for several years. The situation is now similar in Dar es Salaam, Tanzania where a public operator now holds the *affermage* contract previously awarded to a private operator selected after open competition.

⁵⁵ For example, these conditions are met in Morocco where three combined power/water/sewerage concessions are successfully implemented in Casablanca, Rabat/Sale and Tangiers/Tetouan.

⁵⁶ This report does not discuss BOOT (Build, Own, Operate and Transfer) types of PPP, mostly designed for providing additional WSS production infrastructure and not really for improving the WSS service. It does not discuss full divestiture option either; that is limited to a very small number of countries where conditions for accessing private equity markets exist (see Section 3.7).

contract; and (iii) the remuneration scheme: in an *affermage* the operator shares the collection of user charges with the owner of the contract. Since the operator of an *affermage* has to finance the working capital of the WSS operation, the duration of the contract should be sufficient to allow for recouping the initial investment and yielding a reasonable return; *affermage* contracts are usually awarded for about ten years.

- **Concessions** that transfer to a private operator the responsibility for financing the development of the WSS infrastructure and for implementing the Capex in addition to operational responsibilities. When the WSS service is already provided by a public concessionaire, which is the case in many French and Spanish speaking countries, the privatization of the concession results from the acquisition of a majority share of the latter by its selected private partners.⁵⁷ Because of the long depreciation periods of WSS assets, WSS concessions are usually awarded for duration of 25 years and more. Concession contracts specify coverage objectives, service standards, tariffs the operator is allowed to charge to the customers, as well as the conditions under which they can be changed.

Allocating Risks and Responsibilities. The provision of WSS service in urban areas involves, among others, operational, commercial, financing, foreign exchange, regulatory, and political risks. If all these risks can be mitigated adequately, a concession could reasonably be considered.

- **Operational risks** are usually linked to the reliability of water sources (yield and water quality), the conditions of the WSS assets, and the reliability of key inputs such as energy. Mitigating operational risks usually requires rehabilitating assets. Normally, the operational risk should be transferred to the private operator, but if rehabilitation programs cannot be financed timely and implemented efficiently, it may be preferable to initially settle for service contracts of limited scope.
- **Commercial risks** are mostly associated with the evolution of demand for WSS service, the capacity and willingness of the customers to pay and the ability of the operator to collect bills and disconnect customers in arrears. Mitigating commercial risks usually requires detailed assessments of demand and elasticity to pricing, the design of appropriate tariff structures, metering of consumption and enforcement of disconnection policy.⁵⁸ Normally, the commercial risk should be transferred to the private operator, but if the mitigation program cannot be implemented, it may be preferable to opt for a management contract that guarantees part of the payment to the manager.
- **Financing and foreign exchange risks** are linked to the capacity to generate revenues from operations sufficient to service the debt and contribute cash to the Capex. Mitigating financial risks usually requires that local financial markets are able to provide debt on terms compatible with the characteristics of the WSS sector (Section 3.7) and in local currency, to limit the foreign exchange risk. If local financial markets do not meet these conditions, concessions could logically be considered only if cash surpluses are expected to be sufficient to finance the entire Capex.⁵⁹ But if financing that meet the needs of the WSS sector can only be provided in foreign exchange by international financing institutions (IFIs) and bilateral agencies, it may be preferable to allocate the financing and foreign exchange risks to the public partners and, provided that the operational and commercial risks can be reasonably mitigated, opt for an *affermage* contract.

⁵⁷ In Western and Central Africa, public electricity and water concessions in Gabon and Mali have been privatized by the sale of shares to the selected private professional partners and investors (Fall et al. 2008).

⁵⁸ In African countries, the payment of WSS bills by government agencies that typically represent 15 percent to 25 percent of the billing has been a recurrent issue and requires a special attention when assessing the commercial risk.

⁵⁹ This has been the case, for example, in Côte d'Ivoire since 1989 and in Gabon since 1997.

- **Regulatory risks** are associated, as explained in section 3.8, with the capacity to set, monitor, enforce, and change the allowed tariffs and service standards for the WSS service provider. In short-term service and management contracts, the contracts set service standards and the remuneration of the operator, and there should normally be no need to amend them. Services standards and remuneration however cannot always be fixed for the full duration of longer-term *affermage* or concession contracts. Specifying in the contract the conditions under which they can be adjusted and ensuring that they are not superseded by other legislation should provide sufficient transparency and predictability to both parties.
- **Political risks:** long term *affermages* and concessions always face the risk of change of political environment and shift of policies. Ensuring that a dispute resolution mechanism acceptable to all parties is specified in the contract and that all parties are willing to refer to it in case of disagreement should help mitigate the risk of unilateral contract termination or expropriation.

Developing Institutions to Manage the PPP. A key ingredient for successful PPPs is the building of a good working relationship between the private operator and its public employer. During implementation of PPPs, the main issues to be addressed are likely to be: (i) monitoring the performance of all parties and taking actions to improve performance; (ii) resolving disputes between parties; and (iii) adjusting service standards and tariffs.

- **Monitoring the performance of the private operator** should normally be carried out by the owner of the operation contract with the assistance, if necessary, of independent technical consultants or auditors. The role of a regulator (if one exists) with regard to monitoring the operator's performance must be clarified to avoid confusion.
- **Monitoring the performance of the public partners** is equally important, but more difficult to carry out: many PPPs have failed because public partners defaulted on their commitments.⁶⁰ When an independent regulator exists, it could be requested to monitor the performance of the public partners as well. If not, a joint committee that includes public and private partners and customer representatives could help identify key issues linked to the performance of the public partners as well as help design remedies.
- **Resolving disputes** that may arise even if the PPP is well designed should normally involve several steps. Negotiations between partners should be the first one; a mediator, who could well be the regulator if the role exists, could facilitate them. Reviews by an independent expert or panel of experts could be considered to help find a solution to negotiations that are at an impasse. Arbitration that would allow parties to choose a tribunal and arbitrators and appoint experts has many advantages over courts and all PPP contracts should provide for it. But since arbitration awards are not directly enforceable, one may have to go to court to enforce them. The 2006 PPP Toolkit lists issues to address when drafting arbitrations provisions.
- **Adjusting service standards and tariffs:** Section 3.8 includes a discussion on this issue and in particular on the pros and cons of regulation by contract and regulation by regulator.

Selecting an Operator. While there are examples of successful direct negotiations for large WSS concessions⁶¹, it is widely accepted that competitive bidding is the best method for selecting an operator since it encourages transparency and can stimulate interest among a broad range of potential partners.⁶²

⁶⁰ For example, to timely pay WSS bills issued to government's agencies, approve tariff adjustments, mobilize financing for the Capex or implement the investment program.

⁶¹ Casablanca (Morocco) or Jakarta (Indonesia).

⁶² For example, in Western and Central Africa, operators from the Netherlands, Portugal, Morocco and South Africa have recently successfully competed with operators from France who had been active in the region for a long time.

The 2006 Toolkit includes a detailed discussion on the selection process, which should be referred to when organizing the selection of an operator. Three issues need particular attention:

- **Pre-qualifying** operators is a must for most management, *affermage* and concession contracts; setting pre-qualification criteria too high would limit competition to a few international operators, but setting them too low could attract companies which do not have the technical breadth and financial depth to implement the contract. It is worth noting that the process of pre-qualifying operators is different from that of short listing consultants: only companies that meet the selection criteria should be pre-qualified, regardless of their numbers and country of origin.
- **Bid evaluation** procedures should normally include a two-stage process with a technical evaluation followed by a financial evaluation of bids that have been declared technically responsive. When the operator of an *affermage* is requested to implement large rehabilitation and extension programs in addition to technical and commercial operations, special attention should be paid to the respective weights of the elements of the bid and the possibility of manipulating figures to make the bid look more attractive. Limiting the number of bidding variables could be envisaged to increase transparency of the bidding process.⁶³
- Owners must be protected against voluntary underbidding by companies that could expect to be in a strong position for renegotiating service standards and/or remuneration soon after the contract is awarded; it could make sense to indicate the minimum financial bid that would be declared responsive.⁶⁴

3.7 Financing WSS Operations in a Sustainable and Affordable Manner

The cost of operating WSS services and expanding infrastructure eventually has to be financed by customers, tax payers or a mix of both. In developing countries, often confronted with strict fiscal constraints and debt ceilings, it makes full sense to transfer the cost of the WSS service to customers and the responsibility for providing debt to financial markets.⁶⁵ Section 3.7 reviews the key issues to be addressed to gradually build the creditworthiness of WSS service providers and transfer the burden of financing the full cost of the WSS service to customers and financial markets.

Creditworthiness and Financing Options. Table 3 below summarizes the financing sources available to WSS service providers at various stages of financial sustainability.

Getting Out of a Loss-Making Situation. At the lower end of the spectrum are those WSS service providers that do not even recover O&M costs from user charges and survive primarily on budgetary transfers from national or local governments.⁶⁶ Improving cash flows and restoring liquidity usually requires a combination of tariff adjustments, O&M cost reduction and collection improvement. When lumpy tariff increases are not socially or politically acceptable, one option to consider for encouraging gradual

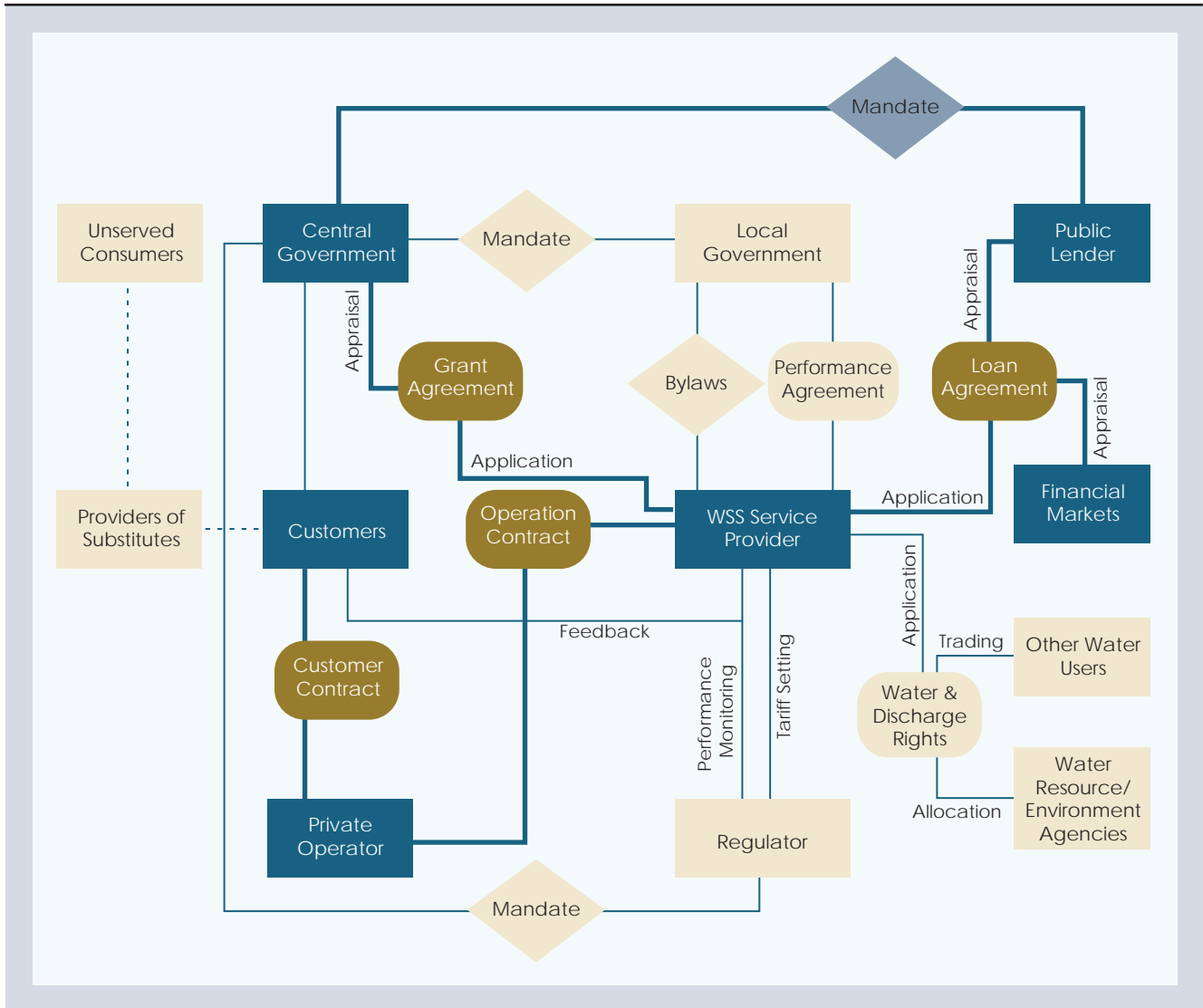
⁶³ In Dar es Salaam, in addition to the *affermage* contract the operator was awarded a small construction contract for urgent rehabilitation and an engineering contract for designing and implementing a large program of rehabilitation and extension of secondary and tertiary water distribution pipes. To simplify bid evaluation, the price to be paid by the owner of the *affermage* contract for the construction and the engineering contracts were set in the bidding document. The only variables for the bidding were the operator tariff and the guaranteed amount of equity to be injected in the local operating company by its shareholders.

⁶⁴ For the Dar es Salaam WSS *affermage* contract, the bidding document included a graph linking the proposed operator tariff to the funding of the operating company; in other words, the lower the operator tariff proposed by the bidder, the higher the guaranteed equity to be injected in the operator by its bidders/shareholders. The *affermage* contract ran into trouble, among others, because the equity was not injected according to its contractual schedule.

⁶⁵ Baietti and Curiel 2005 and Baietti and Raymond 2005.

⁶⁶ Most Indian WSS service providers are at the unviable loss-making stage.

Figure 8 Financing WSS Operations



Source: Developed by the authors

tariff adjustments and efficiency gains could be to link the amount of operating subsidies to the actual collection performance of the WSS service providers (Box 11).

The Limits of the Pay-as-you-Go Approach. WSS service providers that have reached the pay-as-you-go stage generate sufficient revenues to finance O&M costs and repay the principal and interest of their loans. But since they do not generate cash surpluses, they continuously have to raise debt financing for new projects. Box 7 describes some of the risks associated with financing the development of the WSS infrastructure exclusively on debt. But since WSS service providers in this situation usually raise debt from public sources, either on-lent funds made available by IFIs and bilateral agencies to central governments, loans guaranteed by central governments or loans from government lending institutions, it is usually easy to reschedule it or even partially write it off, as part of the design of the reform.

Table 3 Creditworthiness and Financing Options

Level of Creditworthiness	User Charges	Financing Options
Loss-making	Below O&M costs	Government operational and capital subsidies
Pay-as-you go recovery of cash costs	O&M costs, principal and interest of ongoing debt	Mostly government guaranteed IFI loans and infrastructure funds
Cost recovery	O&M costs, depreciation, interest on debt and return on equity	Financial markets with government guarantees
Sustainable cost recovery	O&M costs, depreciation on revalued assets, interest on debt, return on capital, foreign exchange risk	Financial markets with limited government guarantees
Creditworthy	As in sustainable cost recovery plus reliable refinancing sources, security for loans, and stable regulatory environment	Financial markets

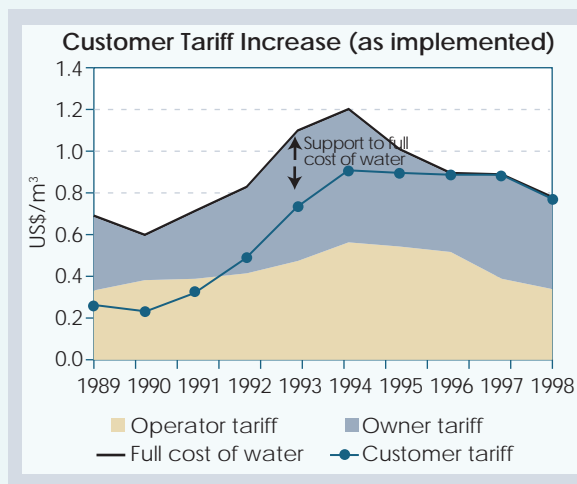
Source: Baietti and Curiel 2005.

Box 11 Guinea: Easing the Move towards Cost Recovery using an Output Based Tariff Subsidy

In the late 1980s, Guinea embarked on a bold reform of its urban WSS sector based on: (i) the sub-contracting of the technical and commercial operations to the private operator SEEG within the framework of a 10-year *affermage* contract with the public asset holding company SONEG; and (ii) the gradual move towards full recovery of O&M and capital costs from user charges.

The full cost of water, estimated at about GF400/m³ (equivalent to US\$0.80/m³) had to be compared with the GF60/m³ customer tariff that was applicable before the mobilization of SONEG and SEEG. The government agreed to immediately raise the customer tariff to GF150/m³, a level sufficient to cover SEEG’s operating expenses in local currency and make a limited cash contribution to SONEG’s capital budget. The government also requested funds from the World Bank to finance 100 percent of the foreign exchange component of the operator tariff for four years, and a gradually decreasing share of it for six more years, so that after ten years the operator tariff would be fully covered by collections from customers. This support was to be paid on the basis of the actual collection of water bills by SEEG, so that the operator would obtain the operator tariff indicated in its bid for each cubic meter of water billed and collected (this is indeed a good example of “output-based” financing). The government finally agreed to service 100 percent of SONEG’s debt for two years and then to gradually decrease its support so that the debt would become fully serviced by SONEG after six years. This move towards cost recovery was ambitious, but nevertheless implemented, even more rapidly than initially envisaged. After seven years, revenues from customers were sufficient to cover O&M, depreciation and financing costs and to contribute cash to SONEG’s Capex.

Customer Tariff Increase (as implemented)



Source: Fall et al. 2008.

Box 12 Senegal: Using a Cash Flow Model as Regulatory Tool

When awarding an *affermage* contract for the water supply service in Senegal's 45 largest urban centers was considered, the government requested that customer tariff increases be limited to a maximum of three percent per year. A cash flow model was then developed to help identify the Capex and a financing plan that would be affordable within the constraints of: (i) tariff increases imposed by the government; (ii) operating performance improvements that could reasonably be expected from the private operator; and (iii) the commitment made to financiers that the urban water sector would, by 2003, reach a financial equilibrium, meaning that sources of funds (sales, loan proceeds, and grants) would be higher than uses of funds (O&M expenses, debt service, and Capex).

After mobilization of the asset holding company SONES and the private operator SDE in 1996, this cash flow model was used as the main regulatory tool by the joint committee made of representatives of the government and the two parties to the *affermage* contracts for identifying the Capex and a financing plan compatible with cash surpluses transferred by SDE to SONES. SONES' operations reached the financial equilibrium in 2003, as scheduled. In fact, and despite a decrease of the customer tariff (in constant terms) since 1996 (as a result of efficiency gains achieved by SDE), cash surpluses transferred to SONES steadily increased and allowed it to finance an extension program that translated into a quasi universal water coverage in the *affermage* service area and one of the highest connection ratios in sub-Saharan Africa in 10 years.

Sources: Fall 2008 et al. 2008.

Moving to the Cost Recovery Stage. Well performing WSS service providers recover O&M costs, depreciate fixed assets and generate a return on capital sufficient to cover interest of the debt and remunerate the equity invested from collected user charges. Several East Asian, Latin American and even a few African service providers have reached the cost recovery stage. Moving to that stage usually requires that the balance of cash generation, debt and development grants to finance Capex programs be defined through an iterative process to take into account: (i) the assessed customer willingness to pay, or the expressed government willingness to charge, for estimating future revenues; (ii) realistic scenarios of operational performance improvements; and (iii) reasonable WSS infrastructure development scenarios (Box 12).

- Service providers should contribute cash to their Capex: an average of 30 percent, for example, calculated on a three-year sliding basis could be considered a reasonable target;
- When service providers rely mostly on on-lent government funds, the debt element of their financing plan should preferably be set on terms that match the terms that IFIs would offer for similar projects⁶⁷ and for loan amounts that would result in a debt service compatible with estimated future revenues;
- The grant element of the financing plan, if still necessary, should be adjusted accordingly, and gradually phased out.

In any case, it is essential that governments and/or government lending agencies carry out a proper financial appraisal of WSS service providers and that the evolution of agreed financial indicators is later monitored closely.⁶⁸ Extending debt financing to WSS service providers which do not even recover O&M costs against a guarantee provided by a municipal or state government does not help building the financial sustainability of beneficiary WSS service providers.

Achieving Sustainable Cost Recovery Stage. Guaranteeing long-term financial sustainability usually requires that: (i) local financial markets are able to provide long term debt on conditions compat-

⁶⁷ World Bank procedures in theory request that IDA credits made available to governments be on-lent on IBRD terms to the WSS service provider, including a premium for the foreign exchange risk.

⁶⁸ Annex 3 lists standard efficiency, leverage, liquidity and profitability indicators used by the World Bank as part of financial appraisals of WSS service providers.

ible with the characteristics of the WSS sector, whose assets depreciate over long periods, to avoid repayment of loan principals being higher than depreciation; and (ii) WSS service providers are protected against sudden variations of exchange rates when funds are borrowed in foreign currencies. When WSS service providers recover all explicit and implicit costs, including return on assets, foreign exchange variations, and depreciation of assets on a revalued basis, they should have access to a much wider pool of local and international financing options, although they may still need government guarantees to reduce their borrowing costs. To become fully creditworthy, WSS service providers would have, in addition to providing accurate historical financial statements, adequate loan security and capacity to operate within a predictable regulatory framework. This has been achieved by Chile, one of the few countries able to finance the development of its urban WSS sector, including collection and treatment of wastewater, entirely from financial markets (Box 14).

Easing Access to Financial Markets. In order to raise commercial debt and private equity and reach the sustainable cost recovery stage defined above, WSS service providers would have to adequately mitigate risks typically associated with WSS projects. Guarantee schemes offered by the World Bank for privately financed WSS projects could cover:⁶⁹

- Political risks, such as war, civil disturbance, terrorism, expropriation and confiscation currency convertibility and transferability risks;⁷⁰
- Contractual risks, such as breach of contracts or regulatory capture: in view of the number of privately sponsored WSS projects that failed during the last decade, instruments to cover these risks would seem to be well adapted, but few examples are available;
- Credit risks covering lenders and bondholders, but not equity investors: partial credit guarantees typically cover only part of the borrowed funds and the portion of the debt service that falls due beyond the normal tenure of loans normally available from commercial lenders; they could also cover a portion of the debt service throughout the life of the loan.⁷¹

Dealing with the Foreign Exchange Risk. For WSS service providers that generate revenues in local currency but have to borrow in foreign exchange, the foreign exchange risk is significant. As service providers move towards the cost recovery stage, this risk is usually taken care of by governments which on-lend in local currency externally borrowed funds against a premium on the interest rate. When service providers are able to raise private financing, creeping exchange rate variations⁷² can rather easily be taken care of by automatic tariff adjustments based on cost index formula. However, there is currently no meaningful coverage for shock, let alone catastrophic, devaluations, such as those that hit some Latin American or East Asian in the late 1990s. The focus has thus mostly been on developing local currency financing and enhancing products offered by local financial markets that usually cannot mobilize long-term financing at affordable conditions; the above described partial credit guarantees have been designed primarily to extend loan maturities.⁷³ IFI lending in local currency has been

⁶⁹ Gupta et al. 2002.

⁷⁰ Examples in the WSS sector are currently limited to a concession in Guayaquil (Ecuador) and a BOOT desalination plant in Sudan.

⁷¹ Recent examples in the WSS sector include projects in Mexico and Colombia.

⁷² Baietti and Raymond provide the following definition: (i) creeping devaluation: a band with which, based on past performance and future assessments, a currency may be expected to fluctuate on a year-to-year basis; (ii) shock devaluation: unexpected and significant devaluation in the order of 5–10 percent; and (iii) catastrophic devaluation: unexpected and significant devaluation where the prospect of exchange rates returning to previous levels are remote over the foreseeable futures.

⁷³ For WSS projects loan maturities of 10 to 15 years are usually optimal; beyond 15 years, reductions of principal repayment are offset by increases in interest payment, as interest rates increase with loan maturities.

limited to a select group of countries where funds in local currency can be raised and where cross currency swap markets are available to hedge IFI exposure.

Designing Grants aimed at Building Sustainability. Development grants are often needed to help WSS service providers move to the cost recovery stage. However, traditional ways of subsidizing infrastructure inputs, either by providing a percentage of the total project cost or by financing sub-projects aimed at achieving specific objectives, such as network extension to low income neighborhoods or pollution abatement, has often led to unsatisfactory results: the delivery of WSS infrastructure alone does not guarantee that the WSS service will be delivered. Output-based aid⁷⁴ (OBA) has been used for improving the efficiency of grants extended to WSS service providers: (i) either to smooth tariff increases (Box 11); or (ii) for rapidly extending direct access to piped water and sewers in low income neighborhoods.⁷⁵ As private operators better react to the financial incentives created by OBA than public operators, OBA has so far mostly been implemented in support for PPPs, with private operators bidding for the amount of OBA requested. But OBA can also be provided to publicly owned WSS service providers to support medium term performance improvement plans with the amount of the OBA subsidy being set by an independent party. When designing an OBA, it is important to properly identify the right output and to assess the potentially counterproductive incentives the OBA scheme could result in. For example, it could sometime make more sense to complement WSS bills collected from customers, because it does correspond to a service that has actually been delivered and partially paid for, than new connections, as there is no guarantee that water will reach customers or bills will be collected.

3.8 Regulating the WSS Service in a Transparent and Predictable Manner

Three recent World Bank notes and publications cover in detail the issue of economic regulation of urban WSS services, which they define as the rules and organizations that set, monitor, enforce and change the allowed tariffs and service standards for WSS service providers.⁷⁶ Economic regulation is mostly about stopping the monopoly abuse of WSS service providers that could provide a bad quality service and charge price above costs to increase their profits or cover their inefficiencies. Section 3.8 includes a summary of these papers, and discusses principles for setting WSS tariff and designing WSS tariff structures and subsidies.

Adapting Regulatory Arrangements to Local Conditions. As for all other elements of the reform, there is no “one-size-fits-all” solution for economic regulation of the WSS service and importing regulatory models designed for other countries is seldom a good option. Regulatory designs should be suited to the specific needs of each country, after proper definition of the objectives pursued, analysis of the potential contribution of economic regulation to the overall accountability framework, specification of regulatory functions, and choice of legal instruments and organizations in which to embed such functions. While the regulatory function usually includes controlling tariffs and service standards, it could also be extended to controlling assets conditions, efficiency parameters, coverage targets, or designing subsidies. When in-country capacity for regulation is assessed to be scarce, using existing organizations or outsourcing this function to regional or international bodies could be an option to consider.

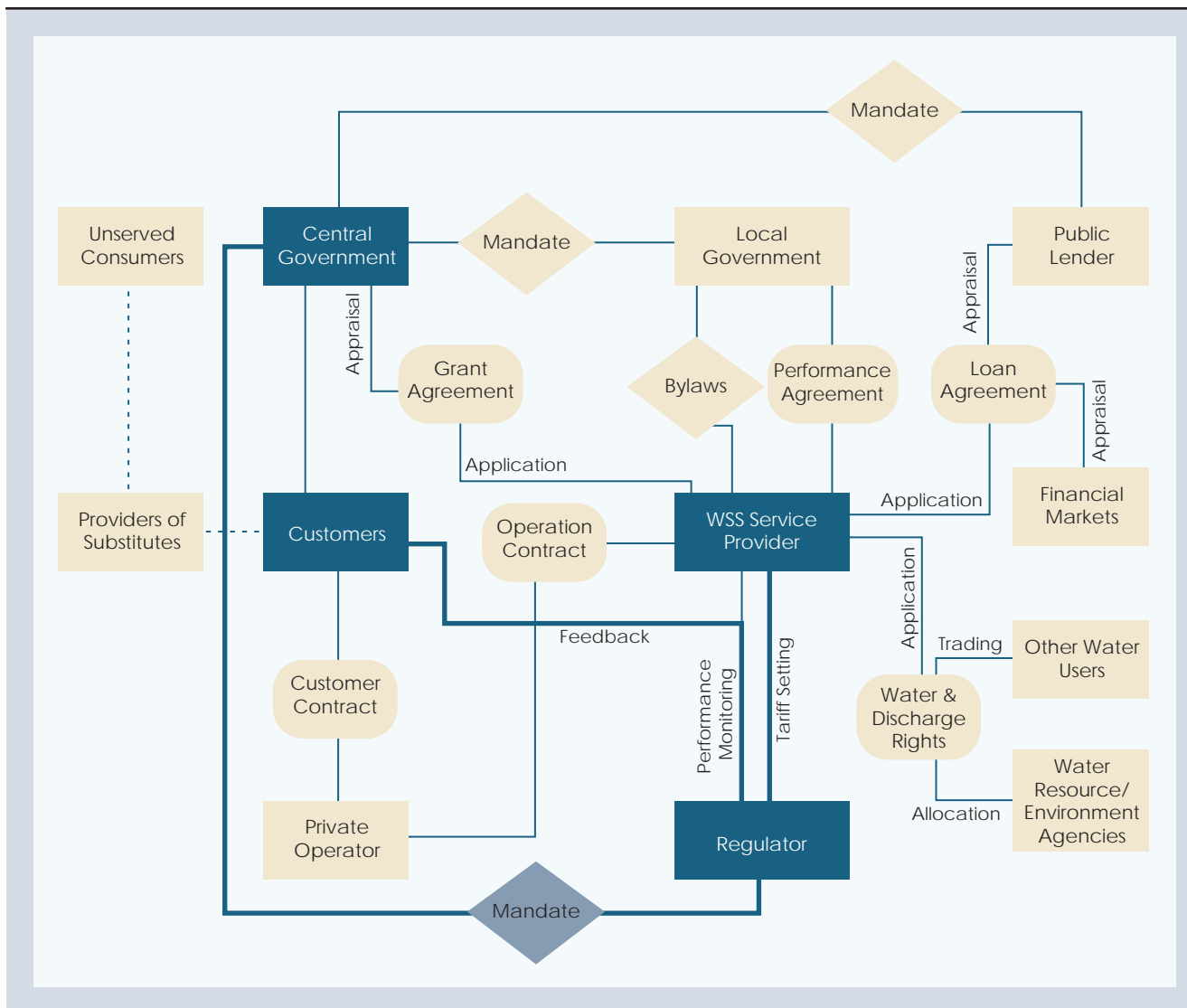
Regulation and PPP. Economic regulation has often been associated with private participation in the provision of the WSS service, in particular to keep WSS tariffs down and limit the profit of private partners to what could be considered reasonable according to industry and local standards. In the Anglo-Saxon PPP tradition, the WSS utility is privately owned and an independent regulatory body sets allowed tariffs and service standards. In the French and Spanish PPP traditions, the WSS infrastructure is usually publicly

⁷⁴ Brook and Smith 2001.

⁷⁵ This has been done, for example, in the Philippines or Morocco.

⁷⁶ Groom, Halpern, and Ehrhardt 2006; Ehrhardt et al. 2006; and Brown et al. 2006.

Figure 9 Regulating the WSS Service



Source: Developed by the authors

owned, private operators are contracted to carry out some or all functions of the WSS service and the contracts specify allowed tariffs and service standards. While PPP in developing countries have usually followed the contractual approach, many governments have superimposed an independent regulator to the operation contract.⁷⁷ However, the possibility for the regulator to make discretionary decisions creates uncertainty for the operator and investors and could eventually undermine the partnership (Box 13). Imposing an Anglo-Saxon type of regulator on a French or Spanish type of concession contract usually does not work: tariffs, standards and rules embodied in the contract cannot be changed by the regulator without the consent of the parties to the contract. Imposing a regulator on a management contract

⁷⁷ As examples, this was, or still is, the case for the WSS concessions in Buenos Aires (Argentina) and Manila (the Philippines), the *affermage* contracts in Mozambique, Tanzania and Niger, and the management contracts in Guyana or Zambia.

Box 13 Africa: Mixed Experiences with Regulators

Since the mid 1990s, several African countries have created regulators, either in parallel to PPPs (Cape Verde, Mali, Niger, Tanzania, Mozambique) or as part of reforms of urban WSS sectors that were not based on PPPs (Ghana, Kenya, Zambia).

Mali: In 2000, Mali awarded the concession of the electricity and water supply services in large urban centers to a private operator that included an international professional partner and other investors. In its early years, the concession achieved notable improvements in access to piped water and quality of the water supply service. The concession ran into trouble when discretionary decisions made by a regulator, created in 2002 and eager to reduce tariffs to meet one of the campaign objectives of the government elected in 2003, endangered its financial equilibrium. In 2005, the professional partner sold its shares to the government, which then became the concessionaire's majority shareholder. The Mali concession has sometime been labeled a "resounding failure" mostly because of the confusion created by the shortcomings of a regulatory body whose decisions were not predictable and independence not guaranteed.

Niger: In 2001, Niger awarded an *affermage* contract for water supply service in 51 urban centers to a private professional operator. Performance indicators of the water supply service have since been making good progress. The creation of a regulator in 2003 created some confusion, again because of unclear terms of reference and inadequate procedures. Attempts to micro-manage the private operator had to be arbitrated by Niger's Supreme Court.

Tanzania and Kenya: In Dar es Salaam (Tanzania), the WSS regulatory act was passed before the *affermage* contract for the WSS service was awarded. Two of the three pre-qualified international professional operators refused to submit bids, because they were unable to ensure that the *affermage* contract would include a clause protecting its economy against discretionary rulings by the regulator. The regulator mobilized only after the *affermage* was terminated (18 months after its commencement) and the private operator replaced by a public operator. The latter still operates under the same *affermage* contract with the public asset-holding company (AHC). The Dar es Salaam situation is thus now similar to that of Nairobi (Kenya), where the reform of the urban WSS sector was based on a separation of the functions of asset ownership/infrastructure development, to be carried out by a public AHC owned by several local governments, and service provision, to be carried out by a public operator under contract with the AHC. In both cases, the independence of the regulator is not guaranteed.

Sources: Fall et al. 2008; and research by the authors.

is generally useless since incentives to improve performance are embedded in the contract. The same applies to an *affermage* contract that sets the tariff that remunerates the operator, the service standards to be complied with as well as the conditions under which they can be adjusted.

Regulation by Contract versus Regulation by Regulator. As a general rule, contract-based regulation may be more compatible with existing jurisprudence in civil law countries (mostly French and Spanish speaking countries), while common law countries (including many of the countries with an Anglo-Saxon tradition) may be more comfortable with independent regulators. The discussion on the benefits of regulation by contract versus regulation by statutory body for *affermages* should however be tempered. In an *affermage*, the contract only specifies the operator tariff and standards that apply to the contracted activities, and there is still a need for: (i) setting the customer tariff to be charged to customers; and (ii) ensuring that operations of the public party (i.e., mostly infrastructure development and financing) are efficiently carried out. Also, it is unlikely that the initial operator tariff will reflect operating conditions after, say, five years in a country where the WSS sector is rapidly evolving.⁷⁸ Finally, efficiency gains achieved by the operator should eventually be passed on to the customers. There is thus a need for a predictable and transparent mechanism for periodically resetting customer and operator tariffs, beyond what is covered by contractual cost index formula.⁷⁹

⁷⁸ *Affermage* contracts usually list the circumstances under which the parties are allowed to request changes to standards and remunerations.

⁷⁹ Côte d'Ivoire or Senegal, two countries with a long *affermage* tradition, offer good examples of customer tariff resetting and regulation of the capital expenditure program and their financing plans using well tested financial models.

Regulation of Public WSS Service Providers. Public WSS service providers could also abuse their monopoly by providing substandard service or charging high prices to cover inefficiencies. Some countries have tried to address the issue of poor performance of public service providers by creating independent regulatory bodies.⁸⁰ Regulating a corporatized public service provider that is supposed to operate on a commercial basis is fully justified, even if it is unlikely that it would react to financial incentives and/or penalties the same way a private service provider would. Independent regulation alone cannot fix the poor accountability framework within which many public WSS providers operate. Overall policies, improved governance of WSS service providers, enhanced discipline during appraisal of financing applications by government or government owned lenders and enforcement of financing conditionality are likely to achieve more to improve the reliability, sustainability and affordability of the WSS service than decisions by a regulator.

Operations of a Regulator. When an independent regulatory body is envisaged, the following ten principles should be reflected in its mandate and the instruments used to carry it out:⁸¹

- **Independence:** the regulator should be insulated from short-term political pressures and be able to make decisions without prior approval from other government agencies; in particular, the regulator should be funded from independent sources of revenue such as a regulatory fee to be paid by the regulated entities;
- **Accountability:** the parties whose interests may be affected by the regulator's decisions should be able to appeal those decisions;
- **Transparency:** decisions should be supported by documentation to be made available to the public;
- **Predictability:** decisions should follow principles and rules that can be amended only after extensive public notice;
- **Clarity of role:** the role of the regulator should avoid duplication with that of other institutions;
- **Completeness and clarity of rules:** rules to be followed should be complete, clear and well understood by all stakeholders;
- **Proportionality:** the interventions of the regulator should be proportionate to the challenges addressed and undertaken only if benefits outweigh expected economic and social costs;
- **Requisite powers:** the regulator should have the power to perform its mission, including setting tariffs, monitoring market and service quality, addressing market power and designs, investigating and mediating consumer complaints, providing dispute resolution mechanisms, compelling provision of information and monitoring and enforcing its decisions;
- **Institutional characteristics:** education levels and compensation packages of the regulator's staff should compare with that of the regulated entities; decisions should preferably be taken by a group of commissioners rather than by individual staff; all decisions should be subject to appeal in a legally designated court or tribunal, which should have minimum regulatory expertise; and
- **Integrity:** the staff of the regulatory body should be subject to strict rules when it comes to the payment of "gratuities" of all kinds and conflicts of interest.

Setting WSS Tariff Levels. Best practices suggest that the WSS service should be priced to meet economic, efficiency, financial, equity and simplicity objectives:

⁸⁰ This is the case, for example, in Colombia, Zambia, Kenya.

⁸¹ Brown et al. 2006.

- **Economic principle:** managing water demand requires that tariffs be set in reference to the long run marginal cost (LRMC) of water and include externalities, such as abstraction of raw water and the collection and treatment of waste water. The LRMC is supposed to maximize benefits of both the supplier and the consumer, thus that of the sector as a whole. A good proxy to the LRMC is the average incremental cost (AIC) of water that can be calculated for each WSS system by dividing the discounted value of the incremental capital and O&M expenses by the discounted value of incremental volumes of sale;
- **Efficiency principle:** the LRMC should be calculated for efficient operations, with for example NRW, staffing ratio, energy consumption and collection ratio set at best practice, and for infrastructure meeting the least cost solution test. In practice, few countries apply the economic and efficiency principles that are, nevertheless, often referred to in their legislation; Chile is a noteworthy exception (Box 14);
- **Financial principle:** tariffs should generate sufficient revenue to cover O&M costs, depreciate assets and yield a sufficient return on capital to cover the interest on debt and a return on the equity invested.⁸² While many public WSS service providers struggle to recover O&M costs from user charges, many well performing ones, in particular those that have benefited from strict financial appraisal of their development programs and strict supervision of the conditionality attached to the financing agreement, are able to recover O&M and capital costs, as defined above;
- **Equity principle:** tariffs should not discriminate between customers within the same WSS system; customers should be charged the same tariff for a cubic meter of water consumed; and
- **Simplicity principle:** tariff structures should be simple to understand and give WSS service customers and providers proper signals about the consequences of their behavior.

Designing WSS Tariff Structures. In countries where WSS service providers have a national or regional coverage, cross subsidies between geographical WSS systems are usually used. Also, many WSS service providers implement overly complex tariff structures that include many bands and categories with the main objective of subsidizing minimum residential consumption from revenues generated by better off residential, commercial and industrial customers. The simplest WSS tariff structure, when consumption is metered, is to charge a uniform tariff for each m³ of water consumed. WSS bills could include a fixed part to cover fixed costs and variable part to cover its variable costs, an option that is well adapted when consumption is subject to high seasonal variations.⁸³ When the consumption is not metered, the monthly charge could be based on the assessed property value, but this arrangement is not adapted to situations where water retail by connected customers to unconnected ones is common. Fees charged for new water or sewer connections have to be set as part of the design of the WSS tariff structure. Construction costs often represent a significant percentage of the annual income of households in the first and second quintiles; if, in addition, new customers are required to contribute to the financing of the extension of the distribution network, direct access to piped water may not be affordable by this category of customers.

Designing Subsidies. Cross-subsidies are difficult to justify because they seldom achieve their objectives and tend to benefit better-off customers.⁸⁴ They can also distort water demand: (i) geographical cross-subsidies could favor the installation of large consumers in areas where the cost of water is higher than the tariff charged; or (ii) cross-subsidies between categories of customers within a same system could

⁸² Baietti and Curiel 2005.

⁸³ In some African cities, customers stop using piped water during the rainy season, as rain water harvesting from roofs is sufficient to meet their need.

⁸⁴ Komives et al. 2005.

Box 14 Chile: Efficient Regulation, Transparent Subsidies and Excellent WSS Service

In Chile, the various functions of the WSS service are clearly separated with: (i) a central Ministry, in charge of setting WSS service policies and standards, granting regional concessions, and implementing a subsidy scheme targeted at lower income households; (ii) an independent regulator SISS, responsible for setting tariffs in reference to the long run marginal cost (LRMC) of water, full recovery of O&M and capital costs, efficiency of operations and asset development and equity among customers; (iii) the same regulator, responsible for closely monitoring the technical, commercial and financial performance of the concessionaires and for applying penalties in case of non-compliance with agreed standards; and (iv) 18 regional concessionaires, initially public and now all privatized, responsible for providing service according to the standards and for financing development of the WSS infrastructure from cash generation and local financial markets.

Between 1970 and 2005, water supply and sewerage coverage ratios in urban areas evolved from 66 percent to 99.5 percent and 31 percent to 95 percent in 2005 respectively. Between 1990 and 2005, the wastewater treatment ratio increased from about 10 percent to 73.5 percent. In 2005, water was supplied on a permanent (24/7) basis in all urban centers (total population: 11.5 million) through 3.9 million connections; compliance with water quality standards reached 99.5 percent. Water production and sales were measured at averages of 330 and 224 liters per capita per day (lpcd) respectively, suggesting NRW at 33 percent of water production, below the 15 percent set by the regulator. The WSS sector directly employed about 2.5 staff per 1,000 connections.

In 2005, about US\$285 million equivalent were invested as part of a fully justified medium-term infrastructure development plan, of which more than a third was devoted to the waste water treatment program. The capital expenditure program was entirely financed from the cash generated from operations and fund raised on local financial markets, without financial support from the government. In 2005, the return on the equity invested in the sector averaged 15.7 percent.

About 17.5 percent of the households, identified as poor according to strict standards, benefited from a subsidy scheme administered by the central government: vouchers distributed to low income households cover, depending upon the city or town, between 15 percent and 85 percent of the WSS bill for the first 15 m³ consumed each month. In 2005, vouchers scheme contributed less than six percent of the total sector sales revenue (there is no subsidy scheme applying to new connections).

Source: Developed by the authors on the basis of data available from the website of the Regulator Superintendencia de Servicios Sanitarios; <http://siss.cl>.

encourage over-taxed large customers to opt out of the public WSS service and develop less expensive substitutes, thus depriving the WSS service provider from a large share of its revenue. However, subsidizing the cost of new connections and the consumption of a minimum quantity of water by low-income households makes full economic sense, taking into account the public good characteristic of urban water supply.⁸⁵ Better targeting subsidies for lifeline consumptions⁸⁶ could be achieved either through government vouchers distributed to low-income households (Box 14) or fixed discount applied to residential WSS bills.⁸⁷ If the option of a lower tariff for the lifeline consumption is selected, it should be set at a level that compares with O&M costs in order to not discourage the WSS service provider to extend the service to low income areas.

Adjusting and Resetting WSS Tariffs. WSS tariffs should be protected against inflation, preferably by applying automatic cost index formulae that reflect the respective weights of the cost components, i.e., energy, chemical, staff for O&M costs and construction and foreign exchange (if applicable) for the capital costs. As WSS sectors tend to evolve rapidly in developing countries, the WSS tariff and the cost

⁸⁵ Subsidy schemes for small residential connections have proven to be a key for the successful development of piped water in several Western African countries.

⁸⁶ Depending upon the country lifeline consumption could be between 5 and 15 m³/month.

⁸⁷ For example, assuming a WSS tariff of US\$1.0/m³, a discount of US\$6.0/month would guarantee that the WSS bill for a consumption of 10 m³/month would not be higher than 4 percent of the average revenue of households in the lower quintile of US\$100/month. Consumption below 6 m³/month would be free. A consumption of 25 m³/month would result in a WSS bill of US\$19.0. The discount could be phased out for consumption over, say, 50 m³/month.

index formulae should also be periodically reset to reflect efficiency gains achieved by the operator or actual and future development of the WSS infrastructure. The periodicity of the WSS tariff resetting should be consistent with the financial incentives built in the remuneration of the WSS service provider to encourage achievement of efficiency gains.⁸⁸

Monitoring Performance. Independently monitoring the quality of WSS service and the efficiency of its provider requires that credible data on technical, commercial, financial operations be generated. In countries where only data of dubious quality exist, one of the first actions to be supported by the reform is a data generation program. This program should at least include bulk metering, pressure monitoring, water and effluent quality monitoring, responses to customers requests and complaints and assistance to the establishment of credible financial statements. As measuring efficiency also requires a reasonable assessment of NRW, the implementation of district and individual metering programs should be envisaged as well, but this could be a medium term objective. Also, special attention may have to be paid to the monitoring of the service provided to the poor. Technical and financial auditors should independently validate data generated. A central database could help benchmark the performance of WSS service providers and establish the legitimacy of performance objectives assigned to them by the regulatory mechanisms during tariff renegotiations.

3.9 Implementing WSS Reforms

There are several examples of countries that have engaged in major reforms of their urban WSS sectors, addressing all key performance gaps in parallel. Most countries however willing to consider a reform wish to implement it gradually and thus are confronted with the identification of which action(s) should come first. Section 3.9 proposes a hierarchy of issues to be addressed to increase the chance of successfully implementing the reform.

Where to Start when confronted with a poorly performing urban WSS sector, characterized by one or more of the following performance gaps:

- Insufficient water production and waste water treatment capacities;
- Low coverage of the water distribution and sewer networks, in particular in areas where the poor live;
- Drinking water supplied only a few hours per day, and thus of dubious quality, and raw sewage regularly overflowing into receiving water bodies;
- Collection of user charges insufficient to cover O&M, let alone capital costs, leaving WSS service providers entirely dependent upon operating subsidies and development grants;
- Local water sources depleted by the development of substitutes to piped water to complement poor quality service or polluted by the indiscriminate dumping of waste water in the environment;
- Households spending significant amounts in addition to their WSS bills to complement a piped WSS service of poor quality;
- Inefficient WSS service providers with high NRW, energy consumption and staffing ratios and low collection ratios;

⁸⁸ For example, if the WSS tariff is based on a NRW ratio of 30 percent, the WSS service provider is implicitly encouraged to achieve a better performance to increase its profit before the tariff next resetting, at which time calculations should be based on the actual performance achieved by the operator and efficiency gains would thus be passed on to consumers.

- WSS service providers with limited or no autonomy;
- WSS service providers with limited or no accountability to customers;
- WSS service providers with non-audited financial statements, in financial difficulty or technically bankrupt; and
- Strong vested interests, likely to lobby against any changes in the way WSS service is currently provided, because it could affect their legal revenues generated by the provision of substitutes or illegal ones derived from fraudulent or corrupt practices.

Addressing the Financial Situation of WSS service providers is obviously the first action to consider. Medium term programs for improving the financial situation of WSS services providers could include:

- Cleaning balance sheets (if any) including, if necessary, writing off uncollectible debt and uncollectible bills;
- Implementing a cost saving program focusing primarily on reducing operating costs such as staff, energy, chemicals, and parts;
- Improving commercial activities by focusing on bulk and individual metering, billing and collection procedures with, if relevant, special attention to public customers;
- Gradual adjusting user charges, if cost recovery is not achievable only through efficiency gains. The statement that tariffs cannot be increased before the quality of service improves is usually a non-starter: it is likely to take many years before the reliability of the service improves and lumpy tariff increases are unlikely to be acceptable once the reliability of the service has improved.

Financial improvement programs should preferably be part of *contrat plans* between the government, likely to remain the main source of financing for rehabilitating and developing infrastructure, and service providers.

Building the Autonomy of WSS Service Providers is the second key element of reforms because it is directly related to fixing their financial situations. Governments that are committed to reforming their urban WSS sector and willing to provide financial assistance during a transition period generally prefer to deal with WSS service providers that can be held accountable for the use of public funds and overall performance. Corporatization of WSS service providers should normally be the preferred option to achieve this. Ensuring that BODs represent various stakeholders (and not only government departments) and that managers are transparently selected on the market (rather than among a pool of civil servants) and have sufficient autonomy and financial incentives for implementing the decisions of BODs are essential steps to move the provision of the WSS service away from short-term political objectives.

Ensuring that Corporatized WSS Service Providers are Responsible for Infrastructure Development, their Capex are affordable by their projected revenues. and designed to actually improve the WSS service provided to customers (not only increasing the production and trunk infrastructure capacities) is another key step for making developers of WSS infrastructure more accountable to their financiers.

Choosing between Internally Developed Programs and PPPs for improving the quality of WSS service and enhancing the accountability to consumers should be considered in parallel with the other actions, as the mobilization of operators, if the PPP option is preferred, is usually a long process that requires a specific stakeholder consultation.

Raising Financing for rehabilitating and expanding WSS Infrastructure should be much easier if realistic solutions and timetables are proposed to the above issues and are described in a detailed action plan.

Maintaining the Consultation Effort throughout would be necessary to manage customer expectations (since improvements are unlikely to happen overnight) and to ensure that vested interests affected by the reform do not attempt to derail it.

3.10 Using the Recommendations of this Report

Section 3.10 makes some suggestions on the best use of this report and on future activities aimed at further supporting its findings and recommendations.

A Structured Methodology. Reforming urban WSS sectors is often needed for increasing access to the infrastructure, improving efficiency of operations, and enhancing the reliability, sustainability, and affordability of the service. As mentioned several times in the report, there is no “one-size-fits-all” solution: policies and accountability frameworks that have worked well, for example, in a French speaking West African country may not be directly replicable in an English speaking South Asian country or a Central Asian country. However, if solutions have to be tailored to local circumstances, issues to be addressed are often similar. Because of this similarity, this report proposes a structured methodology for engaging in the reform process.

Thinking Outside of the Box. Stakeholders involved in the reform process could sometime experience difficulties envisaging solutions that differ from those currently in place, even if their performance has been unsatisfactory. By presenting what are usually considered good practices and describing under which conditions they have successfully been implemented, this report aims to encourage “thinking outside of the box” of current policies and accountability frameworks.

A Sourcebook. The Bank has recently published several reports and notes on specific topics related to urban WSS. Bank teams involved in operations may not always be aware of such reports, let alone publications by other institutions, even if the new website of the Bank Water practice makes a large volume of information available. Also, Bank teams involved in operations often do not have sufficient time to read lengthy papers and extract what is needed to advise on specific reforms. This report is meant to be a sourcebook, pointing Bank teams at relevant Bank publications and indirectly at publications by other institutions, and summarizing key issues covered while proposing a logical framework for establishing a link between them.

Need for User Friendly Instruments to Help Build a Consensus on the Reform. Because this report covers all key issues to be addressed when revisiting policies and accountability frameworks and because its length has been limited, its density could discourage some readers. The methodology and the various subjects covered in this chapter should be translated in user-friendly presentations mainly designed for facilitating exchange of views among stakeholders on issue to be addressed before building a consensus on the scope and timetable of the reform.

Improving the Outputs of Consultants. Bank teams are seldom responsible for directly advising governments on the reform process. The performance of consultants engaged by governments, and sometimes by the Bank, to carry out such task has been variable either because of irrelevant experience, ambiguous TORs or inadequate guidance provided during reviews of consultants’ reports. This report should help to draft more focused TORs. Also, by providing references to what has worked or not worked in similar cases, it should assist Bank teams reviewing consultants’ findings and formulating constructive recommendations.

What We Know and What We Don’t Know. The main objective of this report is to summarize the Bank’s collective knowledge on urban WSS sector reforms. In its various sections, it however identifies several areas where there is obviously a need for further analytical work. For example:

- Estimating the actual cost to the local economy of an intermittent water supply in urban areas;

- Better understanding the overall economy of an urban WSS sector, as formal utilities on which urban WSS sector reforms usually focus often handle only a share of the budget devoted by consumers to their WSS service; and
- Dealing with losers, including providers of substitutes and public and private actors engaged in fraudulent and corrupt practices, likely to be affected by changes in policies and accountability frameworks and tempted to oppose them.

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ANNEX 1

Evolution of Access to Safe Drinking Water in Urban Areas

Water Supply	1990			2004 Actual			2004 Inter. Target		2015 Target	
	Urban Pop. million	Served %	Conn. %	Urban Pop. million	Served %	Conn. %	Served %	Conn. %	Served %	Conn. %
Northern Africa	58	95	83	80	96	92	96	88	98	92
Egypt	24	97	89	31	99	99	98	92	99	95
Sub-Saharan Africa	145	82	45	258	80	36	87	60	91	73
DR Congo	11	90	79	18	82	27	93	85	95	90
Ethiopia	7	81	2	12	81	32	86	29	91	51
Kenya	6	91	59	14	83	52	94	70	96	80
Nigeria	32	80	32	62	67	15	86	51	90	66
South Africa	18	98	87	27	99	87	99	91	99	94
Sudan	7	85	75	14	78	46	89	82	93	88
Tanzania	6	85	33	14	85	43	89	52	93	67
Eastern Asia	367	99	82	579	93	87	99	87	100	91
China	312	99	81	523	93	87	99	86	100	91
Southern Asia	312	90	56	459	94	50	93	68	95	78
Bangladesh	21	83	28	35	82	24	88	48	92	64
India	221	89	53	304	95	47	92	66	95	77
Pakistan	35	95	60	47	95	52	96	71	98	80
South-Eastern Asia	139	93	42	235	89	50	95	58	97	71
Indonesia	56	92	27	103	87	30	94	47	96	64
Myanmar	10	86	18	15	80	16	90	41	93	59
Philippines	30	95	41	51	87	58	96	58	98	71
Western Asia	85	94	83	129	97	84	96	88	97	92
Turkey	34	92	70	48	98	96	94	78	96	85
LAC	315	93	85	428	96	90	95	89	97	93
Argentina	28	97	76	35	98	83	98	83	99	88
Brazil	112	93	90	154	96	91	95	93	97	95
Colombia	24	98	94	35	99	96	99	96	99	97
Mexico	61	89	86	80	100	96	92	90	95	93
Oceania	2	92	69	2	80	57	94	78	96	85
CIS	184	97	86	178	99	90	98	90	99	93
Russia	108	97	86	105	100	93	98	90	99	93

Source: WHO/UNICEF Joint Monitoring Program

ANNEX 2

Evolution of Access to Basic Sanitation in Urban Areas

Sanitation	1990			2004 Actual			2004 Inter. Target		2015 Target	
	Urban Pop. million	Served %	Conn. %	Urban Pop. million	Served %	Conn. %	Served %	Conn. %	Served %	Conn. %
Northern Africa	58	84	58	80	91	73	88	70	92	79
Egypt	24	70	39	31	86	68	78	56	85	70
Sub-Saharan Africa	145	52	21	258	53	19	65	43	76	61
DR Congo	11	53	4	18	42	4	66	31	77	52
Ethiopia	7	13	2	12	44	2	37	29	57	51
Kenya	6	48	12	14	46	9	63	37	74	56
Nigeria	32	51	22	62	53	23	65	44	76	61
South Africa	18	85	68	27	79	70	89	77	93	84
Sudan	7	53	6	14	50	1	66	32	77	53
Tanzania	6	52	1	14	53	3	65	29	76	51
Eastern Asia	367	64	30	579	69	50	74	50	82	65
China	312	64	30	523	69	50	74	50	82	65
Southern Asia	312	54	28	459	63	24	67	48	77	64
Bangladesh	21	55	14	35	51	7	68	38	78	57
India	221	45	30	304	59	25	60	50	73	65
Pakistan	35	82	45	47	92	40	87	60	91	73
South-Eastern Asia	139	70	4	235	81	9	78	31	85	52
Indonesia	56	65	2	103	73	2	75	29	83	51
Myanmar	10	48	1	15	88	10	63	29	74	51
Philippines	30	66	3	51	80	7	76	30	83	52
Western Asia	85	97	69	129	96	83	98	78	99	85
Turkey	34	96	74	48	96	85	97	81	98	87
LAC	315	81	57	428	86	62	86	69	91	79
Argentina	28	86	39	35	92	48	90	56	93	70
Brazil	112	82	50	154	83	53	87	64	91	75
Colombia	24	95	89	35	96	90	96	92	98	95
Mexico	61	75	66	80	91	80	82	76	88	83
Oceania	2	80	28	2	81	32	86	48	90	64
CIS	184	92	61	178	92	82	94	72	96	81
Russia	108	93	84	105	93	85	95	88	97	92

Source: WHO/UNICEF Joint Monitoring Program

ANNEX 3

IBNET and other Metric Indicators

<i>Template Category</i>	<i>IBNET Category</i>	<i>Indicators</i>	<i>Comments</i>
Access	Service coverage	<ul style="list-style-type: none"> Water coverage Water coverage; connections Water coverage; public water points Sewerage coverage 	<ul style="list-style-type: none"> percent of pop. in service area percent of pop. in service area percent of pop. in service area percent of pop. in service area
	Water consumption and Production	<ul style="list-style-type: none"> Water production Water consumption Residential consumption Residential consumption; connected Residential consumption; public WP Other consumption 	<ul style="list-style-type: none"> lpcd; m³/conn./month lpcd; m³/conn./month percent of total consumption; lpcd lpcd percent of total consumption
Efficiency	Non-revenue water	<ul style="list-style-type: none"> NRW 	<ul style="list-style-type: none"> percent of production; m³/km/day; m³/conn./day
	Metering practices	<ul style="list-style-type: none"> Metered connections Billing based on metered consumption 	<ul style="list-style-type: none"> percent of total percent of total sales (in m³)
	Piped network performance	<ul style="list-style-type: none"> Pipe breaks Sewer system blockage 	<ul style="list-style-type: none"> breaks/km/year blockages/km/year
	Cost and staffing	<ul style="list-style-type: none"> Operation cost (water and waste water) Operation cost (water only) Operation cost (waste water only) 	<ul style="list-style-type: none"> US\$/m³ sold; US\$/m³ produced; breakdown between W and WW US\$/m³ sold; US\$/waste water population served by 1,000 W conn.; by 1,000 WW conn.; by 1,000 total W & WW conn.; per 1,000 people served.
		<ul style="list-style-type: none"> Staffing ratio Staff breakdown Labor costs Energy costs Contracted out services 	<ul style="list-style-type: none"> percent water; percent waste water percent of total operating costs percent of total operating costs percent of total operating costs
Reliability	Quality of service	<ul style="list-style-type: none"> Continuity of service Discontinuous water supply Quality of water supplied 	<ul style="list-style-type: none"> hours per day percent of total water customers residual chlorine tests carried out as percent or required; percent of test that pass standard
		<ul style="list-style-type: none"> Complaints about W & WW services 	<ul style="list-style-type: none"> percent of total W & WW conn.

(continued on next page)

IBNET and other Metric Indicators (*continued*)

Template Category	IBNET Category	Indicators	Comments
Financial sustainability	Billings and collections	<ul style="list-style-type: none"> Average revenue W & WW Water revenue Waste water revenue Resid. fixed component of water tariff Ratio of industrial to residential tariff Collection period Collection ratio 	<ul style="list-style-type: none"> US\$/m³ water sold; US\$/ water conn./year; breakdown between W and WW percent residential; percent industrial/commercial; percent institutions US\$/person served percent of average bill; breakdown between W & WW ratio; breakdown between W & WW Days of billing percent cash income/billings
	Financial performance	<ul style="list-style-type: none"> Operating cost coverage Debt service ratio 	<ul style="list-style-type: none"> ratio: operating revenue/ operating costs percent cash income/debt service
	Assets	<ul style="list-style-type: none"> Gross fixed assets 	<ul style="list-style-type: none"> US\$/ W & WW pop served; breakdown between W and WW
Environmental sustainability	Quality of service	<ul style="list-style-type: none"> Waste water treatment 	<ul style="list-style-type: none"> percent at least primary treatment percent primary treatment only percent secondary treatment
Affordability	Affordability of services	<ul style="list-style-type: none"> Total operating revenue per served pop/GNI per capita Average water bill for 6 m³/month Residential fixed component of tariff 	<ul style="list-style-type: none"> percent US\$/year US\$/conn/year; breakdown between W and WW; percent of total average bill

Source: Locussol and van Ginneken 2008.

The Bank Note on “Characteristics of Well-Performing Public Water Utilities” in addition clarifies key financial indicators.

- **Efficiency indicators:** (i) working ratio; operating ratio; collection period; accounts receivable/ collection period; percentage contribution to investment
- **Leverage indicators:** (i) debt service coverage ratio; (ii) debt-equity ratio;
- **Liquidity indicators:** (i) current ratio;
- **Profitability indicators:** (i) return on fixed assets; (ii) return on equity.

ANNEX 4

Example of Summary Governance Assessment⁸⁹

Snapshot at the Water Supply and Waste Water Service in *Abcdef* (2006)

Quality of the Service: In 2006, out of the 5 million people living in the city *Abcdef*, 70 percent were directly connected to the public piped water and 50 percent to sewers. 15 percent of the population lived in military and private developments that operate their own water supplies and 15 percent in informal settlements served by private water vendors. 25 percent of the population relied on septic tanks, 10 percent on latrines; 15 percent had no access to adequate sanitation. Water was distributed on a permanent basis in about half of the city and for an average 12 hours per day in the other half, despite a production capacity of 275 lpcd. Only half of the wastewater collected received secondary treatment; the remainder was discharged directly in the *Ghijkl* River.

Performance of the Service Provider: WSSSP is responsible for piped water and wastewater management; the municipality is in charge of on-site sanitation and storm water drainage. In 2006, WSSSP produced 350 million m³, billed 60 percent of it and collected 75 percent of the bills. Two thirds of accounts receivable, equivalent to 500 days of billing, were with public agencies. WSSSP employed 9,000 permanent employees. The outsourcing of billing and collection initiated in 2003 was terminated after 18 months. The average tariff US\$0.60/m³, the highest in the country, allowed WSSSP to only recover O&M costs of US\$95 million. Since 2002, WSSSP has been unable to service a debt of US\$25 million/year and to contribute to its capital expenditure program of about US\$15 million/year, now mostly financed by provincial and municipal grants. The provincial auditor has audited WSSSP financial statements since 2000. WSSSP tariff includes many bands and categories, with an industrial tariff six times that that applies to residential consumption below 30m³/month; several large industries representing 25 percent of WSSSP's revenue now envisaged to develop their own supplies. The cost of a small residential connection (US\$150) represents 1.5 month of income of households in the first quintile.

Governance of the Service Provider: WSSSP is a municipal company created in 1999 in application of the Decentralization Act. Its Board of Directors, chaired by the Mayor, includes municipal civil servants and staff representatives. WSSSP Managing Director is appointed for three years after open competition, a process that has so far failed to attract competent managers from the private sector. Members of the management team are primarily civil servants seconded from the provincial WSS Department. WSSSP relies mostly on the expertise of this Department for preparing its infrastructure development plans and extension projects and for supervising project implementation. Procurement above US\$100,000 has to be vetted by the provincial Tender Board. Loans totaling US\$225 million, mostly contracted prior to 1999, have hitherto been provided by the public Municipal Bank with the guarantee of the provincial government. To address inefficiencies of municipal WSS service providers a provincial WSS Regulator was created in 2003 in application of the Public Utility Act. WSSSP reports on its performance to the Regulator, but tariffs set by the latter are subject to approval of the Mayor.

Performance Gaps: The assessment has detected a series of performance gaps to be addressed:

- WSSSP board of directors does not include representatives of the vibrant local business community and of customers; a more business-oriented board should help to attract good managers.

⁸⁹ Locussol and van Ginneken 2008.

- WSSSP is over-staffed; many commercial and O&M tasks could be more efficiently carried out if outsourced.
- WSSSP has little grip on its infrastructure development plan; there is evidence that WSSSP does not get best advice from the provincial WSS Department for planning, design and implementation.
- WSSSP is not responsible for procuring major works; there is evidence that prices obtained by the provincial WSS Department and Tender Board are 25 percent higher than that obtained by the private sector.
- Loose conditionality attached to debt and grant financing has resulted in low financial discipline; WSSSP balance sheet should be cleaned up as part of a financial recovery plan; the quality of audits should be improved and qualifications addressed.
- The WSS tariff average level does not need adjustment, because of potential efficiency gains; its structure should be simplified to be more equitable; connection costs need to be reduced.
- Data submitted to the Regulator are of poor quality; independent validation is needed.

Selected Metric Indicators

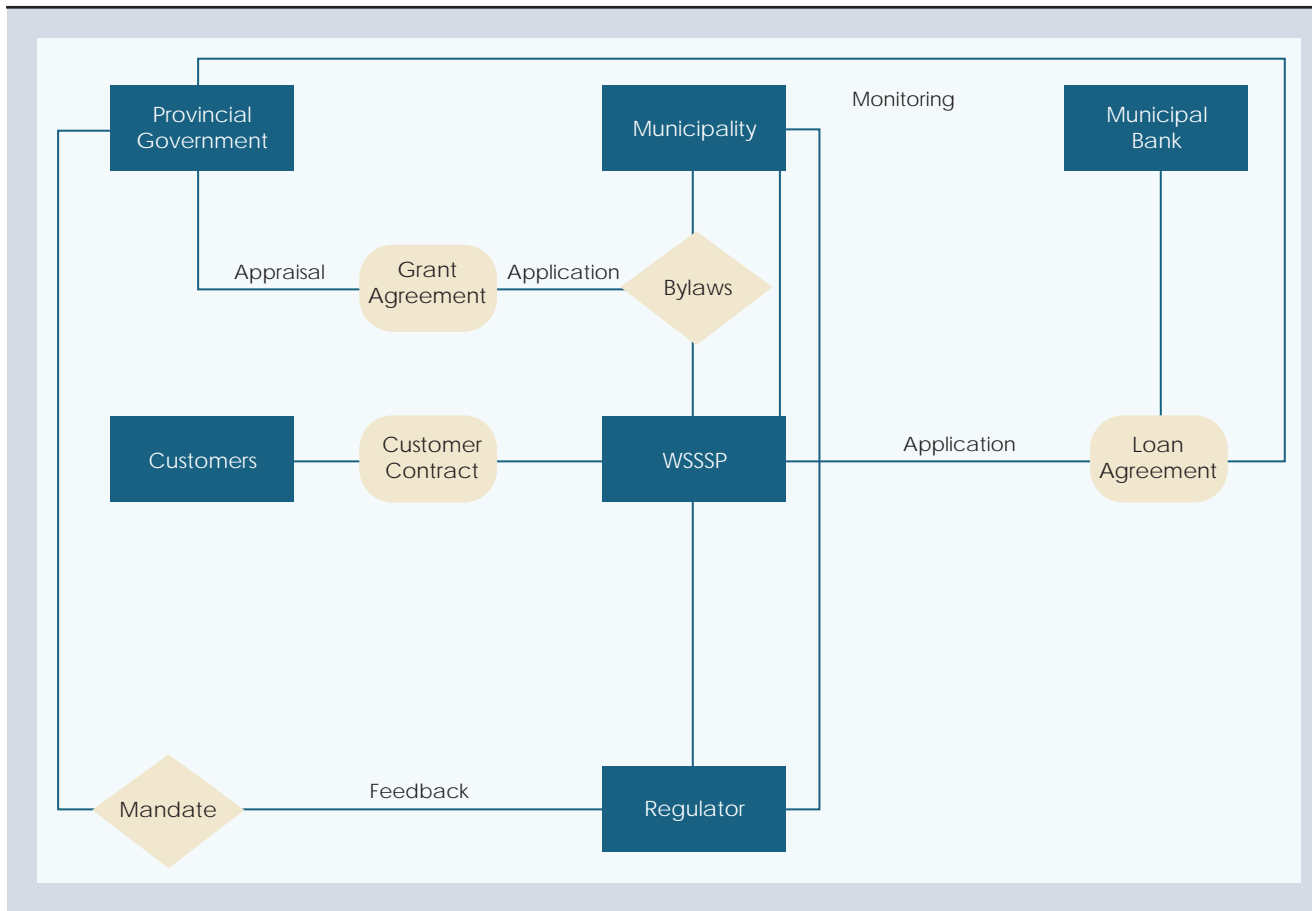
<i>Unit</i>	<i>2004</i>	<i>2005</i>	<i>2006</i>	<i>Target</i>	
Population in service area	000'	4,500	4,750	5,000	
Water connections	000'	300	325	350	
Water connection ratio	%	66	68	70	85
Sewer connections	000'	210	230	250	
Sewer connection ratio	%	46	48	50	80
Average production	lpcd	250	295	275	
Connection metered	%	40	45	50	100
Meters in working order	%	40	50	60	100
NRW	%	39	41	40	25
Waste water treated	%	15	15	30	100
Total staff		8,750	8,750	9,000	
Staff per 1,000 connections¹		17.2	15.8	15.0	7.0
Operating revenues/costs²	ratio	0.95:1.0	1.0:1.0	1.05:1.0	2.0:1.0
Debt service ratio³	%	NA	0	20	160

¹ Total water and sewer connections

² Operating revenues divided by cash operating costs

³ Cash income divided by debt service

Figure 10 Accountability Framework of the WSSSP of Abcdef



Source: Locussol and van Ginneken 2008.

ANNEX 5

Example of Confidential “Vested Interests” Assessment⁹⁰

In *Xyz*, the poor quality of the piped WSS service provided by the municipal WSS utility (MWSSU) has forced most households and businesses to revert to “substitutes” to complement their water supply and mimic a permanent service. A recent comprehensive survey showed that when customers spend US\$1.0 on their WSS bill, they spend an additional US\$1.0 to develop and operate substitutes, which include delivery by tankers, backyard boreholes equipped with electric pumps, large roof tanks, sump pumps sucking directly on the distribution pipes and disinfection equipment installed on indoor plumbing. This does not include a valuation of the time spent by the poorest households to fetch water.

MWSSU is an inefficient utility which bills about 50 percent of the water produced, collects about 70 percent of the bills issued and employs 25 staff per 1,000 (water and sewer) connections; energy and staff costs represent 45 percent each of its total O&M costs. A recent audit showed that it should easily be feasible to:

- Supply the entire city on a permanent basis, as the production capacity of 275 lpcd is sufficient, provided that operation of the distribution network be rationalized;
- Reduce pumping costs by about 20 percent by lowering pressure to limit physical leaks in a large part of the distribution network;
- Reduce staff costs by about 25 percent by outsourcing several maintenance and commercial activities;
- Reduce commercial leaks by metering water consumed by the 20 percent largest customers that represent 80 percent of the sales;
- Reduce by 25 percent the cost of the capital investment program of US\$15 million/year by using adapted design standards and allowing technical alternatives;
- Reduce by 20 percent the cost of goods and works procured by increasing the transparency of the procurement process.

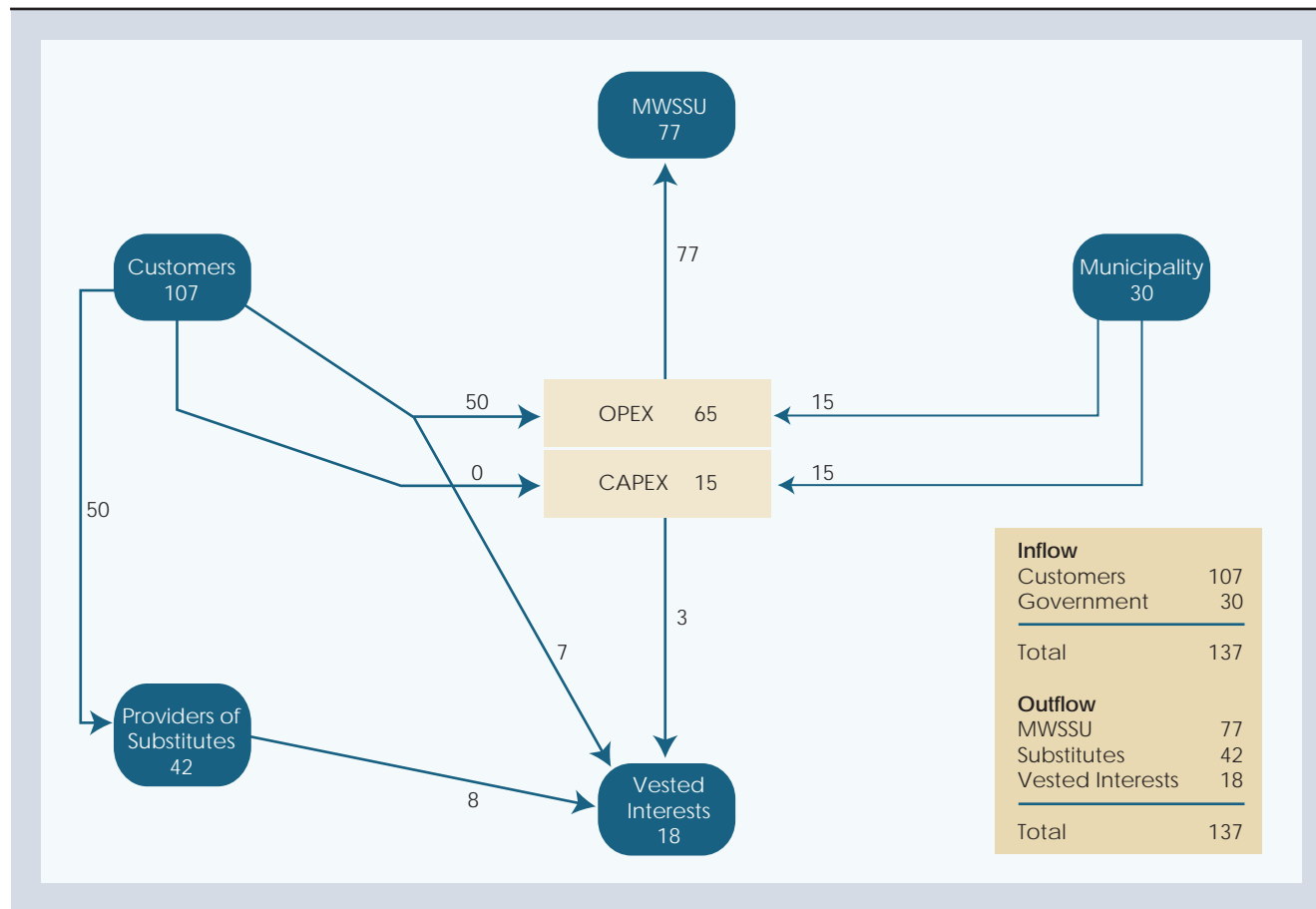
There is either evidence or strong suspicion that:

- Large providers of substitutes have ties with key MWSSU staff and that the latter artificially maintain a poor quality of service to justify activities of the former; altogether, it is estimated that 15 percent of the cash flowing to substitutes eventually benefit MWSSU staff engaged in this non ethical practice;
- A large share of commercial leaks result from bills directly negotiated between key staff in the commercial department and large customers as well as between meter readers and residential customers; altogether it can be estimated that 20 percent of the difference between good practice and current practice (i.e. NRW of 75 percent and 50 percent) benefit MWSSU staff engaged in fraudulent practices;
- The difference between prices obtained by the private sector and MWSSU for similar works directly benefit corrupt staff within MWSSU and the municipality involved in procurement and construction supervision.

⁹⁰Locussol and van Ginneken 2008.

Figure 11 below summarizes the estimated cash flows in the current situation. It shows that MWSSU actually obtains only 56 percent of the cash injected in the WSS sector, providers of substitutes 31 percent and corrupt vested interests the remaining 13 percent (or US\$18.0 million/year).

Figure 11 Cash Flows in the XYZ urban WSS Sector (US\$ million/year)



Source: Locussol and van Ginneken 2008.

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