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Water Working Notes

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PRINCIPLES OF TOWN WATER SUPPLY AND SANITATION

PART 1: WATER SUPPLY

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The World Bank, Washington, DC

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FOREWORD

This Volume 1 report is an output of the first phase of the Bank Netherlands Water Partnership (BNWP) Funded Project No. 043 investigating the challenges of providing water and sanitation services to towns. The report captures the key issues to be faced in the town subsector, proposes possible solutions, and presents some of the latest developments in the sector by reference to recent projects. It is the first attempt to bring the important subsector issues together in one place, under a coherent planning framework. The report is in two parts: Part 1 on water supply, and Part 2 on sanitation.

A number of country assessments have been undertaken as part of the second phase of the project using the knowledge gained in the preparation of the Volume 1 report. The country assessments (in Tanzania and Maharashtra, India) have been used to test the proposals presented here to improve service delivery in towns. Through this learning process the conclusions and recommendations presented in the Volume 1 report have been verified and adapted, leading to preparation of a Volume 2 guidance note with accompanying "how to" modules. Where Volume 1 provides an overview of the key issues, Volume 2 provides guidance on implementation.

A number of individual reports were commissioned during the first phase of the project, which provided background material for the Volume 1 and 2 reports. These are compiled as "companion reports" in Volume 3.

All of the volumes are available on the CD-ROM.

ACKNOWLEDGMENTS

The Volume 1, Part 1 report on town water supply was prepared under the first phase of the Town Water Supply and Sanitation Initiative, Bank Netherlands Water Partnership (BNWP) Project No. 043. The first phase of the project was task managed by Bob Roche and Bill Kingdom. Nick Pilgrim acted as project manager. Cathy Revels led the work on financing and business planning. Jean-Jacques Raoul reviewed the work on contracting. John Kalbermatten reviewed and refined the report as the senior external advisor to the project. The project was task managed by Bob Roche, Bill Kingdom and Mukami Kariuki. Brian Appleton edited all the documents prepared under the first phase of the project.

The accompanying Volume 1, Part 2 report on town sanitation was prepared by Kevin Tayler, with substantive inputs from Bob Roche, Pete Kolsky, and Eddy Perez. It is a joint initiative of the BNWP Project No. 043 and the Steering Committee members were Aldo Baietti, Ato Brown, Camellia Staykova, Caroline Van Den Berg, Ede Ijjasz, Franz Drees, Ines Fraile, Jan Janssens, Meike van Ginneken, and Vijay Jagannathan. Additional peer review was provided by Alain Locussol, Alex Bakalian, Clive Harris, and Oscar Alvarado.

A number of individual activities and reports were commissioned during the first phase of the project:

David Satterthwaite, International Institute for Environment and Development, contributed a report on "Towns: Their Under-Appreciated Demographic, Economic and Social Importance." Richard Hopkins, Water and Sanitation Program—Water Supply and Environmental Sanitation East Asia and the Pacific, provided a discussion piece on "An Alternative Perspective on WSES Services (including the 'Grey Area'); Donald Lauria from North Carolina University, led work on Appropriate Design of Town Water Systems and Connection Policy for Town Water Systems; Barry Walton and Colin Schoon explored the issue of Management and Operation Functions; Keith Burwell and Dilys Taylor looked at Regulation and the Pursuit of "Best Value," and the Importance of Communications in Regulation and Town Water Supply; and Paul Stott developed ideas on Procurement Planning for Private Participation in Town Water Supply and Sanitation—Innovations in Bundled Design, Build and Lease Contracts and Partnering Mechanisms.

Seven management models were identified for study: Klas Ringskog documented municipal water departments and mixed ownership companies drawing primarily on experiences in Spain and Latin America; Barry Walton and Colin Schoon looked at Scottish Water to understand better the operations of a modern national utility in the context of a developed country; Bernard Collignon and Bruno Valfrey from Hydroconseil described the autonomous town water board model emerging in many small town projects in Africa; Jo Smet, IRC, also referred to Africa in documenting a case study from Tanzania on a water user association management model; Klaas Schwartz, the UNESCO-IHE Institute for Water Education, wrote up the Netherlands' experience with the government-owned PLC; and Stephen Myers identified a number of types of private sector water entrepreneurs and companies, as well as documenting the development of London's private water companies from their origins as small-scale providers.

The study on Professional Support Options included detailed case studies that were prepared by the original architects of the concept or by current practitioners: Jack Cresswell described the Nigeria Outreach Training System; Mariela García Vargas, with Luis Alfredo Loaiza and Alfredo Vanín, from CINARA, Universidad del Valle, prepared a Comparative Study of Market Consolidation and Aggregation in WSS Service Provision in Colombia; Solveig Nordström, from

the Nordic Environment Finance Corporation (NEFCO), and Klas Ringskog documented the example of Eesti Veevärk's (Estonian Water Company's) Apex Project Management; and Steven Gasteyer shared his experience of the Rural Community Assistance Program (RCAP) as an NGO Technical Assistance Provider in the United States.

The study, Models of Aggregation for Water and Sanitation Provision[MSOffice7], was prepared by Environmental Resources Management (Sophie Tremolet and Rachel Cardone) with Hydroconseil (Bernard Collignon) and Stephen Myers Associates.

WRc (Simon Gordon-Walker and Edward Glenie) prepared the first version of the Town Water Supply Financial Model (TWFM) as a practical tool for planning affordable town water supply. Tim Yates refined the TWFM and prepared a user manual, and also prepared a Cash Flow Model (CFM) to help compare options to improve utility performance.

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BOXES

ACRONYMS AND ABBREVIATIONS

BNWP	Bank Netherlands Water Partnership
BOO	Build-own-operate
CFM	Cash Flow Model
CINARA	Instituto de Investigación y Desarrollo en Abastecimiento de Agua, Saneamiento Ambiental y Conservación del Recurso Hídrico
COB	Corporate oversight body
CWSA	Community Water and Sanitation Agency (Ghana)
DBL	Design build lease
EBRD	European Bank for Reconstruction and Development
EFCN	Environmental Finance Center Network
EPA	Environmental Protection Agency (United States)
FMWR	Federal Ministry of Water Resources
GWSC	Ghana Water and Sewerage Corporation
HHS	Department of Health and Human Services (United States)
IIED	International Institute for Environment and Development
ILCS	Integrated Low Cost Sanitation Program
IRA	Internal Revenue Allotment
IRR	Internal rate of return
lcd	Liters per capita per day
M&E	Monitoring and evaluation
NCWSS	National Community Water and Sanitation Strategy (Ghana)
NEFCO	Nordic Environment Finance Corporation
NESC	National Environmental Services Center
NGO	Nongovernmental organization
NWSC	National Water and Sewerage Corporation
O&M	Operation and maintenance
OTP	Outreach training program
PHARE	TA program from the European Union
PLC	Public limited company
RCAP	Rural Community Assistance Program, Inc.
ROB	Regulatory oversight body
TA	Technical assistance
TAP	Technical Assistance Provider
TWFM	Town Water Supply Financial Model
USDA	U.S. Department of Agriculture
WC	Latrine (from "water closet"); chiefly U.K. usage for a toilet which, in sanitation parlance, refers to a pour flush latrine with a water seal, as opposed to a dry pit latrine.
WHO	World Health Organization
WSES	Water Supply and Environmental Sanitation
WSS	Water supply and sanitation

EXECUTIVE SUMMARY

One third of the population of Africa and Asia live in towns of between 2,000 and 200,000 people. In Africa, Asia and Latin America, the number of towns and the number of people living in towns is expected to double within 15 years, and double again within 30. This rapid pace of urbanization, together with challenges and opportunities for local governments resulting from decentralization, make **town water supply and sanitation** fundamental to economic growth and achievement of the Millennium Development Goals.

Water supply and sanitation services are crucial to a town's prosperity, but service provision in towns has been extremely poor, most often characterized by sporadic government handouts for rehabilitation or expansion, followed by long periods of deterioration. There has been a lack of knowledge about institutional arrangements and planning processes appropriate to towns.

This report is a first attempt to set out a strategy for town water supply and sanitation. The primary objective is to identify, and find solutions for, the neglected towns—those that fall between rural and urban, the two relatively well-established approaches to managing water supply and sanitation services. Towns in the 2,000–50,000 population range generally fall within this "management gap;" they are the prime focus of this report. These towns face special challenges in the provision of their water and sanitation services. The demand for differentiated technologies—piped water supply in the core, alternative technologies in the fringe areas—and the often rapid, unpredictable growth in water demand and spatial spread requires planning, design, and management skills that exceed "rural" community-based management approaches. Unlike larger towns or cities, however, these smaller towns lack the financial and human resources to plan, finance, manage, and operate their water and sanitation systems independently.

For government planners, the challenge is to allocate limited government resources among a large number of dispersed towns. For every large town (50,000–200,000 people) there are 10 small and medium-size ones (2,000–50,000 people). The goal therefore has to be to establish town utilities with a minimum investment, and to ensure that reforms are put in place so that the utilities can finance all future costs from revenues and borrowing. This goal creates an urgent need for affordable and sustainable solutions to town water supply and sanitation service provision.

In response to this challenge, new approaches are emerging that address the need for improved, sustainable water and sanitation services in towns that can be expanded gradually to match growth. At Addis Ababa in June 2002, participants of the small towns conference agreed that the elements of success include financial and management autonomy, transparency and accountability, professional support, competition, legal framework and regulation, demand responsiveness, and incentives for expansion.

The strategy proposed in this report addresses these main elements of success. It is set out in terms of sound management structures (Chapter 2), appropriate design and financing (Chapter 3), effective professional support (Chapter 4), and contracting to secure continuity in professional support (Chapter 5). A business planning concept is presented that integrates these four aspects of service provision, and that provides a tool to build the capacity of utility managers (oversight plus operations) and town administrators (regulatory oversight) (Chapter 6). Policy recommendations and actions for government or project planners and for towns are outlined in Chapter 7. Companion reports (see Volume 3) add background, detail, and case study examples to the options and recommendations.

Some of the key findings are summarized below chapter by chapter with links to appropriate paragraphs in the report.

Chapter 2: Management: Typically decentralization policies delegate ownership, regulatory oversight, and service provision to towns. They should also delegate the authority to raise revenues to finance operations through tariffs, fees, and borrowing. National government will retain responsibility for setting overall sector policy and coverage targets, and it needs to support the decentralized authorities by providing a legislative and regulatory framework with guidelines on how delegated duties should be implemented (Section 2.1).

Towns then need to choose from a range of different types of management models. Promising models for towns in the 2,000–50,000 population range include water associations, ring-fenced municipal water departments, autonomous town water boards, and small-scale private water companies. For larger towns traditional urban models are usually applicable. In individual towns, the choice of management model will reflect local capacity and culture. Each model has its own niche. For example, a water association may be more appropriate in dispersed smaller communities where self-help, trust, and social pressure help to keep down costs and underpin demand-based planning and consumer oversight. In larger, more affluent communities with higher expectations in terms of service levels, an autonomous water board may contract the services of a full-service private operator, or services may be provided by some form of share corporation operating under commercial law (Section 2.3). Smaller towns may also join together to achieve the resources needed to support a full set of managerial and operational skills, or to share the costs of technical and financial specialists to supplement routine operators. In all cases, the town should establish its own regulatory oversight body (ROB), which is separated from service provision. This separation helps to limit bureaucratic or political interference in utility management, and allows the operator flexibility to compete and innovate.

Chapter 3: Design and Financing: The goal of the financing strategy should be to establish town utilities with minimum government investment, after which all recurrent, replacement, and expansion costs would come from revenues and borrowing. For most towns, grant financing will usually be needed for initial investment or for major rehabilitation to enable the utility to become financially self-sufficient. Financing arrangements should provide incentives for good performance through performance or reform-based lending. A stepped financing approach is outlined, which demonstrates this approach. An initial grant is provided to put in place appropriate institutional arrangements and to plan, design, and possibly make critical repairs needed to immediately improve service. It is followed by funding for major construction if a feasible plan is presented and the utility has demonstrated its willingness and ability to adopt reforms. Grant and loan repayment schedules should be phased to support the utility in the early years until revenues are enough to match costs (Section 3.2.3).

Like management models, technical solutions must be based on consultation with the community, to ensure that levels of service match the willingness and ability to pay of today's consumers. Facilities can then be expanded over time as actual, not projected, demand and revenues increase. Such a phased or "modular" approach is recommended for towns, because it minimizes the gap between system costs and revenues, and so improves cash flows and financial sustainability. It also prevents planners from having to make guesses about demographic and spatial growth that could result in heavy initial investment for which there are no revenue-paying customers. Economies of scale can be illusory, especially if the payback is a long time coming. A

carefully designed connection policy is also important to ensure that everyone is provided with a service they can afford, and that the utility is able to build up its revenue base as rapidly as possible. Sequential improvements to water supply and wastewater disposal can be introduced over time, to match water consumption and consumers' increasing ability to pay (Section 3.1).

Revenue generation needs to be balanced with social equity. House connections generate most revenue, while standposts (or public kiosks) are often seen as the affordable alternative for the poor. Health, poverty alleviation, and environmental goals depend on as many people as possible receiving affordable water and sanitation services. The higher the number of individual connections, the greater the revenue, and the better the opportunity to cross-subsidize services for the poor. The counterpoint is that high water consumption brings with it an increased demand for more expensive sewerage and sewage disposal. Water conservation and reuse become important factors in keeping down costs and delaying the need for big investments (Section 3.3).

Chapter 4: Professional Support: Towns with less than 50,000 people are unlikely to be able to support the full set of technical and managerial skills needed to improve efficiency and expand service. Even larger towns may choose to outsource some functions to improve their effectiveness or efficiency. Innovative ways are needed to support town administrators carrying out regulatory functions, and service providers (operators) delivering water and sanitation services.

External specialist services support for the owner-regulator should be provided separately from that for service providers (corporate oversight body and operator) in order to avoid potential conflicts of interest. The basic types of external specialist services support mechanisms that have been identified are (a) consulting engineers and financial advisors on a retainer basis through service contracts; (b) a central help desk and work-based outreach training program; (c) umbrella organizations, such as nongovernmental organization (NGO) Technical Assistance Providers (TAPs); (d) private firms, for example through a franchise or joint venture arrangement; and (e) direct support from larger utilities to smaller communities. Support may be organized directly by individual towns, or collectively through a regional association or through apex project management (Section 4.4).

Three generic strategies are identified. All can be adapted to local conditions, but field experience shows that they can also be implemented sequentially, reflecting changing conditions and stakeholder preferences (Section 4.5).

- Model 1: Small remote towns can probably only afford a routine operator (operators capable of carrying out routine tasks) and limited external specialist services support. Towns may individually or collectively contract specialists to supplement the skills of routine operators and owners. Successful models of this kind treat water and sanitation service provision as a business or "**local enterprise**."

- Model 2: Successful routine operators may develop their business by expanding to other towns as a full-service operator (one capable of both routine and specialist services), and operate numerous town supplies through individual contracts. This is called "**market consolidation**."

- Model 3: Economies of scale can also be achieved by towns grouping together as one administrative unit to employ skilled technical and managerial staff or to secure the services of a full-service operator. This is called "**aggregation**."

Other options are to improve the capacity of the existing staff through, for example, national certification schemes and outreach training programs.

Whatever the purpose of external specialist services support, its tasks need to include a training component so that both part-time and permanent staff are given the opportunity to acquire the skills to improve their performance. Appropriate information or training should be provided to members of corporate oversight bodies (as well as to operators and regulatory oversight bodies), so that those not familiar with water supply and sanitation operations gain an understanding of the purpose of the various functions and their impact.

Chapter 5: Contracting: Making the right choices in terms of what operational functions to delegate to operators and how they will be paid is critical for towns and operators alike. They should be identified during the planning phase and set out in the business plan, along with appropriate performance indicators and targets. Since the situation is not static, and the information base and level of trust between the contracting parties can be expected to improve over time, it is feasible for increasing levels of responsibility to be delegated to the operator. For example, a typical pattern will be to move from a fixed fee per month plus bonuses to achieve specified performance targets, to a share of operating cash flows. In order to allow for this level of flexibility in increasing delegation of responsibility and the terms of compensation, it is important that the "initial" contract has a sound legal basis in which the rights and obligations of each party (the corporate oversight body and the operator) are clearly set out, including a clearly identified mechanism for contractual adjustments (Section 5.2).

In the town context, contracts must also be understood as providing continuity in professional support, which means that operational functions that are not provided in-house or from the operator need to be secured separately from a specialist services providers under separate contracts. The best balance between these sources depends on local context, and can be expected to change over time.

Chapter 6: Business Planning: A regularly updated business plan is a fundamental tool in all stages of a town's water and sanitation improvement program. Without a business plan, a town lacks credibility with potential financiers (including national government), and with regulators, contractors, and customers. The plan is the basis for matching management arrangements and investment costs with water sales revenues. It provides the justification for tariffs and connection policies and helps the oversight body and operator to communicate with all stakeholders (Section 6.1).

The business plan has a number of linked components (Section 6.2):

- Performance targets
- An investment plan
- A financing plan
- An operations plan
- A procurement strategy for professional support
- A financial management and reporting plan
- A marketing and communications plan

Business planning should be an iterative process, starting with an assessment of regulatory requirements and current service levels, operational performance, and demand, followed by an initial technical design and a management and operations plan. The design is then cross-checked against customer willingness to pay and a financial projection. If construction and operational costs are expected to

exceed income, the design and/or management and operations plan must be revised.
The business planning process is a substantive capacity building exercise. Town administrators and utility managers involved in the process gain valuable insights into the whole process of delivering sustainable water and sanitation services. Regulators, contractors, and customers have access to data on the performance and plans of the utility and can participate in its updating and revision. Key aspects of service provision are put in context in an integrated way, including willingness to pay, design strategy, professional support, financial viability, tariffs and connection fees, the financing plan, and performance monitoring (Section 6.3). The information made available through business planning helps in preparing suitable contract provisions. It improves the capability of those in authority to manage contracts, and it underpins the monitoring and evaluation frameworks needed to assess performance.

Chapter 7: Conclusions and Recommendations: For towns to improve their water supply and sanitation services, and address the identified shortcomings, the national government needs to both (a) adopt policies that will enable towns to take corrective action and (b) support the sector through capacity building.

Existing sector policies may have to be expanded, or new policies drafted, to provide for the following:

- Decentralization must be accompanied by the delegation of authority for towns to act, including authority to raise revenues to finance operations (tariffs, fees, and borrowing).
- Towns should be allowed to choose from a range of approaches to manage their systems. Policies should define the legal conditions and process for the implementation of these arrangements.
- In the long term, town water supply and sanitation systems should be financially viable through cost recovery from the provision of services. Decentralization should provide clear directives about government conditions for financial assistance. Government should also issue directives on tariff design and other cost recovery mechanisms.
- Technical standards should permit and encourage appropriate design, including modular approaches and sequential upgrading, to ensure that solutions reflect local conditions and are affordable.
- Legal conditions need to be established for the formation of specialist support organizations, and for the provisions that bind towns to support services.
- Private sector and NGO TAPs should be encouraged to enter the market, with successful enterprises able to grow their businesses by competing for contracts with towns.

Typically capacity building might include the following types of activities:

- Legal conditions for aggregation of towns should be drafted, including the aggregation process and the conditions binding the aggregated towns.
- Supervisors and senior staff responsible for operations should be licensed by the government, and courses established to provide the necessary training. Funds for training could be generated through a fee on the quantity of water sold.
- Town officials and administrators should be provided with opportunities to learn enough about water supply and sanitation management to acquire the capacity to monitor the performance of operators and professionals they engage to design or manage their systems.
- Towns should be provided with standard contracts and documentation appropriate to towns for the various operator contract options available to them.
- Business planning should be instituted in towns as a tool to monitor and benchmark performance, and training courses established for town administrators and utility managers.

1 THE TOWN CHALLENGE

During the past five years, water supply and sanitation has gained increased recognition as a driver of development and a key factor in poverty alleviation. Efforts to increase the numbers of people benefiting from improved water and sanitation services have focused on two main areas: "rural areas," where the favored approach is community-based management of appropriate systems; and "urban centers" in which public or private utilities operate a range of services tailored to different customers. In the gray area between rural areas and urban centers are a range of "small towns," with populations ranging from 2,000 to 50,000, where neither community management nor utility-based solutions are fully suitable. Given the fact that the population in these towns is often equal to that in rural areas and urban centers, there is growing consensus that they deserve better services. Doing this will require greater attention to the selection of management models, engineering designs, financing arrangements, and professional support options that offer services that can be expanded incrementally and sustained over the long term.

This report sets out the issues facing town water supply and sanitation services. It proposes a strategy for addressing the main elements of success based on sound institutional arrangements and demand-based planning processes appropriate to towns. Companion reports (see Annex G) add background, detail. and case study examples to the options and recommendations.

The Scale of the Challenge

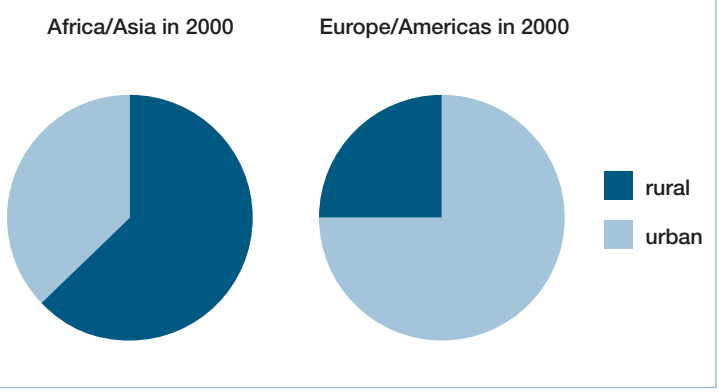
In Africa and Asia, one-third of the population currently live in towns.

The population in towns in Africa, Asia, and Latin America will double in the next 15 years.

1.1 The Number and Size of Towns Is Growing Rapidly

Between 20 and 40 percent of the population in African and Asian countries live in towns. As rural settlements evolve into small towns and as these towns grow in size, the number of people living in towns in Africa, Asia, and Latin America is expected to double within 15 years and double again within 30. Figure 1.1 illustrates population distribution by region in 2000.[1] It is expected that the current 60 percent rural–40 percent urban split in Africa and Asia will shift toward the current 25 percent rural–75 percent urban split found in Europe and the Americas. Much of this anticipated shift will result from the growth of towns. (Annex A provides further demographic data on towns for a number of countries.)

Figure 1.1 Population Distribution by Region in 2000



1.2 For Every Large Town There Are 8–10 Small Towns

Further disaggregation of demographic data illustrates the diversity of the town water supply and sanitation challenge. Figure 1.2 shows some typical distribution patterns in several countries for the numbers of towns in the following size-classes: towns with populations of 2,000–20,000 and 20,000–50,000, which can be classified as small to medium-size; and large towns of between 50,000 and 200,000 population. Typically, for every large town there are 2–3 medium-size towns, and about 8–10 small towns (Figure 1.2), but an equal number of people live in each size-class (Figure 1.3). The large proportion of small and medium-size towns compared with large towns has important implications on how they should be managed.

1 Satterthwaite 2003.

Figure 1.2 Number of Towns in Different Size-Classes

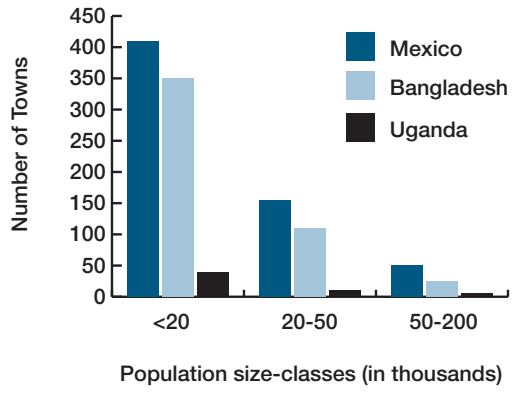
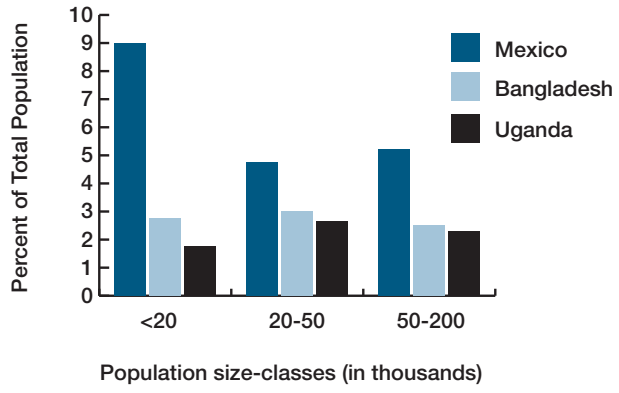


Figure 1.3 Distribution of Population between Different Size-Classes



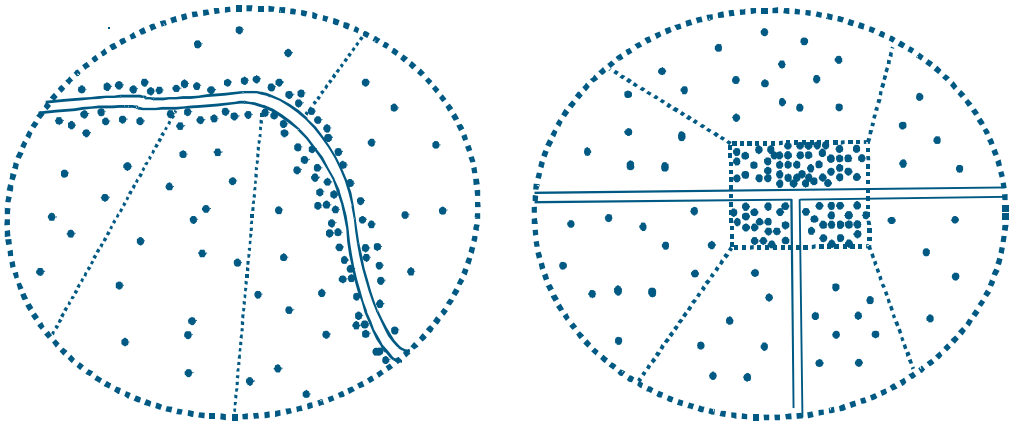
1.3 The Growth in Individual Towns Is Unpredictable

Settlement patterns vary greatly, physically, and over time. People gather in settlements, and settlements evolve for a number of reasons. They may start to develop around a market point or trade route, and slowly build on these foundations, attracting more people with more reasons for wanting to be there at that time (Figure 1.4). While overall growth rates of towns within a country may be high, individual growth rates and development patterns are more difficult to predict. Although these patterns influence decisions around service delivery, they also complicate the process of planning for services. For example, many towns have a dense core served by a piped water supply, and a more sparsely populated fringe area served by public standposts or point sources. The important principle is that alternative technologies should be considered that are best suited to local conditions and can be adapted to population growth and settlement patterns.

1.4 Towns That Fit Neither Urban nor Rural Administrative Definitions Are Often Neglected

Urban and rural areas are often classified for administrative purposes and then treated as distinct in nature and characteristics. However, this dichotomy is a gross oversimplification. In reality, all settlements are part of a

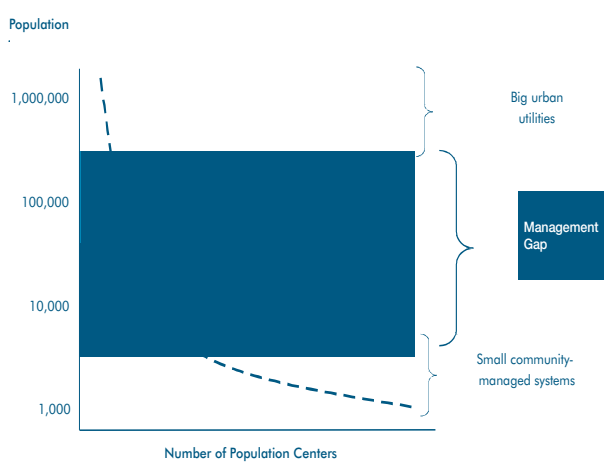
Figure 1.4 Town Settlement Patterns



Source: Hopkins and Satterthwaite 2007 (companion report A1).

rural-urban continuum. Settlements that fall on the margins of what is typically defined as urban or rural within a given country context may fit neither definition. In recent years, much success has been achieved in addressing rural water supply through "bottom-up" approaches that decentralize management to the community level and rely on local supply chains for goods and services. Urban areas have also taken advantage of opportunities offered by decentralization to consolidate their operations and focus on the establishment of utilities that focus on one or a group of medium-size to large urban centers (see Box 1.2: Case Study 1—Sector Reform in Ghana.

Figure 1.5 The "Management Gap"



Adapted from Hopkins: An Alternative Perspective on WSES Services (including the "Grey Area")

However, just as "top-down" approaches—typified by national and regional utilities with broad responsibility for the provision of water supply in both urban and rural areas (found in many developing countries) experience higher failure rates as settlements become too small, so too does the bottom-up approach that has worked for rural villages fail as systems become larger and more complex. If settlements that fall on the margin between urban and rural are approached as either rural or urban, this may lead to underdesigned systems that are very quickly unable to cope with rapid population growth, or to overdesigned systems that are too large and costly to maintain. As small and medium-size towns currently account for a significant proportion of population growth, it has become increasingly important to devise specific approaches that take their unique characteristics into account.

What is required is a strategy for town water supply and sanitation that fills the gap between rural and urban approaches, drawing on elements of both. In the absence of appropriate solutions, towns have tended to be neglected by governments and donors. Figure 1.5 is a graphic presentation of the gray areas between urban and rural, which also illustrates that the boundaries are not precise. Evidence suggests that towns with populations between 2,000 and 50,000 lie in this management gray area, although significant regional and country differences exist.

1.5 Most Towns Lack Sufficient Resources to Hire Full-Time Professional Staff

In general terms, the larger a town is, the less likely it is that the majority of its population will primarily be engaged in agricultural activity, and the more likely it will be to have more sophisticated market and administrative functions. As "market towns," or nodal points on transportation routes, towns play an important role in creating economies of scale for the provision of goods and services for their own population and for surrounding rural areas. Larger towns are also more likely to have a bigger role in delivering public services, such as health care and schools, and in commercial or industrial enterprises, and these activities are likely to make towns a focal point for broader economic and social development. As a result, larger towns are able to attract competent professionals in many fields, including managers and operators of water supply and sanitation systems. On the contrary, many small and medium-size towns suffer from a shortage of competent professionals and have difficulty attracting and retaining them. Small towns often cannot go it alone, and must devise mechanisms for sharing the limited professional support available locally in order to improve efficiency, and plan and manage expansion.

1.6 Town Water Supply and Sanitation Is a Marginal Business

Town water supply and sanitation is a marginal business—small settlements, modest incomes, minimal savings, and frugal spending may not be sufficient to cover the full costs of a typical full service water supply and sanitation system. Technical solutions for town water supply therefore require cost-effective design and operations that are affordable, match local capacity, and can be expanded over time as actual—not projected—demand and revenues increase. Management and operations plans should also be appropriate—small towns may only be able to afford, or may only require, a routine operator and limited external support. Community participation and stakeholder consultation should form an important input to design in order to ensure that consumers receive services they want and can afford. This calls for a dynamic business planning process that balances consumer demand with management and operational capacity, investment requirements, and revenue potential.

More specifically, common problems are as follows:

- Individual towns do not have the required financial and human resource base because there are few, if any, major industrial and commercial clients, and the customer base is too small to generate the revenue needed to sustain water supply and sanitation systems based on standard designs.
- Towns act as independent units, not recognizing the value of sharing some or all service delivery functions with other towns, formally or informally, in order to obtain the economies of scale they require to sustain their operations.
- Towns "manage by crisis" by reacting to breakdowns or service interruptions—the principle of greasing the squeaky wheel, rather than "managing by design." Most do not prepare a business plan or operate on a commercial basis.
- Towns have insufficient financial resources to meet the cost of water supply and sanitation services because they do not have sufficient authority to levy adequate fees and tariffs. Grants and subsidies are subject to competing demands on central government resources and are often unavailable or insufficient.

1.7 The Challenges and Opportunities of Decentralization

In an effort to address these inadequacies, governments have often centralized the management of town water supply and sanitation in a regional or national service provider. Unfortunately, many of these national or regional operators have not been successful, thus aggravating, rather than solving, the problem of inadequate service delivery in towns. Most lack local accountability, have little incentive to serve dispersed settlements around the country, and are constrained in their operations by bureaucracy and politics, which results in the following:

- Facilities are often overdesigned to take advantage of grant or loan financing, resulting in capital costs and running costs that exceed the capacity of consumers to finance or even maintain.
- The design of facilities is based on traditional approaches to water supply planning and lacks the flexibility required to introduce appropriate technical standards. Design periods are inappropriate and do not allow for upgrading or sequencing improvements over time—matching consumers improved financial capacity to higher standards of service.

BOX 1.1 Case Study 1—Sector Reform in Ghana

Until the early 1990s the Ghana Water and Sewerage Corporation (GWSC) operated as a national water supply and sanitation provider responsible for four metropolitan areas, 200 smaller piped systems, and 7,500 rural point sources. In principle, operations were expected to run on a commercial basis, but pressure for reform mounted as the corporation continued to accrue large amounts of debt and operation and maintenance standards showed signs of deterioration. The turning point came with the exploration of alternative approaches for provision of rural water and sanitation services, and formulation of a National Community Water and Sanitation Strategy.

The reform process led to separation of GWSC into autonomous urban and rural units: GWSC to consolidate its activities in larger urban centers and towns run on a commercial basis; and the Community Water and Sanitation Agency (CWSA) set up to take responsibility for rural areas and small towns under community management. In parallel, a decentralization program was designed to empower local government district assemblies to pass legislation, award contracts, lend or borrow funds, and levy taxes.

Of the 300 small town systems in Ghana under community management, more than 100 were transferred from GWSC as part of the decentralization program. These systems are owned by the district assemblies, but overseen by autonomous community water and sanitation development boards. In many cases however, these boards were established without formal organization or training, and they lack the business, managerial and technical skills needed to operate and maintain their systems, or to expand them to meet demand[w3].

A recent PPIAF study (Manu 2003a,b) on local private sector participation in small towns has supported three pilot projects that seek to address this capacity constraint: two five-year Management Contracts in Enchi (9,000 population) and Wassa Akropong (6,000 population) and a build-own-operate license in Dzemeni (population 5,000, which doubles during market days three times a week). In all three cases, the water and sanitation development board takes responsibility for overseeing the contract or license. These pilot studies have drawn on experiences from Uganda (see Case Study 4 in Box 4.4) and Paraguay (see Case Study 5 in Box 5.2), but are notable for the level of participation of the beneficiary communities throughout the planning and contracting process.

Decentralization has played a key part in the emergence of alternative management models for town water supply and sanitation. The biggest driver for decentralization is increased accountability. Local governments (and community-level organizations) are more accountable to consumers because they are more likely to respond to demand, understand consumer preferences, and adapt solutions to local conditions. However, decentralization also presents challenges, namely, how to balance the need for creating economies of scale with a local push for autonomy. While taking advantage of the opportunities offered by decentralization, towns must also ask themselves the following questions:

- Is there sufficient local capacity in-house with which to operate and maintain the water supply and sanitation facilities on a sustainable basis?
- If not, is there local knowledge and capacity with which to contract out service delivery, judge the competence of contractors or operators, and assess the suitability of proposals?
- Are there local service providers with the necessary skills to deliver these services and, if not, would regional or national contractors be interested in offering these services?
- Has the authority to make decisions on the best course of action been fully delegated to the town and, if not, who would make the necessary decisions?
- Are available financial resources sufficient and, if not, would central government provide finances, and under what conditions?

1.8 The Ingredients of Successful Town Water Supplies

The Small Towns Conference held in Addis Ababa (June 2002) outlined several key ingredients for successful town water supply.[2] Experience gained since then confirms the importance of these elements in preparing a strategy for the town subsector.

Autonomy: Town water supply is a marginal business, with no room for error. It is therefore important that management decisions are based on a careful analysis of the best way to provide water supply and sanitation services that are of good quality and affordable to consumers. Revenues should be ring-fenced to ensure that costs are covered and to prevent their use for other activities in the town. The water supply service provider should be able to hire and fire staff, set attractive salaries, offer performance incentives, disconnect both public and private nonpayers, and be free to improve and extend services.

Transparency and accountability: Transparency and accountability are essential to gain and maintain the trust of users and investors. They are particularly important in situations where there is a monopoly in service provision. Reform efforts should focus on (a) clarifying roles and responsibilities; (b) introducing independent audits and monitoring; (c) improving the disclosure of information; and (d) strengthening consultation with consumers. Regulatory and corporate oversight functions should be separated and arm's length, written agreements between the owner or local ROB (typically the appropriate local authority or town council) and the corporate oversight body, and between the corporate oversight body and the operator introduced to improve transparency and accountability, eliminate potential conflict of interest, and introduce incentives for good performance.

Demand responsiveness: Small town water supply and sanitation should aim to offer a range of services that diverse customers want and are ready to pay for. Increasing the revenue base by providing house connections to customers that can afford larger quantities of water is particularly important, and providing financial assistance to reduce connection fees is an appropriate use of subsidies. Developing innovative solutions that respond to the needs of poor households is also critical, and should include options that allow households to share connections, as well as providing public kiosks. At the system level, demand-responsive approaches lead to higher cost recovery and internal cash generation, ensuring sustainability and allowing further development, whereas at the country or program level, demand responsiveness ensures more efficient use of public funds.

Cost-effective design and operations: Small town water supply systems are often overdesigned—using conventional urban piped water design criteria may increase operating costs, thus reducing the likelihood of sustainability. Technical designs and operations and management plans for the town utility must reflect local conditions, capacity, and culture, and match consumers' expectations in service levels and affordability. Stakeholders require better information with which to make informed choices about management models, technical options, financing arrangements, and professional support, including contracts. Business plans that match investments to future water sales and revenues, and that are based on demand assessments and realistic financial projections, greatly improve the prospects for long-term sustainability.

2 The key ingredients for success are described in Volume 1 of the Proceedings of the Addis Ababa International Conference on Water Supply and Sanitation Services in Small Towns and Multi-Village Schemes (2002).

Professional capacity: A fatal mistake that most towns make is underestimating what is required to manage their water supply facilities successfully. Many towns assume that they can go it alone, but most do not have adequate capacity to do so. Experienced professionals are needed to operate town water supplies efficiently and to expand them to keep up with a growing population. Towns often have difficulties affording, attracting, and retaining such professionals in house. The challenge is to secure these services, given a small revenue base and limited human resources, using innovative arrangements to source these skills and, where necessary, to share scarce, relatively expensive specialists with other towns.

Competition: Towns that rely on their own staff to operate water supplies as an integrated part of the overall town administration often introduce bureaucratic and inefficient practices. Decisions concerning the use of revenue generated by the water supply service are often controlled by administrators outside the water supply unit and, as a result, long-term strategic plans are neglected. In addition, there is little incentive for staff to improve their performance, and sanctions for poor performance are difficult to enforce. Introducing performance-based management arrangements can provide incentives for better management. Allowing private operators into the market on a competitive basis may allow a town to introduce incentives for improving services in a number of areas: encouraging innovation, expanding coverage, and enhancing the sustainability of water supply services.

Ability to expand: In most developing countries, at an aggregated level, towns are growing at a faster rate than the national growth rate. Expanding services to meet growing demands for improved water supply must therefore be a priority. Planning for expansion is a delicate balancing act that requires both a long-term vision and a phased implementation plan. The vision should identify long-term requirements including (a) access to adequate water resources, (b) potential financing sources, (c) a legal and regulatory framework for investors, (d) clearly designated service areas and service delivery options, (e) technical and financial expertise, and (f) performance targets and incentives.

1.9 Organization of the Report

This chapter sets the scene for the town water supply and sanitation challenge. The remainder of the document is organized to outline in more detail the particular challenges and how they might be addressed. The strategy proposed builds on the elements of success laid out in section 1.9 above. Chapters 2–7 set out the principles of sound management, appropriate design and financing, effective professional support, and contracting professional support. A business planning concept is presented that integrates these four aspects of service provision and serves as a tool to build the capacity of utility managers and town administrators (regulatory and corporate oversight). Finally, a set of policy recommendations and actions is outlined for decision makers in central government and towns to take into account when preparing their town water supply strategy. The chapters are as follows.

Management of Water Supply and Sanitation (chapter 2) reviews institutional arrangements and management models available to towns. Issues of ownership, regulation, corporate oversight, and operations, including private sector participation, are discussed and available options presented.

Design and Financing (chapter 3) provides information on technical solutions for water supply and sanitation, financial requirements, and cost recovery policies. It emphasizes the need for stakeholder participation in the selection of technical alternatives and the design of cost recovery methods, and the need to match technical design with both short- and long-term financial viability.

Professional Support (chapter 4) reviews professional expertise that towns may require to manage and operate their water supply and sanitation facilities. The chapter presents options for obtaining necessary expertise as and when it is required. The chapter emphasizes that more than more approach will need to be considered in order to meet the needs of different segments of the town subsector.

Contracting (chapter 5) presents approaches for contracting all or part of the operating functions to private or publicly owned operators, and specialist services providers. The chapter emphasizes the link between business plans and contracts, and between contracts and performance supervision. It stresses the need to simplify contracts, but nevertheless allow for contractual adjustments as the capabilities of the contracting parties develop, and the information available on the system and the town's needs improves.

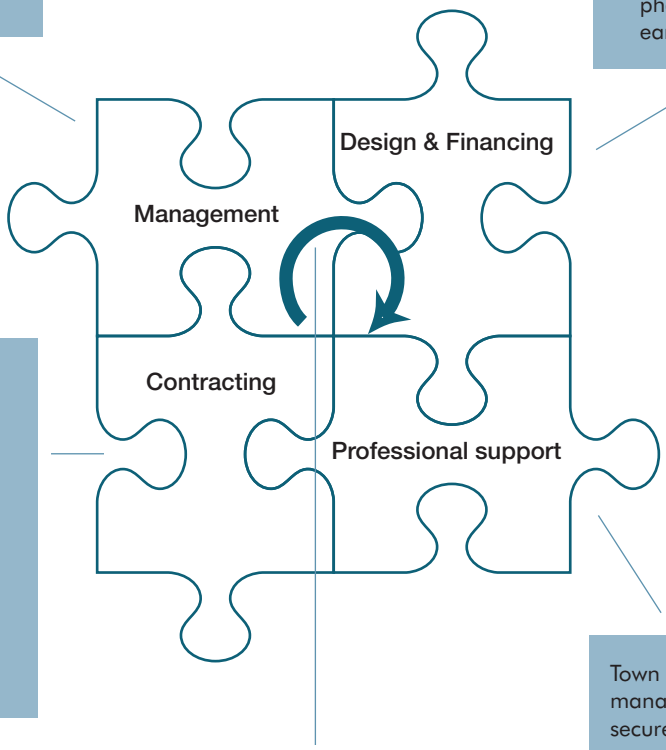
Business Planning (chapter 6) describes an integrated approach to planning for the provision of services in both the short and long term. Business planning is presented as a process that ties together the previous discussions on management models, design and financing, professional support, and contracting. A business plan is essential for the long-term viability of the service, and must be drafted with inputs from all stakeholders in order to match their expectations and service needs. The chapter presents business planning as both a capacity building tool and an implementation tool.

Conclusions and Policy Recommendations (chapter 7) summarizes the conclusions of the different chapters and outlines policy recommendations that promote successful implementation of the strategies outlined in this report (see Figure 1.6).

Figure 1.6 Key Ingredients of a Successful Business Planning Framework for Town Water Supply

Institutional arrangements appropriate to local conditions:
- Sound legal framework (clearly defined ownership, oversight and operation roles and responsibilities)
- Separation of regulation and service provision (financial and management autonomy)
- Authority to raise revenues to finance operations

Financing strategy underpins viability of town WSS utility:
- Minimum investment option
- Appropriate design, including phased expansion, sequential development, and differentiated technologies
- Connection policy to increase the revenue base to cover costs
- Grants conditioned on a plan for the utility to reform itself
- Grant and loan repayment schedules phased to support the utility in the early years



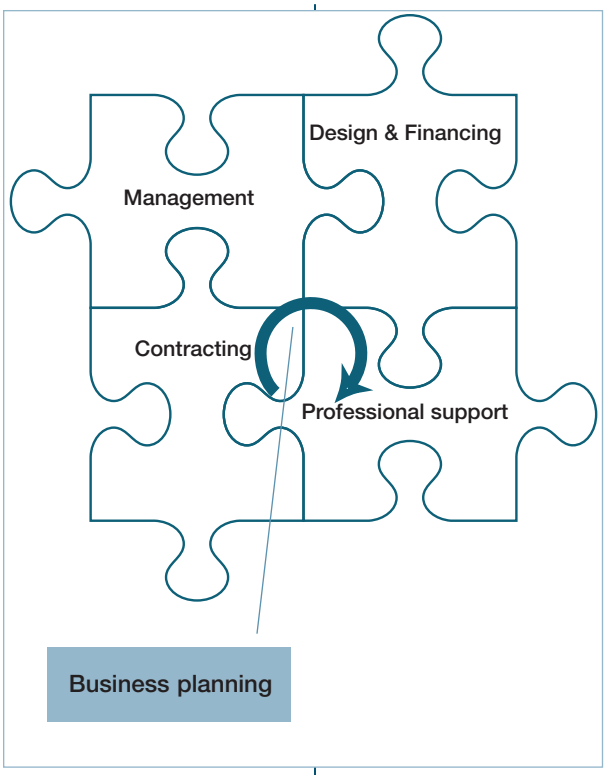
Roles and responsibilities are enforced through performance based contracts:
- Autonomy for day-to-day operational decisions
- Clearly defined roles and responsibilities
- Incentives for good performance
- Operator performance targets linked to the business plan through the incentive structure

Town water utilities have the capacity to manage and operate systems—or secure advisory / specialist services support:
- Separate professional support arrangements for regulators and service providers
- Staff training to develop skills required to improve performance
  - Improve operational efficiency
  - Expand services to keep up with growth (production/distribution)
  - Develop and update business plans
  - Develop and manage contracts

The business planning process allows the integration of the various elements into a cohesive approach to improved water and sanitation services

Key Points Outlined in Chapter 2

- National governments should prepare policies defining how water and sanitation services are to be provided, and establish regulations outlining how the policies are to be implemented, for example, guidelines on setting tariffs and fees, design, connections policy, stakeholder consultations, and environmental and public health standards.
- Decentralization policies should delegate ownership and some regulatory functions (in particular, to assess performance with the help of an independent auditor) to the town, along with responsibility for service provision (corporate oversight and operations). They should also delegate the authority to raise sufficient revenue to finance operations (tariffs, fees, borrowings).
- Management models should clearly separate regulatory and operational responsibilities. The generic management framework includes government (policies and regulations), local ROB (regulatory oversight), the corporate oversight body (directing operations), and the operator (operations). Five possible models are outlined: *water user association; ring-fenced municipal water department; water board; small-scale private water company; and national or regional companies (including share corporations)*.
- In most countries, several of these management models may be relevant. Town decision makers (elected and nonelected leaders) should receive relevant information to enable them choose an appropriate option.



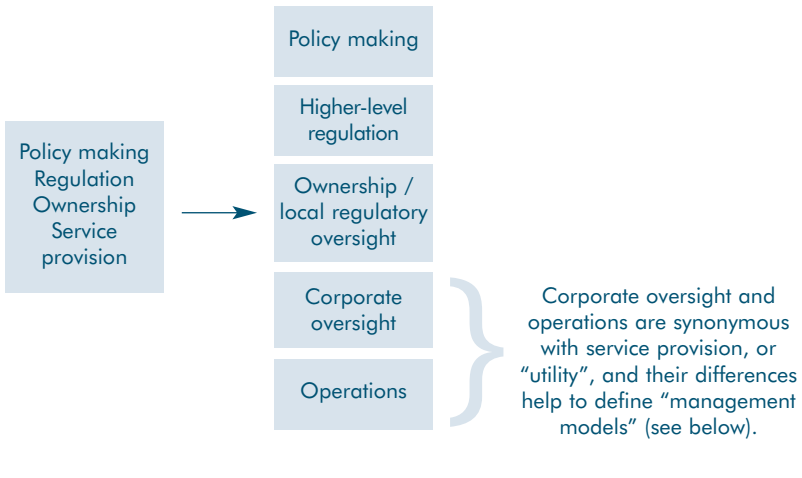
2 MANAGEMENT OF WATER SUPPLY AND SANITATION

Based on experience in a number of countries, the following four common management models have been identified as relevant to small towns: community water user associations, (ring-fenced) municipal water departments, autonomous town water boards,[3] and small scale private water companies. Less common are arrangements in which national and regional utilities and share corporations (with a mix of public and private ownership) serve a group of towns.

In this chapter, each of the four options presented above is analyzed from the perspective of a town, and on the basis of ownership, oversight, and operations functions. It is assumed that national government will continue to exercise its duties of sector policy making and regulation, although some of these duties may be delegated to local authorities.

The defining features for each of the four models presented below are (a) the extent to which core functions are clearly separated, and (b) the legal basis under which the entity operates. These issues are presented graphically in Figure 2.1. A review of relevant literature reveals that one of the key failings of the water and sanitation sector has been the lack of clarity on roles and responsibilities for policy making, regulation, and service provision. In many cases, this led to lack of accountability, poor governance, and unclear objectives for service providers. The four town management models differ in the way that they address these issues, and the discussion below considers the context in which different models are appropriate and outlines their main strengths and weaknesses.

Figure 2.1 Separating Functions within the Town Water and Sanitation Sector



3 World Bank documents often use the more formal term statutory body. Water board is used here because the term is common in the town subsector. The model is outlined in Section 2.3.

2.1 Policy Making and Regulations

National governments generally have policies for the sector that define how sector entities are to operate and provide services. Decentralization policies usually delegate the responsibility for water supply and sanitation service delivery to towns. They should, but don't always, delegate the authority to raise sufficient revenue with which to finance operations (tariffs, fees, and borrowings).

Service coverage targets detailing the number of people to be served by improved water and sanitation services within a particular period (for example, the Millennium Development Goals) are also set nationally. There may also be national health and poverty reduction policies in place (for example, poverty reduction strategy reports) that will influence the performance targets set for towns.

Regulations provide detailed instructions about how policies are to be implemented. They also set technical and financial standards for the operations of the sector, including reporting requirements that provide the government with the information necessary to monitor the performance of operators or specialist service providers and to judge whether standards are being met. To be effective, regulations should also provide for remedial measures in cases where standards are not being met.

The central government may establish regulatory oversight bodies, for example, an environmental protection agency to which it delegates the responsibility of monitoring and enforcing environmental standards. Other agencies (ministries) also provide oversight of specific aspects of utility operations and ensure that applicable national laws are observed (for example, setting tariffs and fees, appropriate design, connection policy, and stakeholder consultations).

National policies and regulations usually specify the powers delegated to towns, and provide guidance on how they are to implement regulatory functions delegated to them. Within this framework, towns also establish policies and regulations for operations. However, few town councils have the expertise required to perform regulatory oversight successfully. The majority have to contract in external professional support to assist them.

In the town context, an important first step for more effective "local regulation" is for the owner (typically the appropriate local authority or town council) to carry out formal performance assessments and benchmarking performance improvements over time. In most towns, this will require implementation of more systematic and accurate information systems (management, technical, and financial), on which to base performance indicators and targets. The town should also secure the services of an independent auditor who can verify the accuracy of reported information. These steps can be formalized through simple contracts with operators or service providers (see Chapter 5), together with clear reporting procedures to support monitoring and evaluation. In addition to this "monitoring and evaluation framework," towns may need some external technical assistance (TA) to help with:

- Setting tariffs and fees.
- Approving investment plans (ensuring that designs are financially viable).
- Establishing a connection policy that offers a range of affordable options.
- Carrying out stakeholder consultations (cross-checking proposed interventions to willingness and ability to pay).
- Ensuring compliance with environmental and health standards.

2.2 Ownership, Oversight, and Operations

All management models require a sound legal framework that defines ownership (local regulatory oversight), corporate oversight, and operational roles and responsibilities.

Ownership ***(owner)***: Ownership is primarily determined by the legal framework or sources of financing, or both. Consideration of long-term renewal and new investment proposals must take into account ownership structure and in some cases may even influence decisions about operation and maintenance. Ownership of assets is usually vested in the government, town, or community, although it may be divested through a privatization process.

Local regulatory oversight ***(regulatory oversight body)***: Depending on the level of decentralization, the local authority may carry out some regulatory functions or appoint an agent to act in that capacity. Local regulatory functions revolve around monitoring operator performance (technical and financial standards) and may extend to the approval of tariffs, fees, and business plans, and working with national or state government to ensure that conditions for public health (water quality) and water resources (abstraction) are met, and performing any environmental (discharge) monitoring and enforcement tasks delegated to the town by the national or state government.

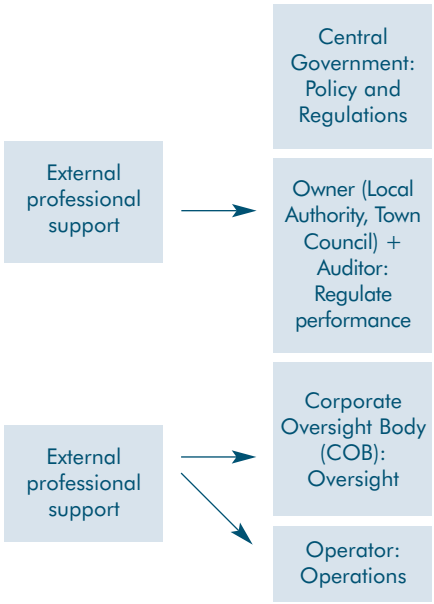
Corporate oversight ***(corporate oversight body)***: Depending on the type of management model that has been established, a corporate oversight body (COB), (for example, board of directors, town water board) may also be appointed to provide overall direction to the operator, with responsibility for preparing budgets and business plans (with help from the operator), monitoring operational performance, and performing other duties defined in the articles of incorporation and national laws governing corporate enterprises.

Operations ***(operator)***: Day-to-day operations is the responsibility of the operations manager. Responsibilities include helping the COB to prepare business plans (although approval will lie with the COB, and outcomes will be monitored by both the COB and ROB).

Corporate oversight and operations together make up service provision, or "utility," and help define the management model. This will be dictated by the legal framework under which the entity operates. Some entities operate under public law, others under commercial law. Typically public law limits the flexibility of the service provider in critical areas such as procurement and staff management, while reducing the rigor associated with reporting and accounting. Commercial law may instill greater obligation on the provider regarding the reporting of audited financial statements, but may also provide greater flexibility in procurement and staff management.

Figure 2.2 shows a graphic presentation of sector responsibilities and arrangements and Table 2.1 provides an overview of five management models most commonly found in towns. Each of these models is discussed in the following section. (Annex B gives a summary of useful legal terms.)

Figure 2.2 Generic Institutional Arrangements and Responsibilities for Towns



2.3 Management Model Options for Towns

Water user associations are typically registered under community or cooperative law (or as a cooperative, trust, company limited by guarantee or other form of voluntary association), and guided by their articles of association. Investment in new systems or initial rehabilitation of old ones is usually through government grants, but the intention is that water tariffs managed by the water user association should cover the costs of operation, maintenance, renewal, upgrading, and expansion. Ownership either remains with the central or local government, or it is transferred to the water user association by way of a permit or some other legal instrument. Water user

Table 2.1 Summary of Five Management Models Commonly Found in Towns

Model	Water user association	Municipal water department (ring-fenced)	Water board	Small-scale private water company	Share corporation
Ownership	Town or water user association	Town	Town or water board	Owner-manager, and/or shareholders	Various models
Corporate oversight	Executive committee of association	Town council water committee	Water board	Owner-manager	Board of directors
Operations	System manager and staff, or private operator	Municipal water department	System manager and staff, or private operator	Company staff	Managing director and operations staff
Who controls decision making?	End users	Mayor or town council	Stakeholders represented on the board	Owner-manager, and/or shareholders	Board, managing director, and/or shareholders
Legal	Public	Public	Public	Commercial	Quasi-commercial
What sizes of towns?	Rural small towns and "satellite" communities	All sizes of towns	All sizes of towns	Typically start in small towns, but expect to grow	Medium-size and large towns

Note: Regulation of performance in every case is assumed to be the responsibility of the owner, that is, the appropriate local authority or town council.

associations are typically established in rural towns where there is no formal public administration, for example, when the lowest level of government is at district level and there is no town council. As a result, water user associations are not always formally accountable to local government. Decision making is largely in the hands of end users represented by an elected executive committee. Operations staff may be employed locally, or the executive committee may choose to contract a private operator (for example, in Paraguay, the water user associations, or juntas in small rural towns; contract private operators or aguateros under a 10-year concession contract). More detailed discussion of water user associations, with particular reference to a case study from the Morogoro region of Tanzania, appears in companion report B1, Water User Associations by Jo Smet.

In the case of municipal water departments, the municipality owns the assets, although these assets are often financed to a large extent through grants from the central government. In smaller municipalities, the water department may report directly to the mayor or the municipal council, while in larger municipalities it is often constituted as a separate department (for example, a public works department). Operations and maintenance are carried out by municipal staff hired by the municipality or even the central government. Very often a municipal water department has very little autonomy. Accountability is often ambiguous and not based on business plans with agreed performance targets. In the best cases, municipal water departments have their assets and finances ring-fenced. In the worst cases, they may be commingled with other municipal services and finances diverted to nonwater supply-related municipal expenses. Companion report B2, "Municipal Water Departments" by Klas Ringskog, provides a generally negative picture of the experience with such departments in Latin America.

BOX 2.1 Municipalities and towns

The terms 'municipal' and 'town' are often used interchangeably. However, a 'municipality' may also be used to denote a larger administrative area such as a district which includes one or more towns and the surrounding rural areas. 'Town' clearly denotes a single settlement.

Town water boards (see companion report B3 by Bruno Valfrey and Bernard Collignon) are established through bylaws, and ownership and oversight responsibility are vested in the board, subject to the conditions set out in a performance contract. The water board may include representation from various stakeholders besides consumers, and including local government, private sector, and other professionals. Successful water boards therefore balance the interests of consumers, and other stakeholders, with accountability to local government. Unlike water user associations, water boards are established where local government is active, and the model scales up even to large towns. Operations staff may be employed directly by the board, or may be contracted through a private operator. (For example, Uganda water boards contract private operators under a two-year management contract.) See also Case Study 3.

Small-scale private water supply companies are normally established in accordance with corporate law (or business law)—as a privately owned, limited liability company, or as a partnership or sole trader enterprise. They provide services after being granted a license or a concession contract. Most small-scale private companies in the town subsector are owner-managed and operated. The ownership of physical assets depends on the legal framework (license or type of contract), including the method of financing. Private water companies are fully autonomous in respect of their management and operations. Their boards are drawn from, or selected by, the shareholders, and are accountable to shareholders (not to public bodies). Private companies use their own staff, which may include their owners. Commercial pressures ensure that

they employ trained staff or train them, or outsource specialist activities (for example, the Ghana PPIAF pilot study for a build-own-operate license in Dzemeni). Companion report B4, "Private Sector Water Entrepreneurs and Companies" by Stephen Myers, includes more discussion of the operations of small-scale private companies.

National or regional companies. In some developing countries, national or regional utilities with a broad mandate provide services in towns and rural areas. Recent sector reforms leading to internal restructuring of the sector, decentralization of service responsibility, and the introduction of private operators have led to significant improvement in many countries. A reformed national utility may take the shape of a government-owned corporation (parastatal) under a managing director and overseen by a board of directors appointed by the ministry. The corporation is usually held accountable through a performance contract with the ministry, and local staff may be under contract, rather than on the government payroll. In some cases, individual towns may have their own system manager reporting to the managing director. Performance contracts for delegated management may be introduced to improve autonomy and accountability at the local level. Because of the ownership structure of a national utility, unlike a town water board, the town system manager would remain accountable to a board of directors appointed at a higher political level (for example, Uganda, the National Water and Sewerage Corporation (see Case Study 3 in Box 2.2); and Tanzania, the Urban Water and Sewerage Authorities, for example, for the town of Arusha). Companion report B5, "Regional and National Utilities" by Barry Walton and Colin Schoon, discusses the operations of Scottish Water and considers whether the experience may have lessons for similar frameworks in developing countries.

In practice, large utilities can take a number of different ownership and governance forms, some of which are similar to the water board and private company models described above (see Case Study 2 in Box 2.1). In particular, where towns aggregate their service delivery responsibility, new forms of "regional utilities" appropriate to local conditions may emerge (described in more detail in Section 4.5).

The ownership, oversight, and operations arrangements for water departments, water user associations, water boards, and small-scale private companies are summarized in Table 2.2.

In most countries a range of management model and professional support options is needed, and water departments, water boards, water user associations (in rural towns), private companies, and national or regional companies have their own market niche (see Case Study 3 in Box 2.2).

BOX 2.2 Case Study 2—Experiences from Europe—the Netherlands, Spain, and France

A number of examples in Europe may be relevant in the context of developing counties:

In the **Netherlands**, public limited companies (PLCs) are governed through company law and their own articles of association. The water companies serve a number of aggregated towns. Shares are held by national, regional, or municipal governments, but the assets are owned by the water company. The Dutch model is described in detail in companion report B7, "Government-Owned Public Limited Companies" by Klaas Schwartz.

In **Spain**, mixed-ownership companies (*empresas mixtas*) are established through local government bylaws, and the contract is contained in the bidding documents. The municipality is the majority co-owner, but the private operator co-owner has complete control over daily operations and often investment decisions. The mixed ownership model applies to individual towns, but in Spain a limited number of large operators compete for contracts. Companion report B6, "Mixed Private-Public Ownership Companies" by Klas Ringskog, describes the Spanish model and discusses its application in Latin America. Case Studies from Colombia are outlined in companion report C4, "A Comparative Study of Market Consolidation and Aggregation in Town WSS Service Provision in Colombia" by Mariela García V.

In **France**, where the average size of a small town is only 1,600 people, towns aggregate to form "syndicates" that are responsible for water and sanitation services rather than municipalities. The process is voluntary, although the central government representative can direct towns. Market consolidation is also apparent with a small number of large water companies competing for contracts with syndicates.*

The two management models (PLCs and *empresas mixtas*) are quite similar since the underlying *raison d'être* is the belief that water supply and sanitation services are best managed by specialized corporate entities that respond to the governance of share corporations. Examples from the Netherlands and France describe aggregation, where towns group together under a single contract, while the Spanish model is an example of *market consolidation*, where the operator serves more than one town through separate contracts.

* For further reading on the Netherlands and Spain, see the documents prepared by Schwartz (2003) and Ringskog (2003). For France, see *Models of Aggregation for Water and Sanitation Provision* by ERM.

Table 2.3 Ownership, Oversight, and Operation—Decentralized Models

Model	Ownership	Oversight	Operation
Municipal water department (see Ringskog)	The municipality owns the assets. These assets have usually been financed by grants from the central government. In practice, it is often difficult to obtain an updated list of the assets, their location, age and state of repair.	In smaller municipalities, the water department is directly under the mayor or the municipal council (representing voters), and in larger municipalities under a public works department.	The operations and maintenance of the municipal system are arranged by creating a municipal water department with municipal staff. Accountability is usually imprecise and not based on business plans with agreed performance targets.
Water user association (see Smet)	Water user associations are commonly registered under cooperative law (or as a cooperative, trust, company limited by guarantee, or other form of voluntary association). Ownership either remains with the central or local government, or it is transferred by the state to the water user association via permit or other legal instrument.	Water user associations are more common in rural areas, with little history of public administration (for example, no town council or weak ties with the district assembly). As a result they are not always formally accountable to local government. Members of the executive committee typically offer their services voluntarily and directly represent users.	• Smaller or less formal water boards or associations tend to hire staff locally, and depend on staff gaining on-the-job experience. Often staff salaries are low, and conditions of work poor. Business planning is minimal (including expansion plans and efficiency improvements), and local operations staff may need extensive TA even with routine operations.
Water board (see Valfrey and Collignon)	The town establishes the water board through bylaws, and invests ownership and oversight in the board, subject to the conditions set out in a performance contract.	Water boards are established where local government is active, and the model scales up to even large towns. Water boards often include representatives of public administration, and must seek guidance or approval for business plans, procurement activities, investment programs, and tariff revisions. The water board represents various stakeholders besides users.	• Larger or more formal water boards or associations can delegate day-to-day operations to a private operator under a performance-based contract. Operators are contracted because they can carry out at least routine operations. TA may be needed for operational efficiency improvements and expansion planning, to help the operator prepare business plans, or to help the oversight board manage the operator contract.
Small-scale private water company (see Myers)	Most small enterprises are owner-managed and operated. Regulated companies are normally established in accordance with corporate law (or business law or other legal requirement)—as privately owned, limited liability companies, or as a partnership or sole trader enterprise. Regulated companies can only provide a water service, having first been granted a license or a performance contract.	Private water companies are fully autonomous in respect to their management and operations. Their boards are drawn from, or selected by, the shareholders, and are accountable to shareholders (not to public bodies).	Private companies use their own staff, which may include their owners. Commercial pressures ensure that they employ trained staff or train them, or outsource specialist activities.

BOX 2.3 Case Study 3—Town Management Models in Uganda

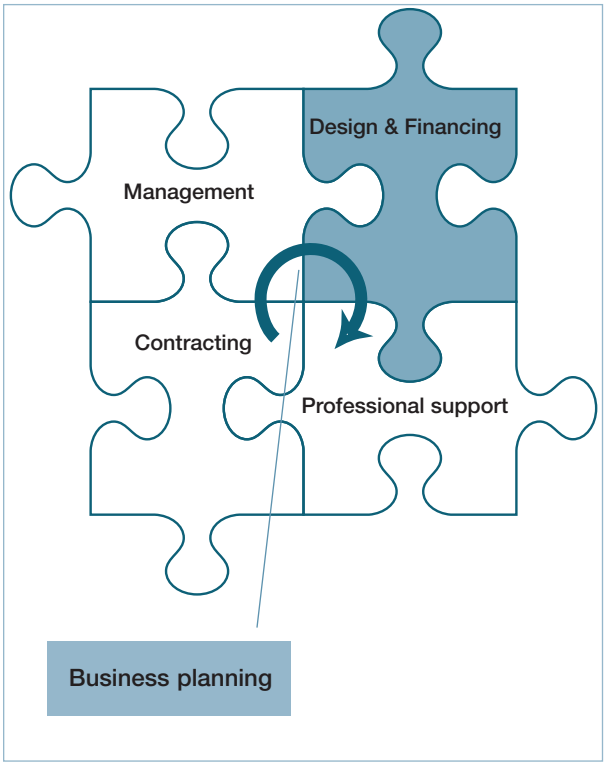
The National Water and Sewerage Corporation (NWSC) bases its operations around the Kampala-Entebbe-Jinja metropolitan area, but also serves 12 other towns. The largest of these has a population of about 110,000, and the smallest about 20,000. The NWSC has the capacity to plan, manage, and operate all these systems. Under current reforms, "unit area" (town) managers have been given increased autonomy through "internally delegated" management contracts, and recent innovations in incentive creation (100-day "stretch programs"—see the NWSC website) have improved performance, so that most of the larger towns now achieve full cost recovery. On the downside, towns have little control over investment and management decisions, and it is worth noting that the practice of oversizing systems to serve projected rather than current demand means that, except for Kampala, only 42 percent of total capacity in NWSC-served towns is operational.

In Uganda's small towns (typically about 4,000–30,000 population), an alternative model has been introduced that requires the town to establish an autonomous water board, which then contracts a private operator to manage its water supply services. At present 15 operators serve 56 small towns, with the towns grouped for procurement purposes, but having separate contracts. A process of "market consolidation" is apparent as the better operators pick up new contracts. Recent support to small towns has focused on the introduction of business planning (financial modeling), through participatory training involving both water boards and operators. Interestingly, there is overlap between the sizes of towns served by the private operators (4,000–30,000 people) and those served by the NWSC (20,000–110,000 people), and some of the private operators are NWSC staff who have been allowed to start up their own businesses.

A third category of settlement in Uganda comprises the "rural growth centers" (1,000–5,000 people), where the prevalent model is for water user associations to contract "one-person" operators, which often form umbrella regional associations with donor financial and technical support. It is worth noting that the water user association model was first adopted in the small towns, but a general deterioration in service standards led to the introduction of water boards with private operators.

Key Points in Chapter 3

- Water supply and sanitation services need to be sustainable in both the short and long term. Towns should therefore plan for the current population, but should also plan to expand the system gradually based on actual demand. Following are the key elements of a design strategy:
  - Design of service level based on customers' willingness or ability to pay;
  - Phased expansion and sequential upgrades corresponding to demand;
  - Connection policies designed to increase the number of household connections;
  - Government promotion of affordable design—regulations and design standards, and guidelines for design, connection policy and stakeholder consultation; and
  - Systems and technologies appropriate to local capacity and culture.
- Design of facilities and cost-recovery measures should be developed in consultation with present and prospective users of water supply and sanitation services.
- The strategies for financing town water supply and sanitation should allow utilities to be established with a minimum investment to provide a level of service existing customers are willing and able to pay for, with a plan for expanding and upgrading the system, as needed. They should enable utilities to provide affordable service to all segments of the population while maintaining financial viability. They should also aim to minimize government financing required in the sector and target resources most effectively.
- Grants should be conditioned on a plan for the utility to transform itself, and grant and loan repayment schedules should be phased to support the utility in the early years.
- It is recommended to define full cost recovery on a cash generation going forward basis, which means that tariffs should be set so that sufficient revenues are generated to cover operating and maintenance expenses plus renewal and replacement of existing assets and allow for expansion of the system, as needed.
- Governments can support town utilities by defining cost-recovery objectives, providing standards and guidelines for tariff setting and financial reporting and auditing, as well as appropriate design, and by establishing benchmarking as a means of monitoring policy implementation and promoting efficiency.



3 DESIGN AND FINANCING

Design of urban water supply and sanitation systems has traditionally been carried out by consultants, advisors, or operations staff, based on prescribed national standards to meet projected demands for 20–25 years. The resulting systems are often overdesigned and expensive to construct and operate, and they may end up providing a piped water supply service to only a small portion of the population who can afford to have their own connections. The problem is more pronounced in towns with smaller, more homogeneous populations, where there is less opportunity for economies of scale and cross-subsidies.

As demand-responsive approaches have taken hold, social scientists have become a more common feature of project design teams working with local stakeholders to identify effective demand (willingness and ability to pay). Engineers and financial analysts assist in this effort by preparing preliminary designs and cost estimates for construction and operation that are matched to user demand. Representatives of all three disciplines then assist the stakeholders to identify the most suitable option, satisfying cultural preferences at affordable costs. This joint planning effort helps to ensure the appropriate design of town water supply systems that are affordable and financially sustainable.

This chapter discusses important aspects of the physical and the financial design of town water supply and sanitation systems. It emphasizes the need to integrate the assessment of technical and financial viability. For town water supply and sanitation, there is little room for error. Any oversight in the design phase may have significant implications for tariffs and, ultimately, financial sustainability. It is therefore important to use an iterative process that highlights the tradeoffs between levels of service and affordable costs.

3.1 Design[4]

Rapid population growth places increasing demands on town water supply and sanitation service providers. Piped water systems with household connections and appropriate sanitation and drainage are the technologies of choice for those who can afford them. However, standard designs that are commonly applied in larger urban centers may be unaffordable or simply unnecessary for small and medium-size towns. Designing for uncertain and unpredictable future growth puts an unacceptable burden on current populations in terms of physical scale, investment cost, and operation and maintenance obligations.

The first part of this chapter discusses possible strategies for designing town water supplies in order to allow a minimum initial investment—a level of service that existing customers are willing and able to pay for, and to plan for expansion and system upgrades as and when required. The strategies laid out below that aim to minimize the government financing required in the sector and to target resources most effectively include the following:

4 This section draws extensively on the work of Don Lauria in companion papers A2: Appropriate Design of Town Water Systems, and A3: Connection Policy for Town Water Systems.

- Designing service levels on the basis of customers' willingness and ability to pay (that is, the effective demand);
- Phasing expansion and planning for sequential time-based upgrades that correspond to demand;
- Establishing connection policies that enable the number of household connections to be increased;
- Ensuring that government encourages and promotes affordable design through appropriate regulations and design standards, and guidelines for design, connection policy and stakeholder consultation; and
- Identifying systems and technological solutions that are appropriate to local capacity and culture.

3.1.1 The Start-up Dilemma

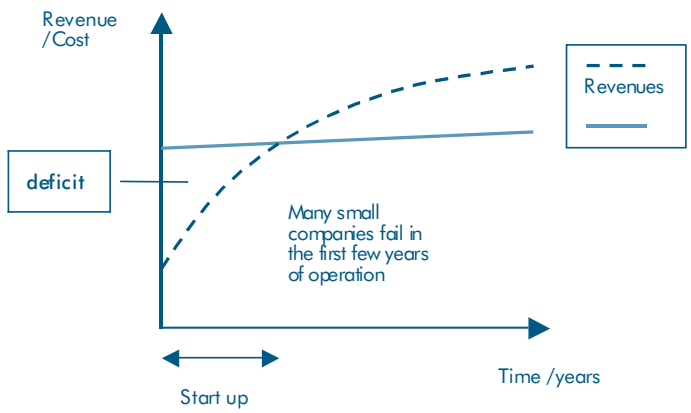
In their early years, or after a major expansion of facilities, small water utilities often have difficulty generating sufficient revenues to cover costs. Fixed costs associated with debt service and the overheads of operating and maintaining facilities must be paid from the start, but often the customer base takes some time to grow to a level that can support these costs (Figure 3.1). Positive cash flow may never be achieved if systems are overdesigned, or if grant financing is not available during the start-up phase when debt service and operation and maintenance costs are relatively high and revenues are low. Even when design matches short-term demand, it takes time for revenues to cover costs. The smaller the gap, however, the more sustainable the utility will be. Where a sizeable customer base exists and the problem is one of deteriorated assets, rehabilitation may quickly produce income from the sale of water and shorten the period where costs exceed revenues.

Towns, particularly small ones, that install full-service piped water systems for the first time, also face several additional problems in building up their customer base:

- Customers obtaining water from their own wells may be reluctant to abandon them and pay for an unproven service, especially if the quality of the well water is acceptable.
- Low-income consumers and immigrants from rural areas previously supplied by wells or standpipes may not be accustomed to paying for water and may be reluctant to pay lumpy connection fees and tariffs.
- Customers may give priority to other needs in allocating their limited resources and not support water and sanitation investments.

To overcome these problems, planners must engage the community in the planning effort and ensure that designs are based on effective demand.

Figure 3.1 The Start-up Dilemma



3.1.2 Designing Service Levels Based on Demand and Willingness and Ability to Pay

The first steps in the design of a town water supply system should be as follows:

1. An assessment of the current situation, including service coverage, financial aspects, and institutional capacity.
2. Preliminary identification of technically feasible options, including immediate incremental improvements, as well as larger investments. Technologies and approaches need to be evaluated to find those most likely to deliver services matching user cultural preferences and capacity to pay. Governments can facilitate this exercise by issuing guidelines on identifying and estimating the cost of technology options for town water supply and sanitation, emphasizing lower-cost options (see section 3.1.4).
3. A survey of customer demand and willingness and ability to pay for improved service. Once feasible technology options are known and their costs estimated, customers can be surveyed to assess their demand and willingness to pay and to select a preferred option. Leaders and opinion makers should participate throughout the design process. Guidelines for conducting willingness to pay surveys in towns (WEDC 2003) can be adapted to local circumstances and a social scientist and/or public health specialist involved in helping to assess and promote effective demand for sanitation improvements and hygiene behavioral changes. (See also Section 3.2.3 notes on connection agreements.)
4. The allowance made for estimated future demand is particularly important for small towns because their customer or revenue base is small and any errors in demand (quantity or spatial) can have serious repercussions on a system's financial viability. Unfortunately, small towns are also the group for which growth forecasts are least reliable, as any individual town's development can vary widely from the national average. The best approach is to carefully sequence investments in system components over short design periods in such manner that they are able to accommodate future changes in demand (see section 3.1.5).
5. An assessment of regulatory requirements relating to design and service standards and appropriate institutional arrangements for enforcing regulation (for example, design standards—see section 2.1).

3.1.3 Government Promotion of Affordable Design

Local decision making by stakeholders is fundamental to town water supply and the major force behind decentralization. However, smaller towns often cannot "go it alone." They need good financial and technical advice to make the right decisions. Governments can promote and facilitate affordable design by adopting appropriate regulatory requirements and standards for town water supply and sanitation. They should include standards for materials and design and guidelines for design, assessment of willingness to pay, and alternative connection policies. In most cases, it will be necessary to train local consultants or advisors in the use of these guidelines so that they are better able to assist towns with appropriate design.

3.1.4 Phase Expansion to Minimize Fixed Costs

Appropriate design of town water systems means planning system capacity when there is uncertainty about future demand, both in terms of the amount of water that will be purchased and the location of future customers. Towns are best advised to plan for the current population, but also plan to expand the system gradually, based on actual demand. This phased or "modular" approach minimizes the gap between system costs and revenues, and so improves cash flows and financial sustainability.

Cost of pipe capacity. Planners need to keep in mind that the cost of water and sewer pipe networks depends largely on the length of the network, far less on the diameter of pipes. A 20 cm diameter water main requires the same excavation as a 10 cm diameter pipe, but carries four times

the amount of water. Since the extra cost for a larger diameter pipe is likely to be less than 20 percent of total installation cost—depending on local conditions and materials—it is comparatively inexpensive to build a pipe network that will cater for an increase in population density rather than building one that allows for changes in the spatial distribution of the population. This is true for both water mains and sewer networks.

House connections. It is through household connections that a water utility collects most of its revenue for domestic water supplies and sewer systems. It follows that marketing and pricing policy should therefore be directed at encouraging as many users as possible to opt for affordable house connections. This argument is elaborated further in section 3.1.7. However, there is an important caveat. Experience shows that most leakage from water systems occurs through defective house connections. Because the individual leaks are relatively small, lots of connections must be repaired to have a significant effect on water savings, yet because there are so many leaky connections, the wasted water and the financial loss to the utility is substantial. The key message is that, in fostering optimum adoption of house connections, utilities also have to recognize the need for high quality materials and craftsmanship.

Modular approaches mean that design and construction must be viewed as regular activities, and include incremental improvements, rather than just large, onetime investments. The underlying principle is to construct only when the investment leads to increased water sales and revenues in an acceptable timeframe. A modular approach means that system components are initially designed with only limited excess capacity determined on the basis of the following:

- Economies of scale: There are usually long-term cost savings in building a component as large as possible, but there is a risk that demand may not grow as much or as quickly as predicted, or that the spatial distribution of the population to be served will change.
- Mechanical reliability: Some excess capacity is needed to cover for short-term mechanical failure of similar components, for example, reserve pumps or wells.
- Security against future availability: The component may not be readily available at a future date.
- Uncertainty over the location of future demand: It is not known in advance where the component will be needed.

Components are also designed so that they can be expanded or upgraded, as needed. Table 3.1 shows some example recommendations for three categories of components (a more detailed explanation is provided in Annex C). In particular, the shorter planning horizon (less than 5 years for many components) challenges current practices used for larger urban systems (which typically have a 20–25 year planning horizon).

Sequential improvements are possible for both water supply and sanitation. For sanitation, the siting and design of on-site facilities will reduce the cost of future connections to a sewer system. As long as water consumption is low, on-site disposal may be the first step. The choice will depend on housing density, soil, and groundwater conditions. The location and design of on-site systems should anticipate future conversion to waterborne waste disposal because with increasing financial resources householders can be expected to increase water consumption to a level that exceeds the capacity of on-site systems. Once the need for evacuating sewage arises, it is best to install pipes adequate for future demand. The reason is the much higher cost of installing sewers compared with water mains (sewers have to be laid to accurate grade at a greater depth than water mains). For water supply, costs can be kept down by sizing pipes so that extra transmission capacity can be added later to increase the quantity of water delivered through the same network.

Table 3.1 Modular Approaches to Design—Recommended Excess Capacity

Component	Explanatory factors	
Provide large excess capacity, > 5 years		
Land	Future availability	
Reservoirs	Future availability	Economy of scale
Water intakes	Future availability	Economy of scale
Sewers	Compatibility	Economy of scale
Provide some excess capacity, ~ 5 years		
Wells	Economy of scale	Reliability
Network diameters	Economy of scale	Reliability
Pump stations	Economy of scale	Reliability
Treatment plants	Economy of scale	Reliability
Provide little or no excess capacity, < 5 years		
Network length	Uncertain location	Economy of scale
Storage tanks	Uncertain location	Economy of scale

Source: Lauria: Appropriate Design for Town Water Systems.

3.1.5 Economies of Scale

Economies of scale can bring significant savings in water supply and sanitation systems. However, a careful analysis is necessary to ensure that anticipated savings are not illusory. In general, administrative costs per unit of productive capacity will decrease as a system grows. In contrast, the per capita cost of facilities grows as systems expand because increasing demand often requires investment in more expensive (more distant) source development and longer transmission facilities. Several examples illustrate that fact:

- Water systems serving a single town will probably benefit from fewer, larger reservoirs—an economy of scale.
- In contrast, both water and sewage treatment plants can be designed for modular expansion, so there is likely to be no benefit in building them larger than necessary for an initial phase, say five years.
- When a town covers parts of several watersheds, the cost of building water transmission mains or sewer trunk lines from different watersheds to a single large treatment plant needs to be compared with the cost of building several treatment plants without the large trunk mains. The comparison should cover both construction and operating costs. If costs are comparable, a decision should be based on a comparison of the damage caused by the failure of one of several plants against the cost of failure of a single large plant. The former is likely to occur more often, but the latter is more serious.
- Economies of scale are almost always achievable when administrative and purchasing functions can be combined for several systems.
- Aggregating several towns will result in administrative economies of scale, but connecting their systems may increase the total cost of facilities.

3.1.6 Connection Policy

A utility needs to have a strategy to provide water to all consumer groups with a service level that each can afford (social equity), while increasing the revenue base by providing as many house or commercial connections as possible. For sanitation, when a sewerage system is in place, encouraging connections to the sewer system is not only good financial policy, but also a way to protect public health and the environment. The main issues to be considered are (a) the type of connection, (b) the connection fee, (c) the method of payment for connections, and (d) the frequency of billing for water consumption and sewage collection. From the utility's point of view, the goal is to increase the revenue base by increasing the number of connections and consumption. This is consistent with consumer preference for a system that provides water that is cheaper, more readily available, and of better quality than alternative sources. It also reflects the consumers' desire to live in a healthy environment through the safe disposal of wastes. As long as water consumption remains low (for example, a large number of consumers share connections or use standposts), on-site and other low-cost alternatives to standard sewers are an acceptable alternative.

Type of water supply connection. Multiple levels of service are commonly found in towns. These include individual connections, shared or yard connections (joint account), buying from a public or private kiosk or standpipe, and buying from neighbors:

- Individual connections: Either connecting indoor plumbing to the system or a yard hydrant on the private property occupied by a single family.
- Sharing connections: If connections are metered, a yard connection may be shared among a group of households occupying private property. However, care should be taken to ensure that increasing-block-tariffs (described later) do not drive up the price of water for those sharing a connection. The tariff should be adjusted to account for higher consumption levels.
- Public or private kiosks: Kiosks or standpipes that sell water to unconnected consumers are also common. Whether the kiosk is operated by the operations staff, subcontracted to a private entrepreneur, or privately installed is less important than the arrangements that are put in place to staff and operate the kiosk. In addition to maintaining appropriate hours and payment arrangements (in cash or prepaid), tariff levels should enable prices to be kept at an affordable level (for example, bulk rate rather than increasing block rate).
- Buying from neighbors: If connections are metered, households with private connections may also be allowed to sell water to unconnected neighbors. Although tariff structures (for example, if an increasing block rate is in place) may need to be reviewed to ensure that prices remain affordable.

For a fuller discussion of tariffs, see section 3.2.2.

3.2 Financing

Governments and development assistance partners generally agree on the policies and institutional frameworks that need to be in place for communities at either end of the rural-urban spectrum; and most countries have strategies for financing water supply and sanitation in rural communities or in large urban centers.

Investments in new rural water supply systems for small communities usually involve a large share of government grant financing, with sufficient community contribution and training for maintenance and management to establish capacity and ensure a sense of local ownership. It is widely acknowledged that local governments—usually at the district level—need to assist

communities with contracting for construction of new rural water supply systems and for consultants or advisors to carry out community preparation and provide ongoing support in the form of TA and monitoring and evaluation.

For large urban water supply and sanitation systems, economies of scale allow utilities to achieve cost recovery, with governments and donors possibly financing new connections to serve the poor and subsidies during phased increases in tariffs. In these large urban centers, cross-subsidies between customer categories and consumption blocks enable subsidized connections for low-income consumers and may be a permanent feature in cities. Various forms of private sector participation in improving service levels and efficiency are also common.

It has proved difficult to adapt either of these two models to town water supply and sanitation. Towns are often too large to be managed effectively by communities and too small to provide economies of scale necessary to allow for full cost recovery. Different pricing strategies may be needed where the customer base is more homogeneous or where customers have easier access to alternative (but not necessarily safe) sources of water. Towns may also be unable to finance the full cost of investments upfront and will often require grants with which to establish financially viable and creditworthy water supply and sanitation systems. However, once established, these systems should be able to generate sufficient revenue to cover their recurrent, replacement, and expansion costs. The long-term objective of providing grant financing should therefore be to enable towns to put in place measures and policies that lead to financial self sufficiency. This section reviews sources of financing typically available for town water supply and sanitation and then outlines possible strategies for financing.

3.2.1 Sources of Financing[5]

Towns often have access to several sources of finance for the development of water supply and sanitation systems:

- Central government with donor support.
- Local government.
- Tariffs.
- Connection fees.
- Special purpose funds.
- Private sector financing.

These are described in more detail below.

Government or donor financing. Government financing with donor support has been and will probably remain the chief means of financing major construction and rehabilitation costs in town water supply and sanitation for the foreseeable future. However, with investment financing appropriately targeted and reform- and performance-based, governments and donors can improve the sustainability of systems, open up more options for future financing sources and thus reduce dependence on limited government funds. The goal should be to improve the financial viability of town water supplies by generating revenue internally and obtaining credit financing to cover the costs of operation and maintenance, systematic renewal and replacement of assets, and system expansion to meet growth needs over time. Government can also help to reduce the cost

5 For a more comprehensive review of potential sources of financing for water supply and sanitation, see the following reports: Meeting the Financing Challenge for Water Supply and Sanitation: Incentives to Promote Reforms, Leverage Resources, and Improve Targeting, Meera Mehta, the World Bank and Water and Sanitation Program, 2003; and Financing Water for All, Report of the World Panel on Financing Water Infrastructure, chaired by Michel Camdessus, report written by James Winpenny, March 2003.

of investment by requiring competition for design and construction contracts, and supporting appropriate design.

Local government financing. Decentralization programs often aim to transfer the responsibility for the delivery of public services, including water supply and sanitation to local governments. As decentralization efforts intensify, local governments receive larger central government budget transfers and the authority to raise local revenues. In addition, local capacity and systems for planning, implementation, management, and regulation of local service delivery are strengthened. Through this transfer of responsibility and authority, local government officials become more accountable to their local constituents and are expected to be more responsive to their needs. In the least developed countries, local governments may lack sufficient resources to fully fund needed improvements to water supply and sanitation, but can still play an important role in mobilizing resources and providing the enabling regulatory environment and institutional arrangements for utilities to function more effectively. In more developed countries, local governments often finance investments in water supply and sanitation from local revenues or guarantee loans for their utilities. Loan agreements typically include tariff covenants—guarantees by the local government that tariffs will be maintained at levels sufficient to allow for loan repayment.

Tariffs. Tariffs should be established in a manner that allows utilities to generate sufficient revenue internally to cover ongoing operation and maintenance, systematic renewal and replacement of assets, and system expansion, in order to meet growth needs over time. Reforms may be needed at the national level to define pricing policy, including cost-recovery objectives and tariff-setting guidelines, and to establish a sound basis for regulation. For example, the government can establish benchmarking systems or increase transparency as a means of promoting efficiency and monitoring policy implementation, or both. Tariff reform is more likely to be implemented if national governments and donors predicate financing on the implementation of appropriate tariffs and institutional arrangements.

Connection fees. In most countries, connection fees have been used as a source of financing to cover the direct costs associated with connecting a customer to the system—meters, service laterals, and labor for installing them. In some cases—usually in more developed countries—connection fees cover a greater portion of the investment cost. However, high connection fees can be a hurdle that prevents the poor from connecting to the system and harms the utility's chances of achieving economies of scale or financial viability. Experience indicates that subsidizing connections for low-income households in order to increase water sales is a worthwhile strategy for town utilities, and an appropriate use of available subsidies.

For example, in Côte d'Ivoire the following policy is adopted:

- Commercial, industrial, institutional, and high-income domestic consumers pay the full connection cost up front.
- Low-income domestic consumers can apply for a connection subsidy and pay part of their reduced connection fee (together with a security deposit) up front and the rest in installments.
- Subsidies can be financed from a revolving fund raised from a percentage surcharge on the tariff.[6,7]

6 Lauria: Connection Policy for Town Water Systems.
7 About 90 percent of the domestic connections in Côte d'Ivoire are subsidized.

An alternative approach would be to include materials and labor for a certain number of initial connections in the capital investment financing and offer subsidies for individual connections to low-income households or shared connections for groups of households. Offering consumers a choice in the type of connection and the connection fee gives more people access to the network and enables the utility to sell more water. Over time more people can be expected to upgrade to household connections.

Special purpose funds (municipal development funds and social funds). Special purpose funds can be used to provide investment financing for the sector, but they need to be designed carefully to promote rather than inhibit commercial financing. Municipal development funds and social funds have been set up to channel government or donor funds to water supply and sanitation, among other things. They can provide grant financing and loans on commercial terms for implementation of sector reforms (for example, improved financial management systems or project planning and procurement), to pay for project preparation and to finance investments.

Private sector financing. In most developed countries, private financing is available to creditworthy water supply and sanitation utilities at relatively low rates of interest for terms that match the life of the assets being financed (Box 3.1). The financing is often provided by pension funds and other institutional investors who view water utilities as good credit risks because of their financial autonomy, steady revenue streams, strong financial management systems, routine external audits, and credit ratings from reputable agencies. As local financial markets develop, private financing will become more accessible to developing country utilities that are creditworthy. Private financing may also be provided by private operators, although this will depend on the viability of town water supplies. Private sector financing requires fiscal discipline and accountability by the utilities and allows them to develop financial self-sufficiency. Governments can facilitate private sector participation by improving the regulatory framework, supporting project development, and providing partial risk guarantees.

BOX 3.1 Utility Creditworthiness

A utility is considered **creditworthy** when its financial performance and management meet tests of reasonable lenders for provision of long-term loans. The utility must be able to show a history of sound financial and operational management, usually evidenced by several years of acceptable audited financial statements. Other factors that affect creditworthiness are management capacity and governance or accountability of the institutions and customer demographics. Utilities applying for credit must present financial projections to confirm that sufficient revenue will be generated to cover relevant costs, including routine operation and maintenance costs, renewal and replacement of assets, and system expansion and service debt. In developed markets, utilities can receive a credit rating indicating the level of creditworthiness of the utility and the level of risk involved in lending to it. The rating affects the cost of borrowing—utilities with strong credit ratings can borrow at lower interest rates, while those with less borrowing experience or poorer financial performance will have to pay higher rates, may need a guarantee from the municipality or other owner or may not be able to borrow on the market.

3.2.2 Financing Strategy for Towns

The first step in developing a financing strategy is to conduct a diagnostic to review the current situation, identify the needs of the sector, and determine factors that have contributed to or hindered sustainability. Drawing on information about good practice in the country and internationally this information should be used to formulate a financing strategy for town water supply. Annex D lays out questions to be addressed in an assessment of the sector. The following strategies are suggested.

Ensure that the level of investment in water supply and sanitation services matches the level of services existing customers are willing and able to pay. The aim should be to minimize the initial government financing required to establish town utilities, and to move as rapidly as possible to utility self-financing of all costs, including operation and maintenance, renewal and replacement, and expansion and upgrades from revenues or borrowing. Governments should strive to ensure that design standards are affordable to town customers, but take into account the need to expand the system to meet growing needs.

The initial investment may be from a mix of grants, equity, and loans. The amount of the initial grant will depend on the size of the town, population growth rate, and rate of new connections. The principle is that the right combination will help the utility to move to financial sustainability. This approach minimizes excess capacity at each step and phases in expansion as and when required. It allows government to use limited funds to support a larger number of towns with modest infrastructure rather than encouraging oversized systems in fewer towns.

Encourage local equity in development of the water supply and sanitation system. Governments should also encourage part of the initial investment to be provided in the form of local equity by municipalities and/or regions and their water companies. Having a stake in the financing of water supply systems should provide additional incentive for them to be involved in business planning, decisions about service levels and tariffs, and performance monitoring.

Government and donor investments should support reforms that aim to increase financial efficiency. The use of financial resources should be more effectively targeted, based on clearly defined priorities and rules of access. Town water supply and sanitation utilities need to be established so that they have sufficient autonomy to make sound financial decisions and implement them without undue political influence. Grants should be conditioned on a plan for the utility to transform itself, plan appropriately, and implement improvements in financial management and reporting, efficiency, and customer service, as well as tariffs, so that it can become a creditworthy entity able to finance future investments from internal resources and with borrowing. Whatever financing support is provided, it should be linked to performance improvements and reform in some way.

A stepped approach is one promising way, whereby an initial grant is provided to put in place appropriate institutional arrangements and to plan, design, and possibly carry out some immediate repairs to improve service. Subsequent steps would provide funding for major construction if a feasible plan is presented and the utility has demonstrated its willingness and ability to adopt reforms.

Figure 3.2 illustrates a stepped approach to investment, in which grants are made conditional on institutional reforms and improved business planning, rehabilitation is phased to allow immediate

repair work in the early stages, and major works are carried out once institutional reforms have been undertaken.

In cases where there is no existing water supply network ("greenfield" projects), the potential to start out with "good practice" in developing institutional and financial arrangements exists. A stepped approach would enable an initial focus on establishing relevant institutions, planning in consultation with stakeholders, and building capacity for decision making and oversight of water supply and sanitation arrangements, well before making major investments in a new water supply system.

Special financing mechanisms to facilitate private sector lending to the water and sanitation sector. If special financing mechanisms are needed to encourage private sector participation, they should be designed to support development of the commercial banking sector rather than undermine it. Governance and operation of such funds should be free of political interference, and there should be equitable, transparent criteria for accessing finance. Governing boards and operations should be independent, with private sector and consumer representation on the board. Mechanisms should be put in place to ensure adequate transparency and accountability. Ideally, the commercial banking sector should be involved in the operation of such funds and there should be a plan for phasing out direct government financing as the commercial banking sector enters the market.

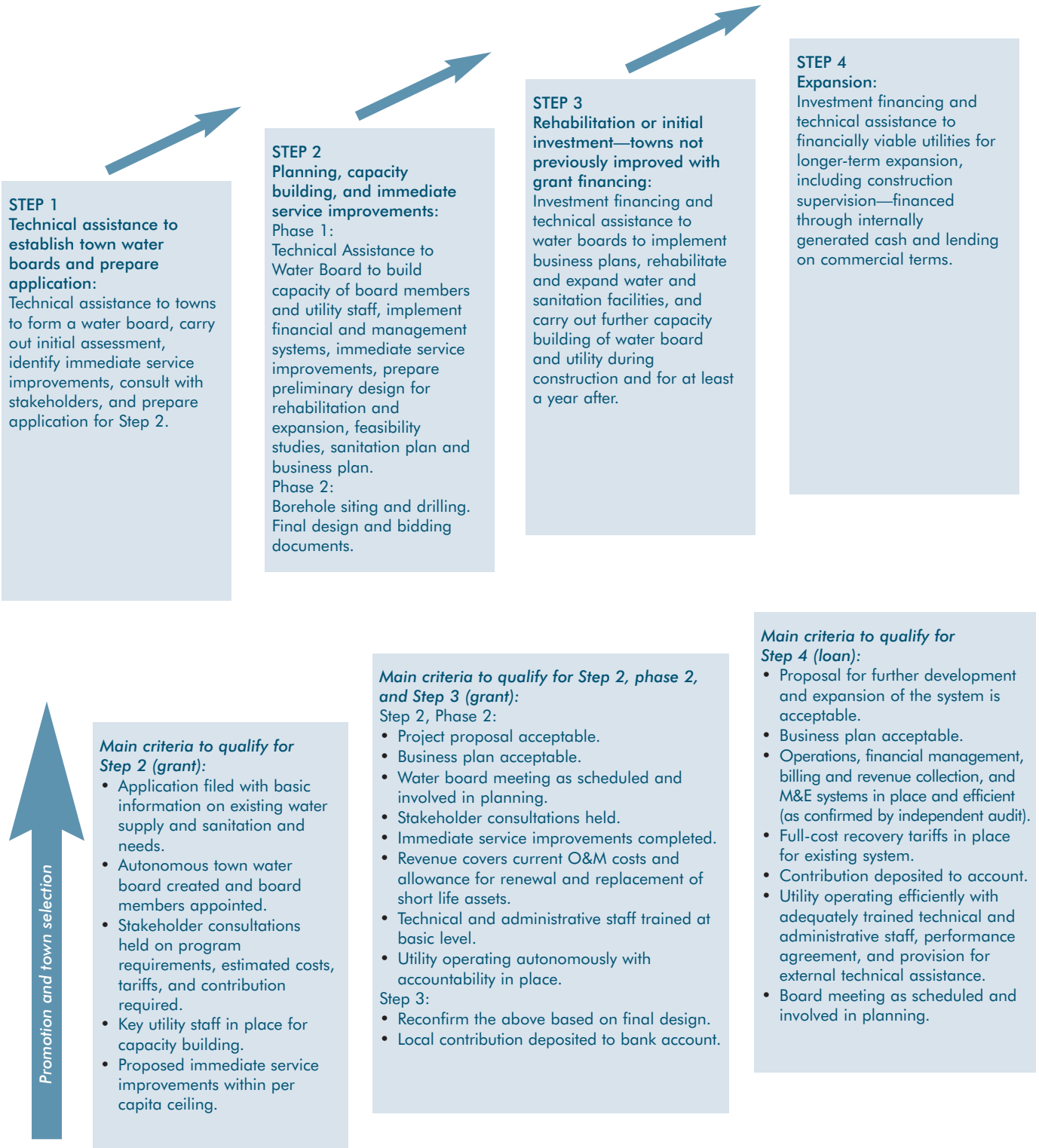
Financing terms should be designed to match utilities' ability to pay. Grace periods should match the construction period. The repayment period should be set to match the expected life of the assets being financed, at least 10–15 years. Loan repayment can be stepped to match projected increases in customers and revenues. It should be noted that donor-financed projects often include significant expenditures to support institutional reform and capacity building. These costs are normally passed on to smaller utilities as grants.

Innovative approaches can be used to attract private sector equity financing. Among the innovative approaches used in recent World Bank projects are design-build-lease , bids for minimum subsidy or lowest connection charge, and output-based aid arrangements to subsidize tariffs and/or connections for lower-income customers (see Box 3.2).

Connection agreements can be used to ensure cost recovery from the outset. Based on tariffs and costs, financial analysis should indicate the percentage of the capacity of a water supply or sewerage system that needs to be used from the outset for a utility to be financially viable. Under normal circumstances, it could take years for a new system to reach that percentage of capacity, especially if connection fees are expensive. One way to ensure that a sufficient number of customers connect to the system as soon as it is commissioned is to require a connection agreement with the community, whereby it is agreed that a minimum number of customers sign up and pay a connection fee before construction commences. For example, in the Philippines (see Box 3.2) this was set at 60 percent. A reduced "introductory offer" connection fee can be allowed for those who pay in advance and the cost of these connections can be incorporated into the overall investment cost.

Institutional framework should provide for regulation of tariffs and performance monitoring. Utilities should be financially autonomous with sound financial systems, standardized financial reporting and auditing supported by monitoring and evaluation. For towns, regulation is usually informal and local, and an important first step for towns is to establish improved information systems and a monitoring and evaluation framework. National standards for setting tariffs should be established, and

Figure 3.2 A Stepped Approach to the Upgrade of Existing Town Water Systems



the same performance indicators should be measured and reported for all utilities for comparative purposes to create incentives for improving efficiency. Whether regulation is carried out by a regulatory body or by contract, it should provide for transparency and accountability to customers.

BOX 3.2 Examples of Financing Arrangements for Town Water Supply

A selection of examples from World Bank–funded projects show the wide variation in financing arrangements and levels of financial analysis used to determine future financial viability of the utilities concerned:

- In Ghana (Community Water Supply and Sanitation Project, CWSP-1) and Uganda (Small Towns Water and Sanitation Project), the rural water supply financing strategy is applied to small towns. The government provides grant financing for the majority of the investment, and the community is required to contribute 5 percent and 2 percent, respectively.
- In the Philippines (Local Government Unit—Urban Water and Sanitation Project), financing is channeled through local government subloans and recovered through a lease fee. The local government units receive a substantial fiscal transfer from the central government called the Internal Revenue Allotment (IRA), of which 20 percent is used for any investment project the Mayors and Councils agreed upon. This provides the collateral to lending institutions. The Mayors or Councils also had to decide on the tariffs (on how much of the loan would be amortized by the users). Most local government units opted for full cost recovery, but the lease fee is a concern for operators in towns when expected water sales do not materialize.
- In Colombia (Water Sector Reform Assistance Project), a minimum subsidy concession has been adopted. The private operator proposes to finance a level of investment that they believe they can recover through the tariff (which is fixed before bidding), and central and local government subsidize the remaining costs. Operators submit detailed investment plans as the basis for their bids. In general, the level of local government financing in medium-size towns is usually more than 50 percent of the total subsidy, while in small towns it is less than 20 percent of the subsidy and sometimes almost nothing (in which case the central government finances 100 percent of the subsidy).
- In Paraguay (Fourth Rural Water Supply and Sanitation Project), the private operator meets all costs, excluding a subsidy of US$150 on connections. The operator bids on the connection charge to users knowing that he would receive a fixed US$150 per connection subsidy. The initial tariff is fixed at a level thought to cover operating costs (and some profit) and to give the operator an incentive to stay engaged once he had collected his subsidy. In practice, during the initial pilot project the operator has been able to fully recover his investment within a year from the defined subsidy and the connection charge.
- In Vietnam (Pilot Design Build Lease Project), provincial water companies are expected to contribute equity for initial investment in water supply systems in unserved towns. For the portion of investment financing that is borrowed, onlending terms are designed so that the project is always cash positive to the operator. A grace period allows for the buildup of cash reserves into an escrow account to fund the period where there is an annual cash shortfall. Repayment of the loan is stepped up to reflect a build up in revenues.

Financial autonomy of utilities does not necessarily imply that no operational or investment subsidies would be provided by the national or local government. It means only that the utility should have its own bank account and financial systems, should be able to retain its revenues for development, and that any subsidies or funds transfers are transparent.

Town water supply and sanitation should be cost efficient and affordable. All customers should be able to afford the amount of water they need, and at the same time tariffs should discourage waste and overconsumption. Tariffs should be kept simple, so that consumers can easily understand what they are paying for. Minimum fixed monthly charges are not advisable, as they do nothing to encourage conservation and can become a disincentive to staying connected to the water supply system. One way to achieve both affordability and cost efficiency is a two-step tariff with a lifeline block that ensures that low-income households have access to enough water to satisfy personal needs, and a second block set so that those using more water pay a higher price. Political imperatives often require a more nuanced approach, with more than two consumption blocks, but it is best to keep the number of consumption blocks to a minimum and the size of the first block small.

Subsidies should be designed to benefit those in need while preserving incentives for the utility to operate efficiently and provide good service to all customers. If subsidies are to be provided, they should be well targeted, transparent, and well understood. As already noted, subsidies that help the poor to afford individual connections can also benefit the utility by increasing consumption and revenues so that financial viability can be achieved sooner.

Tariffs should gradually be increased to cover full costs over a reasonable period. Full cost recovery tariffs are defined as tariffs sufficient to provide for financing of investments, as well as operating and maintenance expenses. Usually, this is taken to mean that tariffs should cover operating and maintenance expenses plus depreciation and interest financing or return on equity. However, customers of town water utilities may not be able to afford full cost recovery tariffs immediately. Therefore, it is recommended that full cost recovery be interpreted on a cash generation going forward basis. This means that tariffs should be set so that sufficient revenues are generated to cover operating and maintenance expenses plus renewal and replacement of existing assets and to allow for expansion of the system as needed.

Targeted TA and incentives should be provided to improve service levels, customer relations, and operational efficiency. Good customer relations underpin willingness to pay. Customers should be kept informed of utility growth and investment plans and given adequate notice on changes in tariffs, billing practices, and planned service interruptions. Billing and collection policies and methods should be designed, so that they enable low-income customers to pay when they have the means to do so. Many consumers have difficulty in paying large bills that arrive infrequently. Some households can only pay in small day-to-day increments, and others can only pay at certain times of the year. Coin-operated meters have been successfully introduced by some utilities as a means of enabling pay-as-you-go for customers who are unable to accumulate funds to pay a monthly bill.

Operational efficiency can reduce the amount of funding required and help to keep tariffs affordable. Water leakage is lost revenue. Although all water systems leak to some extent, it is important to reduce physical leaks to not more than 15 percent, a level that can be achieved with effective operation and control. Physical leaks, however, are not the only way that utilities lose money. There are administrative leaks as well: defective, unread, or misread meters; faulty billing; and late or nonpayment of bills. The financial loss from such "leaks" can be as high as that caused by physical leaks. High rates of unaccounted-for water (physical and administrative leaks) are a sign of inadequate staff training and lack of motivation. Both can be overcome with appropriate managerial actions and targeted training. Well-performing utilities should be rewarded for their efforts. At a minimum, their achievements should be formally recognized, but financial incentives can also be provided, for example, in the form of additional discretionary funding or more favorable financing terms for utilities that have shown improvement.

3.3 Revenue Generation and Social Equity

When developing financial policies, it is important to keep in mind that while the purpose of water and sanitation services is to improve and maintain human health and well-being, the sustainability of town water supply and sanitation services depends on generating the revenues needed to cover costs from the sale of these services.

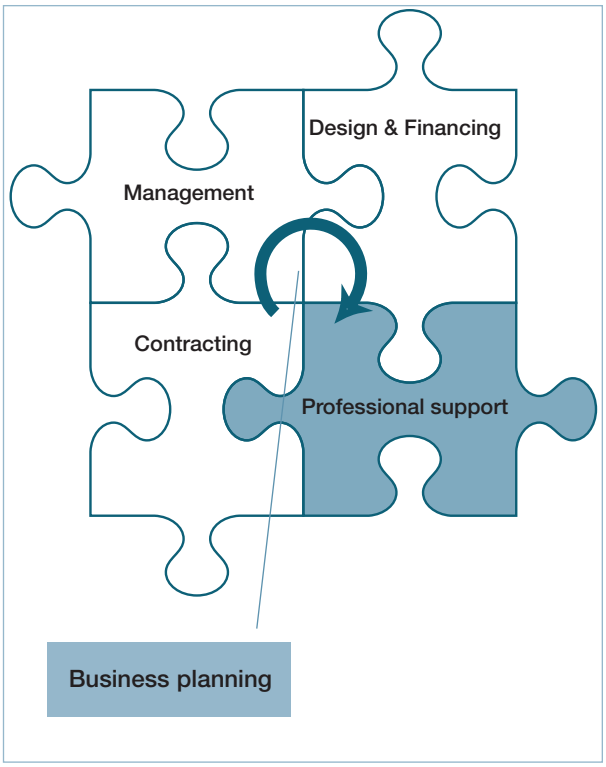
Often small town water systems distribute most water through kiosks or standpipes. As a result, water consumption is limited, and sales are not sufficient to generate the revenue required to sustain and expand the system. Sanitation facilities may also be rudimentary, built and maintained (often inadequately) by the householder. On the other hand, in larger towns and cities where the demand for individual connections is met, typically less than 25 percent of the customers contribute more than 75 percent of the revenue. Everyone benefits from high connection rates: the utility as a result of a larger revenue base to cover fixed costs, wealthier customers because their higher demand for water is met, and poorer customers from cross-subsidies and a more reliable system.

As water consumption levels rise, so does the need for wastewater disposal systems. As wastewater systems are factored in, the cost of water supply and sewer services increases dramatically (sewage disposal typically costs substantially more than water supply). Water conservation and reuse can play an important part in reducing costs—by postponing sewerage investments or reducing sewage disposal costs. Efforts to conserve and reuse wastewater also help to make services affordable to low-income consumers.

Key Points in Chapter 4

- Professional support = (continuous) routine operations + (periodic) specialist services.
  - Professional support for *operational functions* will most often be secured from either (a) a routine operator plus specialist services to the operator and COB, or (a) a full service operator plus specialist services to the COB.
  - *Regulatory functions* should always be separated form operational functions to avoid conflict of interest. Specialist services to the ROB should be provided separately from that for operators.
  - However, specialist services to the COB may be jointly procured from the same organization that supports its operator.
- Because of their small size, on an individual basis, many towns can probably only afford in-house staff or a routine operator. They will therefore require supplemental specialist services on a periodic basis. These can be provided by an umbrella organization that provides specialist services to a number of towns.
- "Full service" operators (capable of routine and specialist services) require a larger revenue base to be viable in town water supply, but they may gain economies of scale by operating a number of town water supplies jointly. This is called "market consolidation."
- As an alternative, it is possible to group towns together so that they can achieve economies of scale, and have sufficient resources to support the employment of skilled technical and managerial staff. This is called "aggregation."
- Whatever the nature of external assistance, a training component should be included to give in-house staff the opportunity to acquire the skills to improve their performance, and members of corporate oversight bodies and regulatory oversight bodies (those not familiar with water supply and sanitation operations) a better understanding of their responsibilities.

4 PROFESSIONAL SUPPORT



Professional support is needed whenever an organization requires help in performing functions for which it is responsible, but does not have the capacity to undertake. In the context of town water supply and sanitation, such support may be needed to help.

- Town authorities perform their regulatory oversight function—to ensure that the service provider meets performance standards and regulations, and fulfills contractual obligations.
- Service providers perform planning and operational functions, for which they do not have the relevant skills.

Regulatory oversight, corporate oversight, and operational functions can either be carried out "in-house," or they can be outsourced. Where capacity is limited, professional support may be required for either routine tasks or specialist services that are more skilled. External assistance required for routine tasks or operations and specialist services are collectively referred to as professional support.

PROFESSIONAL SUPPORT = ROUTINE TASKS + SPECIALIST SERVICES

The type of professional support required varies according to the size and complexity of operations, level of service that consumers want and can pay for, and the enforcement of regulations and standards. For example, in the United States even small rural systems need to meet increasingly stringent regulatory standards set by the Environmental Protection Agency. This requires a high level of technical expertise to be available at the town level. Larger towns or utilities with full-service operators may also seek the advice of specialists to review performance and suggest efficiency improvements.

4.1 Regulatory Functions

The ROB must be legally and operationally separate from operational units (that is, the COB and operator) to avoid conflicts of interest, and it is important that support services for regulatory oversight be contracted separately from operational functions, and from different organizations, so as to avoid conflicts of interest. Regulatory oversight is usually the responsibility of the owner of a water supply and sanitation system. In small towns, the responsibility may lie with a member of council—in larger towns with a committee of the council, or a council established ROB.

The role of the ROB revolves around performance monitoring related to economic and public health regulation to ensure that the systems are operated in a professional manner and service

quality standards—including water quality—are met, and that the business plan prepared by the COB or operator is successfully implemented. The ROB is also responsible for the examination of financial operations, in particular to examine and approve any proposed tariff increases. The ROB may also have a role in customer relations and remedial (arbitration) actions—operational deficiencies observed should be brought to the town council's attention for remedial action.[8]

Table 4.1 gives a summary of routine tasks and specialist services needed for effective regulatory oversight of the town water supply and sanitation service provision.[9]

Table 4.1 Regulatory Oversight Activities That May Need Professional Support

	Routine tasks	Specialist services
Economic regulation	Operational performance – Service quality performance indicators – Accounting – Financial reporting	Benchmarking performance Appropriate design Promote competition – Procurement – Contract supervision Financial performance – Cost recovery objectives – Tariff setting – Audit
Environmental regulation	Local control of discharge and sludge disposal, and sanitation strategy (see guidelines on sanitation strategy)	Financial modeling Environmental performance – Water resources management – Water abstraction control – Wastewater discharge control – Sludge disposal – Sanitation strategy
Public health regulation	Water or wastewater quality monitoring	Water or wastewater quality testing
Customer relations	Communications Publication of information Community consultations	Demand assessments
Remedial actions	Social fairness – Discriminatory practices – Services to the poor Customer complaints	Contract arbitration Tariff appeals

4.2 Operational Functions

Table 4.2 provides a summary of the routine operations and specialist services that are most important in town water supply and sanitation. Routine operations are repetitive activities that technicians with a basic education can be trained to carry out. Specialist activities, which tend to be periodic and which require higher skill levels and experience, involve business planning,

8 Depending on the country, a separate body may be charged with environmental regulation, which often requires decision making and monitoring of compliance at a higher administrative level. In some countries, an umbrella support organization for water resources management and water abstraction and wastewater discharge permits may exist.

9 In Contracting Out Utility Regulatory Functions (ERM), the key functions relate to price, service quality, competition, and customer protection, each of which requires tasks involving gathering information and data, monitoring compliance with existing rules, determining new rules, and enforcing rules.

operational efficiency improvement, and expansion management. The intensity of support needed depends on existing capacity of the operator. It is clear that the larger the system, the more sophisticated the skills required, but even small systems require a full range of skills. (See Annex E for more details for large utilities.)

Table 4.2 Operational Activities That May Need Professional Support

	Routine operations	Specialist services
Business planning		Customer demand assessments Investment planning, including expansion Securing professional support Financial modeling Tariff setting Funding applications and borrowing M&E, including external audit
Operations	Meter reading Billing and collection Accounting Routine O&M Monitoring – Production – Water quality – Customer satisfaction Connections Stores	Operating efficiency improvement – Technical training – Financial management training – Problem solving, for example, pump maintenance – Collection performance – Unaccounted-for water reduction – Power and chemical usage – Procurement services (goods or chemicals) – Improved monitoring – Performance indicator analysis Management of operator contracts
Expansion management	Planning, financing, procurement, execution or supervision of expansions	Engineering design Contract management – Bid document preparation and evaluation – Construction supervision – Commissioning and handover

Depending on the skills and capacity available within a town, professional support may be required to improve routine operations in addition to helping the operator carry out more specialized tasks, such as preparing or updating business plans, improving operational efficiency, and expanding the system (Figure 4.1). The COB may also require technical or financial assistance to carry out their responsibilities, including business planning and managing the operator contract.

PROFESSIONAL SUPPORT OPTIONS
(A) ROUTINE OPERATOR + SPECIALIST SERVICES TO OPERATOR AND COB
(B) FULL-SERVICE OPERATOR + SPECIALIST SERVICES TO COB

Figure 4.1 Division of Responsibilities between Operators and Specialist Service Providers

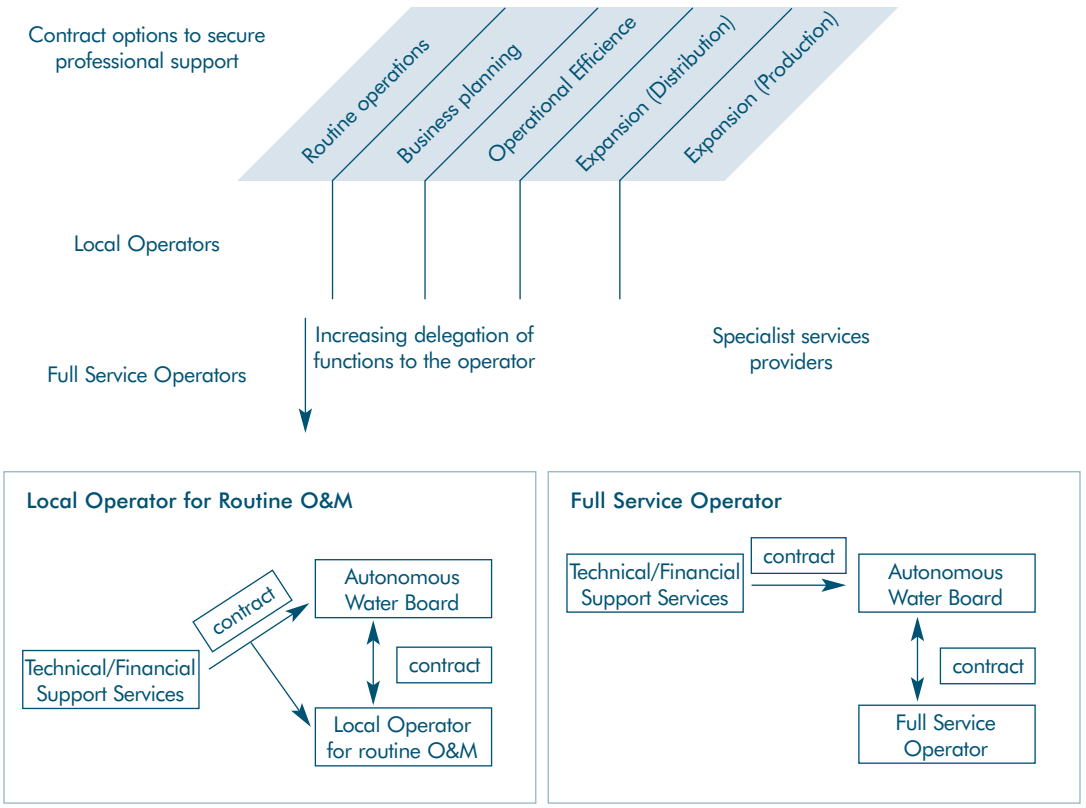
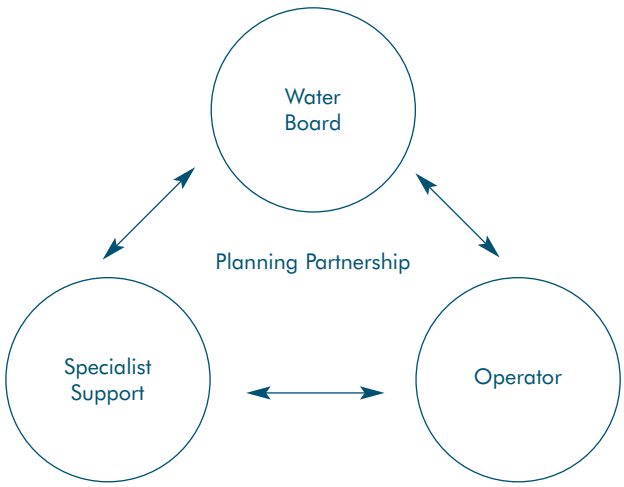


Figure 4.2 The Planning Partnership



As a basic principle, a town should secure the services of the most capable operator it can afford. The more capable the operator, the more functions it can carry out. With proper incentives, a capable operator will innovate to improve operational efficiency and find lower-cost ways of expanding the distribution system. The basic arrangement will take the form of a tripartite arrangement with the COB (for example, water board) and technical and financial advisors (Figure 4.2). In this dynamic planning process, support services should be adjusted to complement increases in the capacity of the town's COB and its operator, and the changing needs of the town. Specialist support is not a one-time intervention. It is an ongoing requirement that will evolve in tandem with the town's business plan (described in Chapter 6).

4.3 Customer Relations and Communication

Regular publication of information and good communication on decisions and activities are important aspects of service delivery in town water supply and sanitation (Table 4.2). More often than not, the skills that are required in order to prepare and manage

a communication strategy are not available in a town. The ROB, COB, and operator should all have the capacity to develop a communications strategy and to collect and disseminate information to and from consumers. Communicating with stakeholders about accomplishments and challenges, financial needs and tariff decisions, plans for the future, and resolving consumer complaints is an integral part of the business planning process. Performance indicators gathered to monitor a town water supply can also be selected so that they are consistent with information provided in the town business plan, and also provide the basis for benchmarking.

Table 4.3 Communications Strategy

For the regulatory oversight body or corporate oversight body	For the operator
• Have a clear vision of what it wants to achieve. • Work with all stakeholders. • Be open and consultative. • Publish information to help accountability and explain decisions. • Keep up a steady flow of press information about its work. • Publish information on the performance of the utility. • Ensure mechanisms are in place to receive consumer feedback.	• Know what its consumers want and are prepared to pay for. • Provide information to consumers on its services and complaints procedures. • Report honestly on performance to regulators or oversight bodies and consumers. • When things go wrong, admit it and try to put things right.

Source: Taylor: *The Importance of Communications in Regulation and Town Water Supply.*

4.4 External Specialist Services Support Options for Regulatory Oversight and Operational Functions

Specialist services for towns can be organized in a number of different ways. The following are a few examples of specialist services that have been organized to strengthen regulatory oversight, although most of them serve single rather than multiple purposes:

- In France, where the average town population is less than 1,600 people, but the market is dominated by three large private operators, the organization Service Public 2000 set up by the National Association of Mayors provides support services to local authorities in preparing contracts, organizing fair competition, negotiating with bidders, estimating the costs of services, ensuring respect for legal procedures, and monitoring services and contracts.
- In Mali, the government agency Conseil aux Adductions d'Eau Potable (CCAEP) performs regular financial audits for small towns and helps to publish their accounts. This service is financed by a percentage surcharge on the tariff.
- In the United States, the Environmental Protection Agency provides financial support for NGOs to help train and mobilize rural small towns to meet environmental regulations (see companion report C3, "NGO Technical Assistance Providers in the USA" by Stephen Gasteyer).[10]

10 Contracting Out Utility Regulatory Functions (ERM 2004) includes discussion of: independent regulatory agencies (which may be at municipal level, and for one or more sectors); assigning functions to line ministries or municipalities; regulation by contract with supervising units (often relying on the court system); use of technical, advisory, or arbitration panels; contracting out specialist functions to international consultants, local companies, or NGOs; and tri-sector partnerships involving the private, public, and civil society sectors. If functions are contracted out, a key issue is whether the findings are binding or only advisory.

Examples of more integrated forms of support developed to assist corporate oversight bodies (COBs) and operators with operational functions are described below, and it is noted that similar principles could be applied to deliver consolidated support for ROBs. The key challenge for a town COB is to secure the services of a qualified operator and technical or financial specialists at an affordable price. The following selection of approaches could all be appropriate for a given situation. What they have in common is that they spread the cost of specialist support services directly or indirectly over a number of towns, in order to make the services financially viable for the service provider and affordable to the town. The approaches described are mainly associated with water board and water user association management models, but could be applicable to any decentralized management model.[11] These specialist support functions may be organized directly by individual towns, or collectively through an apex organization (which the towns own or belong to).

The basic types of support mechanisms are as follows:

- Consulting engineers and financial advisors on a retainer basis through service contracts.
- A central help desk and work-based outreach training program (OTP).
- Umbrella organizations, such as NGO (TAPs).
- Private firms, for example through a franchise or joint venture arrangement.
- Direct support from larger utilities to smaller communities.

The help desk or OTP and NGO TAP models are described below based on case studies from Nigeria (companion report C1, "Outreach Training Systems (OTS) in Nigeria" by Jack Cresswell) and the United States (companion report C3, "NGO Technical Assistance Providers in the USA" by Stephen Gasteyer), as well as an example of an apex organization from Estonia (companion report C2, "Apex Project Management and Technical Assistance" by Solveig Nordström and Klas Ringskog). A brief note is also provided on the potential of franchising and "regional development agents."

4.4.1 Help Desk or Outreach Training Program

The goal of outreach training is to provide cost-effective, practical, on-the-job training in the trainees' own workplace. Courses are designed to be needs-targeted and competency-based, using private sector experts to help design training modules and to deliver them in the workplace. The program is administered from a central help desk with minimal staffing.

Private sector experts are chosen because of their practical expertise and their credibility. (If the program hired instructors, its ability to respond to training needs would be limited to the expertise of the hired instructors—and would create a constant payroll cost.)

The provision of training consists of five steps:

1. Identification of training needs based on requests from towns.
2. Specification of competency-based objectives for each course.
3. Development of modular courses by training design experts working closely with contracted private sector experts.
4. The delivery of training in the workplaces of the requesting town.
5. An assessment of the impact of the training.

11 Many of the companion papers in Volume III include examples of how professional support can be secured (including less common approaches such as operator certification and outreach training systems). A few are highlighted here, and readers are encouraged to read the full papers where there is very much more detail on this critically important aspect of town water and sanitation service delivery.

Skills development targets are defined in three ways:

1. An analysis, by the help desk, of staff profiles and training needs.
2. An assessment of training requests submitted in terms of their relationship to broader programmatic objectives.
3. A judgment by the help desk concerning the likelihood that several towns will ask for the requested training.

Piloting Outreach Training in Nigeria

In Nigeria, as a first step to mounting a pilot, the help desk selected a single request for training and designed a single modular competency-based short course on pump maintenance and repair. The one-week pump course was designed in collaboration with the chief technician from the supplier of most of the pumps in Nigeria, and delivered by the same expert to a group of 20 operatives.

The requesting town was obliged to identify participants, arrange for training space and resources in the participants' workplace, arrange lodging and meals for the expert, disburse funds, and implement impact-assessment protocols after the training course. In terms of payment, the help desk calculated the overall cost of the course, and sent a check to the town to enable the town to pay all costs directly, including the fee to the expert (to create a client-consultant relationship).

Expansion of the Program in Nigeria

As outreach training expanded, the help desk staff increased from two to five people, still remarkably small to serve the training needs of 250 towns. To streamline the identification of trainers, a databank of nearly 500 experts was created, based on responses to advertisements in national and local newspapers. As courses were designed and implemented, each was added to a regularly updated course list, which provided details of each course, including skill acquisition objectives (see Box 4.1).

BOX 4.1 Courses Delivered through Outreach Training in Nigeria

- Preventive maintenance.
- Diesel electric generator maintenance.
- Generator maintenance.
- Basic electrical fault finding and repair.
- Electrical installation.
- Submersible electric pump repair and maintenance.
- Hand pump operation and maintenance.
- Pump design and installation.
- Borehole maintenance.
- Leak detection and repair.
- Meter reading and reader supervision.
- Repair of meters.
- Valve repair.
- Basic motor vehicle maintenance.
- Pipe network maintenance.
- Water quality testing and control.
- Bookkeeping.
- Word processing.
- Billing and collection.
- Customer relations and marketing.
- Customer enumeration.
- Personnel management.

The help desk designed questionnaires to assess the impact of delivered training, especially in terms of acquired skills and subsequent use on the job. They were completed by a cross-section of trainees three months and six months after delivery of training (see Box 4.2).

BOX 4.2 Measurement of Impact of Training in Nigeria

To help monitor the quality of training delivered, a simple Impact of Training Study was implemented in 25 percent of the courses delivered during the NWRP. The impact questionnaire was completed by trainees three months and six months after training. The questions were:

1. To what extent did you understand the objectives of training prior to the start of the course?
2. To what extent do you feel the course was delivered in a way to provide you with skills?
3. To what extent do you feel you acquired all of the skills taught during the course you attended?
4. To what extent did you learn each of the following skills?
   (*A separate list of 10–15 skills to be acquired at each course was developed in order to gather course-specific data.*)
5. To what extent do you feel you strengthened your existing skills?
6. To what extent do you feel you acquired new skills?
7. To what extent was the training related to your responsibilities on the job?
8. To what extent do feel the training was practical enough?
9. To what extent have you been able to use your new or improved skills on the job?

Summary of Challenges and Advantages

Outreach training works well to transfer skills where the intended beneficiaries have a plan to improve efficiency with clear goals and needs and can afford the costs; participants are carefully chosen; training is "hands on;" and the supervisors of individual participants encourage use of newly acquired skills in the workplace.

The introduction and implementation of outreach training in Nigeria faced a number of challenges, including the following:

- Convincing World Bank and Federal Ministry of Water Resources (FMWR) officials that outreach training merited funding.
- Promotion of outreach training among the state water agencies and towns.
- Ensuring that the managers of state water agencies and town water providers understood the concept and how to access training, and would support the use of acquired skills in the workplace.
- Locating private sector experts.
- Ensuring quality while keeping costs low.
- Designing a simple and valid impact assessment instrument.

Major advantages of outreach training over traditional training programs are as follows:

- Collaboration among central, state, and local governments.
- In-house control of design, implementation, and assessment.
- Use of local private sector experts as technical advisors and trainers.
- Specific targeting of beneficiaries' identified needs.
- Access to training on demand.
- Cost-effectiveness.
- Delivery of practical training within the work environment of participants.

4.4.2. NGO Technical Assistance Providers

In the United States, NGOs provide TA to small rural communities to help them with water and sanitation services. Although the NGOs are themselves funded though the federal government loans and grants program, the impact that they have had on improved quality and sustainability of water and sanitation services, together with the high rates of cost recovery on loans to rural communities, goes some way to justifying this use of funds.

The Origins of the NGO TAP Model in the United States

The U.S. Department of Agriculture (USDA) developed and funded programs to provide TA to rural communities in the early 1970s, as part of the "War on Poverty." Because of the complexity of managing water systems, a model was developed that provided communities with TAPs, much as the cooperative agricultural extension operates for farmers.

The program was so successful that the USDA granted funding to establish National Water Demonstration Projects that replicated the process in sites around the United States. Individual sites became so numerous that the federal government asked them to incorporate into regional organizations to save on the administrative and management costs. The regional programs eventually incorporated to form the Rural Community Assistance Program, Inc. (RCAP).

Expansion of the NGO TAP Model in the United States

There are now two different organizations that provide TA to community water systems: RCAP and NRWA.[12] In theory, RCAP and NRWA provide different services to communities. NRWA is more technically oriented, tending to act as circuit riders (mobile technical officers) to work with water operators at the community level providing assistance on the operations and maintenance aspects of work. RCAP tends to work more with communities on planning, financing, administrative management, and oversight.

Additionally, the Environmental Protection Agency (EPA) provides training materials to communities on best practices on rules and regulations, and the National Environmental Training Center for Small Communities and the National Drinking Water Clearinghouse, both part of the National Environmental Services Center (NESC) at West Virginia University, produce training materials and demonstrations that aid small communities in water and wastewater management and delivery of services. In addition, university-based training institutes provide technical innovations and training materials for community water systems. Community water systems may additionally receive assistance in issues related to financing from the university-based Environmental Finance Center Network (EFCN).[13]

Tables 4.4 and 4.5 and Box 4.3 summarize the organizational structure of RCAP and the network of TA organizations that serve small systems.

12 For more information on these two institutions, see http://www.rcap.org for RCAP and http://www.nrwa.org for NRWA.
13 For more information on NESC, see http://www.nesc.wvu.edu; for EFCN see http://www.efcn.unm.edu.

Table 4.4 TA Organizations That Serve Small Systems

Institution	Function—TA
NRWA	Located in Duncan, Oklahoma, NRWA is a membership organization of small community water systems throughout the United States. NRWA has representation through affiliates in each state where they have field staff made up primarily of water engineers and system operators who work directly with small water system operators to improve operations and maintenance. They have contracts from the federal government (USDA) to carry out a circuit-rider program to troubleshoot water system problems through 30-minute visits. They have also had federal and state government contracts to work with small water systems on the development of source water assessment plans and on source water protection.
RCAP	The network has a central office in Washington, D.C., but is made up of institutions in six regions of the United States. RCAP works with rural communities and their water system operators helping to develop the capacity to improve water and sanitation access and management. TA providers help communities to organize to decide on and receive funding for installation of water, wastewater, or solid waste systems. TA providers also carry out management, operations, and administrative trainings and TA to improve services, management, and planning.

Table 4.5 Information Agencies That Serve Small Systems

Institution	Function—TA
EFCN	Located at universities around the United States with a rotating headquarters, EFCN institutions carry out research and pilot projects to help communities with financial and asset management of their water system. They have played a key role in helping develop models for financial and asset management and community consolidation to improve source water protection and cost savings through improved economies of scale.
NESC	Located at West Virginia University, NESC publishes magazines and articles on best practices and key issues for small water and sanitation systems. They carry out trainings programs that attempt to consolidate knowledge by other institutions (specifically those listed above) to improve water and sanitation services. They additionally manage a demonstration project for small wastewater management systems, and carry out pilot projects on small system water and wastewater projects to document new technologies and best management practices.

BOX 4.3 Organizational Structure of RCAP

RCAP is made up of six regional institutions, with field representation in 52 states and U.S. territories. This allows RCAP to have a presence throughout all states, but also to be able to coordinate nationally to achieve a given agenda.

TA providers work directly with rural communities and tend to live in the area where they primarily work. The scope of work is determined by program directors in each region that coordinate with the national office and with state directors. The national office advises the program directors about reporting requirements for national funders, as well as agreed-upon objectives, outputs, and tasks. They constantly work with federal government offices to collaborate on key objectives (both within the scope of existing grants and to expand the pool of projects on which RCAP is working). The state directors coordinate both with federal government representatives at the state level, for instance, with the state rural development office, and with the various pertinent state agencies, such as the state department of environment or department of health.

Summary of Challenges and Advantages

The TA model in the United States comes out of a commitment by the government to provide support for all rural communities that want water and wastewater. Many of the TA and information organizations that exist now are the result of a commitment implemented from the 1970s to improve water service for all in the United States. Currently, the TA model faces a number of challenges:

- Continued funding from the federal government to support NGOs, and for small water system infrastructure.
- Continued interest in allowing communities to maintain autonomy over local water systems—since TA providers must ultimately have community partners to work with.
- As the health, safety, and environmental regulations have become more sophisticated, community water systems are faced with ever more stringent requirements for compliance with these standards. With state departments of environment and health facing shrinking resources, NGO TA providers are increasingly relied on to work with communities to bring them into compliance.
- Significant regional differences, which carries over to eligibility requirements for communities in different parts of the country.

Key elements of the NGO TAP model include the following:

- Government often uses the TA provider and information providers to help communities achieve compliance with health, safety, or capacity standards.
- Often RCAP's role is to establish an oversight body that can apply for project financing, and help the community see the project through to completion. (It is notable that rural development small water and sanitation infrastructure loans have a default rate of one-tenth of 1 percent since the program started in the 1970s.)
- Increasingly, RCAP also assists the community to establish relationships with others in the region surrounding the community who are involved in water issues—both for goals such as source water protection and for regionalization (aggregation) to share costs across utilities and communities.
- Requests for assistance may come from communities directly or through referrals from private sector actors, state government, or national, state, or local offices of the federal government.
- RCAP's services to communities are free of charge. However, to receive advice, communities need to meet certain standards in terms of low-income status and population. Communities that exceed those required (for example, they are more wealthy or populous than the requirements for free TA) occasionally contract directly with a regional RCAP office for services.
- A key part of what RCAP does is to help communities to access financing.
- The TAP can play a big part in helping communities to advertise and assess contracting bids.
- TAPs can facilitate dispute resolution within the community, or the role of liaison between the community and outside groups.

4.4.3 Apex Project Management

Eesti Veevärk (Estonian Water Company) is an example of an apex institution serving municipalities throughout the Republic of Estonia. The objective was a division of responsibility where routine operations and maintenance would be managed by municipalities, but specialized expertise would be housed in Eesti Veevärk. Municipalities would jointly own Eesti Veevärk, but would buy professional services on terms that would permit Eesti Veevärk to attain financial and legal autonomy.

Historical Context
Eesti Veevärk, was established in 1993. The arrangement was intended to facilitate the external financial and TA that Estonia sought from the European Bank for Reconstruction and Development (EBRD), the Nordic Environment Finance Corporation (NEFCO), and other institutions and private companies.

Eesti Veevärk was established as a share corporation to allow it legal autonomy and give it clear rules for governance. It is owned by the individual municipalities (later transferred to the municipalities' water companies) that expect to require its professional services. Municipalities are free to purchase as many shares as are available.

Given the small size of the country, Eesti Veevärk was established with a headquarters office in Tallinn and without any branch offices.

Development
The rapid and successful creation of a professional apex institution in the relatively short period of five years was most of all because of the strong will of the Estonian government and of Eesti Veevärk to modernize. However, both were supported by substantial external TA. First, there was a four-year twinning program with the Oslo Water and Sewerage Works (OWSW) in Norway on a grant basis. The twinning arrangement was provided to Eesti Veevärk and participating municipalities and had a number of objectives: to develop Eesti Veevärk into an efficient and self-financing company; to ensure efficient implementation of externally financed investments; to improve the management, operation, and maintenance performance; to improve the planning, design, and construction of minor system expansions; and to improve the rehabilitation and repairs in the participating municipalities' waterworks.

Second, the TA program from the European Union (PHARE) was tapped. The main program was to improve accounting, billing, and revenue collection. Third, Eesti Veevärk benefited from having NEFCO as an external owner of shares and a lender, and from NEFCO's seat on its board. And fourth, through the EBRD financing program, Eesti Veevärk also received continuous technical advice on how to build up and apply its technical and financial know-how. The combined effect of the Norwegian support, the PHARE assistance, and the continuous advice from the NEFCO board member and from the EBRD financing was highly beneficial and was unusual in its breadth and scope.

Summary of Challenges and Advantages
An apex TA and project management institution can make its most important contribution in a stage of rapid expansion of a country's sector where the investment volume is substantial. Its contribution will be less in a mature sector where the utilities and operators need to invest less and where they have broadened their own level of skill and experience.

Some of the challenges that have emerged include the following:

- With the growing competition from private firms that supply equipment and spare parts for the water companies Eesti Veervärk chose to discontinue this business line.
- Similarly, with the institutional development of the individual water supply and wastewater companies, Eesti Veevärk elected to discontinue its training workshops, since their profitability was marginal at best.
- The three main remaining activities are now project management, technical services (particularly network rehabilitation) and preparing feasibility studies. In all three areas Eesti Veevärk faces

competition from private consulting companies, equipment suppliers, and even the water supply and wastewater companies themselves.
- Eesti Veevärk has not played a major role in facilitating partnerships and contracts between individual municipalities, since by doing so it would duplicate the TA capacity that it itself possesses.

Key elements of the model are as follows:

- The innovation of Eesti Veevärk is to clearly separate functions that small-town routine operators cannot perform cost-effectively and leave the rest to the municipal operators.
- In keeping with its objectives of functioning in accordance with the principles of a free market, Eesti Veevärk developed explicit contracts under which it is providing its services to individual municipalities.
- In return for its professional specialist services, Eesti Veevärk receives a remuneration intended to cover its entire costs of personnel and operations (there is no funding from either local or central government).
- The key concept of Eesti Veevärk is that it is cheaper and more feasible to gather and develop specialized administrative, financial, and technical expertise in an apex institution rather than attempt to build up such capacity within each municipality.
- A second concept required Eesti Veevärk to serve as a financial apex borrower through which external financing could be channeled to the municipal borrowers.
- A third was to use Eesti Veevärk as an economical way of buying spare parts and equipment on behalf of its municipal owners to obtain larger quantities and better prices.

4.4.4. Franchising and Regional Development Agents

Under a franchise arrangement, a local independent operator (franchisee) receives a "branded" business concept (or package of specialist services) from a franchisor in exchange for a fee—effectively making the routine operator to a full service operator. The fees are likely to include an upfront charge (for training) and ongoing payments as a percentage of the operator's revenues. The driving force behind a pure form of franchise arrangement is the franchisor's reputational risk (the brand name), and its motive to ensure the ongoing quality of services provided by the franchisee. Three variations of the franchise arrangement are as follows:

- Master franchise: The franchisor contracts with a master franchisee who then sells the branded business concept to subunit franchisees, which are otherwise independent of the master franchisee. The master franchisee collects initial fees and ongoing payments from subunit franchisees, and a portion is passed on to the franchisor. It is a three-tiered structure.
- Area development franchises: A simplified two-tiered structure. An area development franchisee purchases the branded business concept from the franchisor, and then forms its own subunits, which are part of its own organization.
- Regional development agents (discussed in Volume 2 materials): This is a hybrid form of franchising, which perhaps hold the most potential in the town water sector. The regional development agent is contracted by the franchisor to act as an agent on its behalf, to develop a specified area by providing support services to franchisees. The franchisees contract directly with the franchisor. Franchisees pay their fees directly to the franchisor, with a commission or fee passed on to the regional development agent.

Table 4.6 summarizes the specialist support cast studies in terms of drivers, financing, organization and potential barriers to replication

Table 4.6 Summary of Specialist Support Case Studies

	Outreach Training Systems—Nigeria	NGO TAPs—United States	Apex Project Management—Estonia	Franchising	Regional Associations—Uganda
Drivers	• To provide economical, practical, on-the-job training within the trainees' own workplace, using local private sector experts. • Initially set up by the donor, but in principle beneficiaries contact a help desk.	• TA protects federal investments in community infrastructure. • Ensure compliance with health and safety standards (review, train, disseminate). • Requests for TA may come directly from communities or from local government, or through referrals from the state regulatory agency, the offices of the Federal Government (for example, USDA Rural Development), local engineering firms, and social justice or conservation groups.	• Investment agent for a given municipality—responsible for project planning, design, and implementation, and transferring assets on completion. • Initially promoted by individual municipalities and funding agencies.	• Trademark (quality stamp) helps the operator in bidding for contracts and securing financing, and changes the public perception of service provision. • Driven by commercial interests of franchisor, and water board or operator identifying the need for support and/or requiring it to access financing.	• Umbrella financial and technical support to improve management and maintenance of small schemes. • Donor initiatives to protect investments, together with stakeholder consultation.
Financing	• 60 percent by FMWR (that is, the federal government's own funds), and 40 percent by project loan funds (World Bank). • Creation and equipping of the help desk office was directly paid for by the FMWR. • FMWR withheld 5 percent of the project funds allocated to each state to create a dedicated fund.	• Financed by (a) federal government as a percentage of loans and grants allocated for community infrastructure, (b) state level grants, or (c) regional grants through federal agencies or foundations. • NGOs officially compete for funding. • RCAP's services to communities are free, but contingent on eligibility criteria. • NRWA is financed through membership fees.	• Municipalities buy services at competitive rates. • Project financing from donors (EBRD and NEFCO).	• Franchise fee: – upfront charges cover the costs of training, and – ongoing fees as a percentage of revenues. • Upfront charges could be subsidized.	• Initial project funding from donor (Federal Republic of Austria). • Ongoing costs to be financed from membership fees.
Organization	• Help desk housed within the Nigeria Water Resources Institute with 5 staff. • Town requests transmitted through the state water agency human resources officer. • Training in the workplace.	• Tripartite support: Federal loans and grants (EPA, USDA, HHS); EPA and NESC training materials; RCAP, EFCN, and NRWA TA. • RCAP robust apex structure: national head office, regional program directors, state directors, and field workers.	• Share corporation (municipal owners). • Only one office—catering to a small country.	• Independent routine operators, supported by a higher-level franchisor.	• General assembly (two members from each scheme); seven member executive committee; day-to-day management team.
Potential barriers	• Lack of stakeholder support for the model. • Locating experts.	• Mostly grant based. • Contract awards (programs) for TA may be politically determined	• Less important in mature, decentralized sector. • Top-down planning.	• Creates service monopolies.	• Needs external financing to start up. • May not draw in external professionals.

4.5 Institutional Models—Local Enterprise Development, Market Consolidation, and Aggregation

The approach to planning described in Chapter 3 is a continuous process of investment and management decision making by the town. The typical institutional arrangement is a ROB, a COB and a system manager with hired staff or a contracted private operator. As discussed above, the town secures specialist services support to augment that available from its contracted operator or hired staff. Four basic institutional models are described below. All can be adapted to local conditions, but field experience shows that they can also be implemented incrementally, reflecting changing conditions and stakeholder preferences.

- Small remote towns can probably only afford a routine operator (one capable of routine operations) and limited supplemental specialist services provided through one of the specialist support options described above. Successful models of this kind treat water and sanitation service provision as a business or "**local enterprise**."
- Successful routine operators may develop their business by expanding to other towns as a full-service operator (one capable of routine and specialist services) and operate either numerous small town supplies through individual contracts, or larger town supplies. This is called "**market consolidation**."
- Economies of scale can also be achieved by towns grouping together as one administrative unit to employ skilled technical and managerial staff or to secure the services of a full-service operator. This is called "**aggregation**."
- Larger towns have the resource base to establish a full service operator with a complete set of in-house skills. The threshold at which senior management and professionals can be supported as full time staff is likely to be above 50,000 people or 5,000 connections (with country and regional differences in professional capacity). This is akin to the "**conventional urban utility**" approach.

4.5.1 Local Enterprise Development

The local enterprise model represents the independent approach of towns in the provision of water and sanitation services. The ability to match investments to local conditions, consumer preferences and willingness to pay, and to depoliticize tariffs, are the key drivers for promotion of decentralized approaches. The approach also builds opportunities for local professionals in the water sector. Figure 4.3 is a graphic presentation of the local enterprise model.

A variation on this model is that individual towns have independent corporate oversight bodies, but organize specialist services collectively, for example, a Regional Association, or Apex Project Management.

Figure 4.3 Model One: Local Enterprise [MSOffice5]

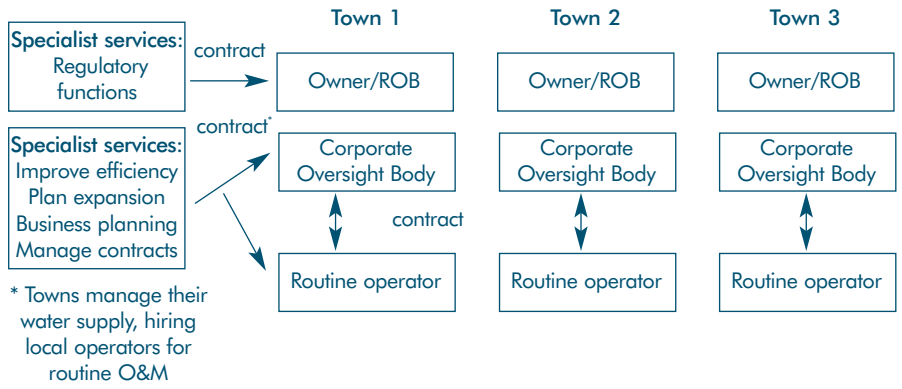
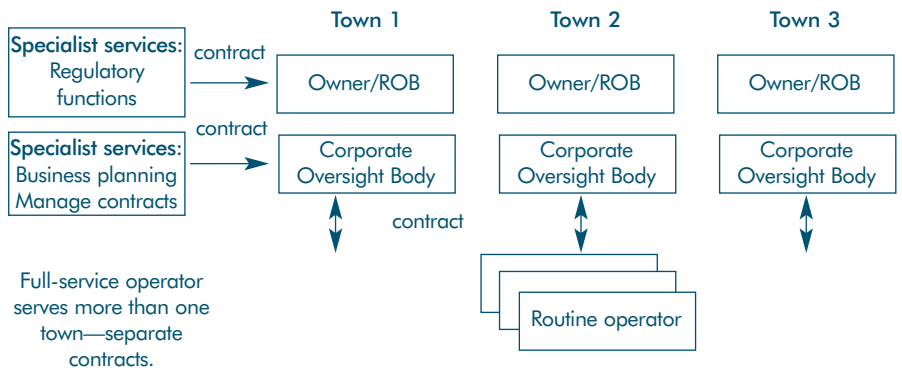


Figure 4.4 Model Two: Independent Towns with a Full-Service Operator



4.5.2 Market Consolidation

Market consolidation is the process whereby successful operators are able to grow their business by competing for and winning contracts with more towns. It may be that a routine operator builds sufficient capacity through experience and over time becomes a full-service operator able to provide services to a number of towns under individual contracts signed with each town authority. The large number of individual contracts provides the full-service operator economies of scale (that is, an adequate revenue base to support the kind of professional staff required to meet all of the requirements of these towns. Figure 4.4 below is a graphic presentation of market consolidation.

One example of market consolidation is France where three full-service operators meet the needs of the majority of French towns or municipalities through contracts that are individually bid and awarded on a periodic basis. Another example, described in companion report C4, "A Comparative Study of Market Consolidation and Aggregation in Town WSS Service Provision in Colombia" by Mariela García V., is summarized in Case Study 4 below.

The key to a successful market consolidation approach is the ability to group together enough individual contracts to allow the full-service operator to build a business that can afford the technical and managerial staff competences required. Since it may not always be possible to group together enough contracts to allow market consolidation from the start, this approach is likely to evolve over time. Towns may also be grouped together during the contract bidding process in order to achieve economies of scale, but enter into separate (town-by-town) contracts with the operator.

4.5.3 Aggregation

As an alternative to specialists providing support to individual towns and their local service providers, or to full-service operators serving a number of towns through individual contracts, towns can band together to enter into a single contract with a full-service operator or employ their own full team of skilled technical and managerial staff. This aggregation approach is shown graphically in Figure 4.5.

BOX 4.4 Case Study 4—Market Consolidation among Local Private Companies in Antioquia, Colombia

In the department of Antioquia, Colombia, the state-owned company Acuantioquia was liquidated in 1996, and is in the process of transferring ownership of small town water systems to the municipalities. The bidding process led to eight local private companies (PYMES) providing services in 34 small towns, under 15-year renewable contracts. The companies comprise local building contractors, consultants, and former Acuantioquia engineers. The process illustrates many of the challenges that small start-up companies face in establishing themselves in the town water market and then growing their business by competing for further contracts with other towns. Over time a process of market consolidation is expected to take place, with the more successful companies winning more contracts or taking over from less successful companies.

The companies can be described as "full-service operators" in that they carry out planning, design, implementation, and management and operation functions, within the limits of the small town system needs. Almost all the companies have a central office and branch offices in the small towns. The local offices do all the operational work, system business planning, manage relations with the town or community, billing and collection, and reporting to the central office. The central office coordinates administrative and operational activities, procurement, staff employment, and organization of specialist support services as needed. Specialist support services include training staff, water quality tests, legal advice, software development, external auditing, meter reading, billing, and help with replacement and expansion.

The main challenges faced by the companies have included establishing themselves as creditworthy entities with financial institutions; initial skepticism from local communities and authorities; achieving financial sustainability, including tariffs appropriate to small town needs; training professional staff; and updating obsolete systems (more than 30 years old, with lists of users 10 years out of date). Most systems need some government financing to help with major rehabilitation works, which would then allow the companies to run on a sustainable financial basis, without needing to raise tariffs too high.

An important feature has been the relationship the companies have with local government and the communities. The companies have generally been able to use a process of open dialogue to find solutions that are acceptable to the community—rather than resorting to strict contractual obligations or arbitration. Companies also work with local government to coordinate with municipal development plans, and help with planning for new projects. For communication with customers, the companies use a number of means: home visits; information bulletins; educational messages on the back of bills; public announcements by megaphone to inform the public of upcoming events, such as suspension of service; and information videos.[14]

Where towns aggregate to form a single COB, there is also an option to pool assets in an asset holding company. Creation of such a company usually occurs after years of experience with a single ROB.

Aggregated structures can vary widely in scale, scope, and process. While aggregation is often the result of demand from towns, market consolidation is often driven by supply-side considerations (operator expands his or her business). Table 4.7 compares these three parameters for aggregation and market consolidation.

14 Garcia: A comparative study of market consolidation and aggregation in town WSS service provision in Colombia.

Figure 4.5 Model Three: Aggregated Towns with Full-Service Operator

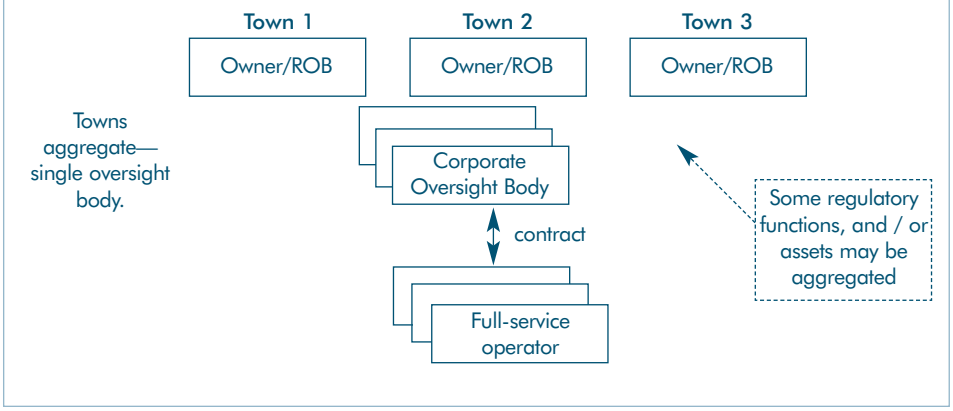


Table 4.7 Market Consolidation and Aggregation Compared

	Market consolidation—supply side	**Aggregation—demand side**
Scale	Operators expand their business into greater numbers of smaller towns and into larger towns. This growth can take place over almost any geographical range—local, national, or international.	Aggregated structures group two or more municipalities, locally or across a broader regional or national territory.
Scope	The range of routine and specialist services provided will depend on the capacity of the operator, or on whether the operator chooses to outsource functions to specialist service providers in order to improve effectiveness or efficiency. This flexibility is a strength of market-driven models. Market consolidation with regard to operators does not encompass regulatory aspects; it applies only to operating functions. However, many aspects of regulation can be handled by umbrella specialist service providers, such as a help desk disseminating standards and guidelines or assisting in benchmarking exercises, for example, the role of NGO TA in the United States.	Aggregated structures can provide a single service (for example, bulk water supply) or all services, from raw water abstraction to sewage treatment. For each of these services, they may carry out specific functions only (such as procurement) or be responsible for all functions, from operations and maintenance to investment and financing. Aggregation may encompass regulatory aspects. When towns group operating functions they may also choose to group some regulatory functions under a common ROB. This is done in France with the syndicate structure, and was the case in Scotland at the national level. As with operating functions, not all regulatory functions need to be aggregated. Some may be better organized at the local level or outsourced.
Process	The process is market driven. It may take place over time as the operator competes for and wins contracts or merges with other operators, or it may be that towns are grouped from the beginning for contract bidding.	Municipalities may form aggregated structures voluntarily based on mutual interests or alternatively, a higher level of government, driven by the overall public interest, may impose or create incentives for the aggregation process. The aggregation may be temporary (for a short-term specific purpose) or permanent.

The advantages of aggregation and market consolidation relate to economies of scale and professional capacity. Large group service providers offer "one-stop shopping" for complete water supply services to a number of towns. They are better placed to handle rapid urbanization and growth, including industrial and commercial interests and are also generally better able to raise service levels while riding out periods of negative cash flow in individual towns.

Aggregation is a particularly advantageous model for towns seeking to access financing for new investments, especially large facilities like reservoirs and treatment works that are shared between towns. The transfer of oversight responsibilities to an authority that can provide oversight of the aggregated functions (for example, at district or regional level) can provide other benefits, such as reducing the cost of oversight in individual towns, improving contract management capacity, and adhering to environmental standards—including abstraction and pollution controls. Bulk supply by national or regional utilities is often linked to regional water resources issues, such as water scarcity in some areas (for example, ONEP in Morocco). Bulk supply is also an important option at local levels through district or multivillage type schemes.

Once service responsibility is aggregated, individual towns may lose direct control over their investment and management decisions. One risk is that a town's particular priorities may be lost or dropped when collective decision making is undertaken, and this can lead to high transaction costs. In addition if revenues and investments are not ring-fenced in individual towns, conflicts may arise (for example, when high overheads associated with larger administrative units need to be recovered from the aggregated towns, when customers in large towns object to subsidizing smaller towns, while customers in small towns complain that the operator is limiting investments and services in order to minimize its financial losses). Aggregation may also result in a loss in competitiveness, since there are fewer individual contracts and less opportunity for small contractors to grow their business.

Aggregation may be mandated (as in European countries such as England and Wales, the Netherlands, and Italy), or the government may provide financial incentives (for example, in Hungary where the grant-to-loan ratio is improved by 10 percent for towns that aggregate). Examples of these forms of aggregation include the following:[15]

Voluntary aggregation: driven by local governments

- France: High levels of decentralization, municipal responsibility for water services, and a long experience in the formation of aggregated structures for public services. The process of aggregation is largely voluntary. The legal framework defines aggregation forms and rules; and the representative of central government (regulatory oversight) can mandate inclusion of certain towns.
- Philippines: Aggregation is voluntary and tends to be temporary. Private sector participation has often been a key driver for aggregation. Fragmented water rights have created obstacles to further aggregation.

With incentives provided by a higher level of government

- Hungary: Decentralization of entities aggregated during the communist period has led to the creation of new entities for expanding service in rural areas. The central government has provided financial incentives, including favorable lending terms for aggregated entities.
- Brazil: Financial incentives (access to finance) were provided during PLANASA era for creation of state water companies. Following decentralization of PLANASA structures, the reaggregation process failed when incentives proved insufficient (as in Mato Grosso). A similar reaggregation process was deemed more successful when linked to private sector participation (as in Dos Lagos).

Mandated by an upper level of government, based on public interest arguments

- Italy: The central law (Galli) mandated aggregation, however, implementation was left to local governments (voluntary) and was much slower than anticipated.

15 ERM: Models of Aggregation for Water and Sanitation Provision.

- Netherlands: Voluntary aggregation of water supply companies was limited. Provincial authorities were given powers to introduce binding reorganization plans, but in the event of resistance, the process was often slow.
- England and Wales: Central government created regional water service providers based on river basin boundaries; the process was quick (nine months).

A fuller discussion of the aggregation process, its benefits, and costs, can be found in a related report also financed by BNWP: Models of Aggregation for Water and Sanitation Provision by ERM. The key findings are as follows:

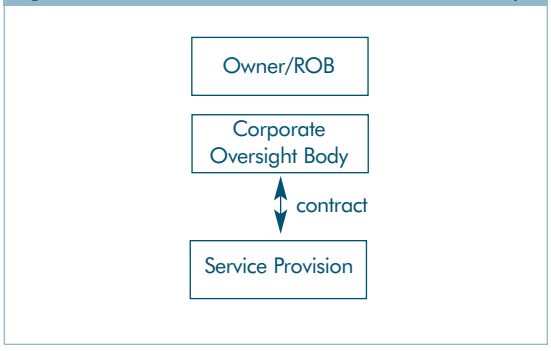
- Aggregation provides opportunities for improved efficiency of service delivery through economies of scale and scope.
- Aggregation facilitates professional capacity in service providers.
- Cost sharing through aggregation can mitigate the impact of high cost systems.
- Central governments can assist, mandate, or provide incentives for the aggregation process.
- Aggregation has implications for local democracy.
- Aggregation can take many forms and is not static over time.
- Aggregation can take place without transfer of asset ownership.
- Aggregation can fail if benefits are not clearly understood and there is no adequate process in place to implement it; a due process backed by political will is key to the success of the aggregation initiative.
- Aggregation of service provision often creates the requirement to reform mechanisms for oversight of the service provider.
- When linking aggregation and private sector participation, care should be taken not to overemphasize the need for a larger revenue base to attract operators.

In addition to the main drivers and constraints for aggregation, the report proposes some initial guidelines on the due process to be followed to introduce aggregation, and a checklist of key issues that forms the basis for articles of association, including entry and exit conditions, rules of governance and decision-making process, issues related to the transfer of asset ownership (including water rights), issues related to the transfer of staff; and issues related to the harmonization of service levels and tariffs.

4.5.4 Conventional Urban Utility

A town with upwards of 50,000 inhabitants or 5,000 connections is likely to have an economic base that will support the senior management and professional skills needed to manage water services efficiently, or provide incentives for a large private operator to take an interest. This model may also be relevant when towns aggregate and have a common COB. This model is shown graphically in Figure 4.6.

Figure 4.6 Model Four: Conventional Urban Utility



4.6 Review of Professional Support Options

Figure 4.7 is a graphical representation and brief explanatory notes of professional support options.

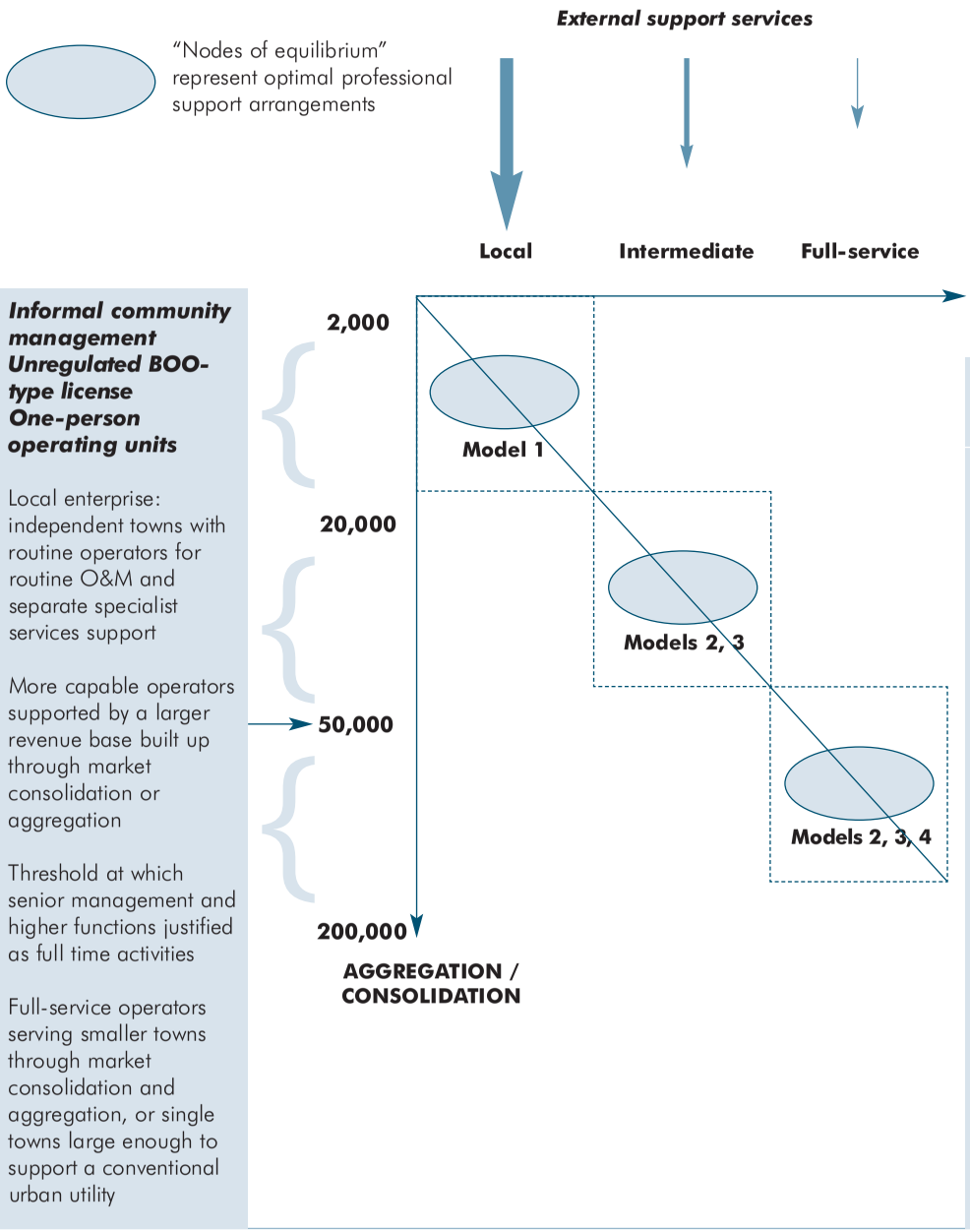
- The horizontal axis shows increasing size and capability of service providers from routine operators who provide routine tasks only to national or international operators who provide a full range of support services.
- The vertical axis shows increasing sizes of towns or the demand base from small (2,000–20,000) to medium-size (20,000–50,000) to large (50,000–200,000). A process of market consolidation or aggregation would move from top to bottom.

Examples of the four models described in section 4.5 can be identified (oval shapes) on the diagram:

- In the top left, a small town (2,000–20,000) is served by a small, routine operator, with specialist services from external technical and financial advisors. Model One is associated with this zone (for example, small towns in Uganda—Case Study 3).
- Moving diagonally from top left to bottom right, an intermediate level service provider could serve consolidated or aggregated groups of towns. Models Two and Three can fit this zone (for example, for aggregated approaches, the large private operators in France serving groups of towns many with less than 2,000 inhabitants, and the NWSC in Uganda serving mostly medium-size towns—see Case Study 3 (Box 2.2); or for market consolidation, the activities of private operators in Antioquia, Colombia—see Case Study 4 (Box 4.4).
- Continuing down and to the right, a single large town may support a conventional urban utility (for example, the Town Urban Water and Sewerage Authority in Arusha, Tanzania). Both aggregation and market consolidation can apply to this zone as well, so that Models Two, Three, and Four all apply.

Examples can be found to cover most areas above the diagonal. Options below the diagonal are unlikely, such as a small routine operator serving a large town (although several small operators may be active in serving different parts of a large town—for example, the Aguateros working in periurban areas in Paraguay).

Figure 4.7 Professional Support—Aggregation



Informal community management
Unregulated BOO-type license
One-person operating units

Local enterprise: independent towns with routine operators for routine O&M and separate specialist services support

More capable operators supported by a larger revenue base built up through market consolidation or aggregation

Threshold at which senior management and higher functions justified as full time activities

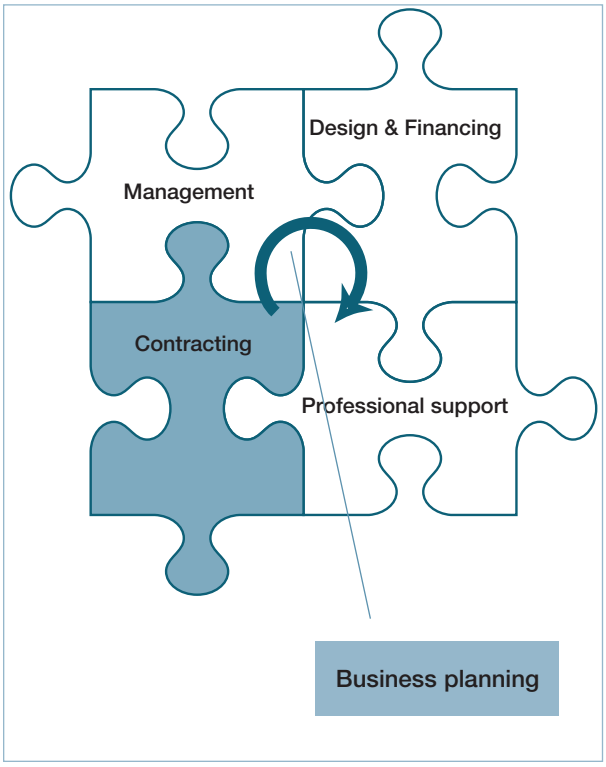
Full-service operators serving smaller towns through market consolidation and aggregation, or single towns large enough to support a conventional urban utility

Some examples referred to in the report...

Country	Sizes of towns	Contracting arrangements
Laos	<100 conn.	Small-scale private company. Local BOO.
Paraguay (aguateros)	<1,000 conn.	Water association. (a) design-build, (b) 10-year concession with the same contractor.
Colombia	2,000–12,000	Local government. (a) design, (b) constructor-operator 10-year concession.
Ghana (PPIAF)	10,000	Water Board. BOO or management contract.
Philippines	5,000–20,000	Local government. DBL (15 years). Towns grouped for procurement.
Uganda (small towns)	4,000–30,000	Water Board. Two-year management contract. Towns grouped for procurement.
Uganda (NWSC)	20,000–110,000	National utility. Unit area "delegated" management contracts.
Tanzania (Arusha)	17,000 conn. 300,000	Town Urban Water and Sewerage Authority (Arusha).

Key Points in Chapter 5

- Contracts are linked to business plans, which identify services required and expected levels of performance to achieve business objectives, and the process of business planning helps build capabilities to understand and manage contracts.
- Contracts should be kept short (two to five years), so that adjustments can be made, for example, to performance standards and incentive compensation, when business plans are updated, and to allow for the delegation of increasing responsibility to the operator.
- In order to allow for this level of flexibility in terms of increasing delegation of responsibility and the terms of compensation, it is important that the "initial" contract has a sound *legal basis* in which the rights and obligations of each party (the COB and the operator) are clearly set out, including a clearly identified *mechanism for contractual adjustments*.
- Contracts also provide continuity in professional support; operational functions not provided in-house or by the operator must be secured from specialist services providers.
- Contracts can be used to underpin good governance in the following ways:
  - **Providing autonomy** for day-to-day operational decisions (no political interference), including hiring or firing staff, budget management, procurement.
  - Clarifying **roles and responsibilities** in order to ensure transparency and accountability.
  - **Creating incentives** for good performance, including performance-based remuneration, rewards and bonuses, and penalties and sanctions.
  - Defining operator **performance targets** that are linked to the business plan through an appropriate incentive structure.
  - Specifying coverage targets to achieve social objectives set by towns, such as service to all.
- In small towns, with limited contracting experience and inexperienced small operators that may initially require significant TA to build their capacity, the COB may contract support services for the benefit of the operator.
- To properly monitor the performance of external contractors, town administrators need to learn the basics of water supply and sanitation service management through initial training courses and appropriate continuing education opportunities. They may engage consultants or advisors to assist in this task.



5 CONTRACTING

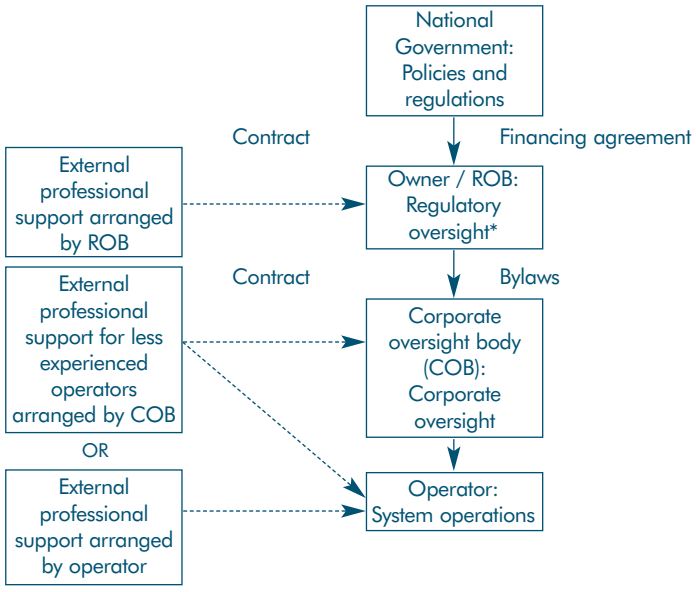
5.1 Contractual Framework

This chapter focuses on contractual relationships between a COB and an operator or specialist service providers to secure the operational functions described in Chapter 4. The emphasis is on improving operational efficiency and planning for expansion.

Figure 5.1 shows a simple but sound contractual framework. Contracts between a ROB and specialists are not described, but would be similar in form and content to those described below. As a matter of principle, specialist support should always be contracted separately by the ROB and the COB.

To recap from Chapter 4, towns may seek to secure technical and financial support services from (a) consulting engineers and financial advisors on a retainer basis through service contracts; (b) a help desk and outreach training program; (c) umbrella organizations, such as NGO TAPs; (d) private firms, for example, through a franchise or joint venture arrangement; or (e) directly from larger utilities to smaller communities. Specialist support may be organized directly by individual towns, or collectively through regional associations or apex project management.

Figure 5.1 Stakeholder Contractual Framework (water board management model)



* At the local level, regulatory responsibility often lies within the same town administration that owns the water service. While responsibility for regulation and operations is often handled by different departments within a town, this may not provide sufficient autonomy to the regulator.

5.2 Developing Operational Contracts from Business Plans

Contracts are linked to business plans (discussed in Chapter 6), and the process of business planning helps build capabilities to understand and manage contracts. During the business planning process, the local decision makers will have already identified the current problems that confront them and prioritized the interventions.[16] They will also have considered whether they want to build capacity in-house or whether to outsource, and who can provide the services. Finally, they will have prepared investment, operation, and financing plans (a business plan), and they will be ready to prepare contracts and to monitor performance.

In general, contracts should be kept short (2–5 years) so that adjustments can be made, for example, to performance standards and incentive compensation, when business plans are updated, and to allow for the delegation of increasing responsibility to the operator, for example, when moving from a fixed fee per month plus bonuses to achieve specified performance targets, to a share of operating cash flows.

In order to allow for this level of flexibility in increasing delegation of responsibility and the terms of compensation, it is important that the "initial" contract has a sound legal basis in which the rights and obligations of each party (the COB and the operator) are clearly set out, including a clearly identified mechanism for contractual adjustments.

This approach to contracting is based on five simple "principles of contracting":

Principle 1: A contract is an integral part of the business planning process (business plan), and business planning is an iterative learning process, not a one-time event.

Principle 2: Over time, the quality of information available, the skill and experience of the operator or specialist service provider, and the level of communication and trust between the contracting parties should all improve, allowing increasing levels of responsibility to be delegated.

Principle 3: Where appropriate, the contract may be tied to the business plan through a performance standards chart and an incentive compensation chart, which specify the operational functions required and the expected level of performance.

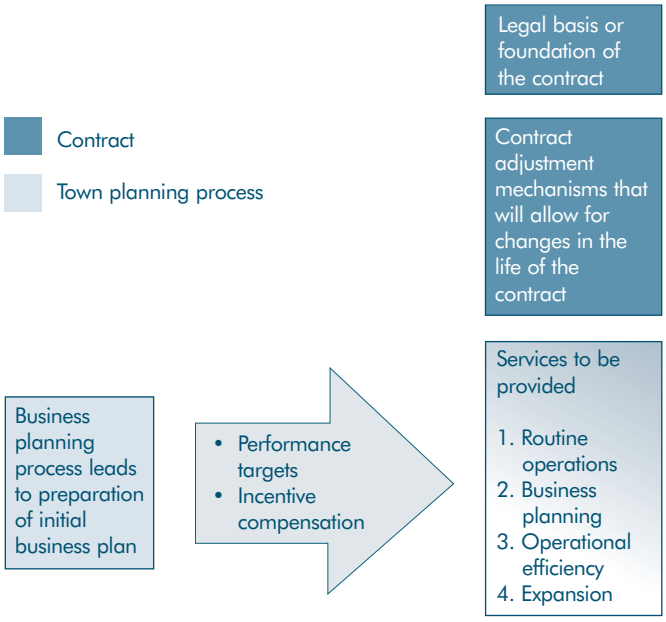
Principle 4: The method of payment adopted should reflect the level of responsibility (risk) delegated and can be expected to change over time, for example, from a fee per month to a share of operating cash flows.

Principle 5: Since business plans (performance targets) and levels of responsibility (risk) change over time, the contract must be robust with a sound legal foundation and a clearly identified mechanism for contractual adjustments.

These five principles are captured graphically in Figure 5.2.

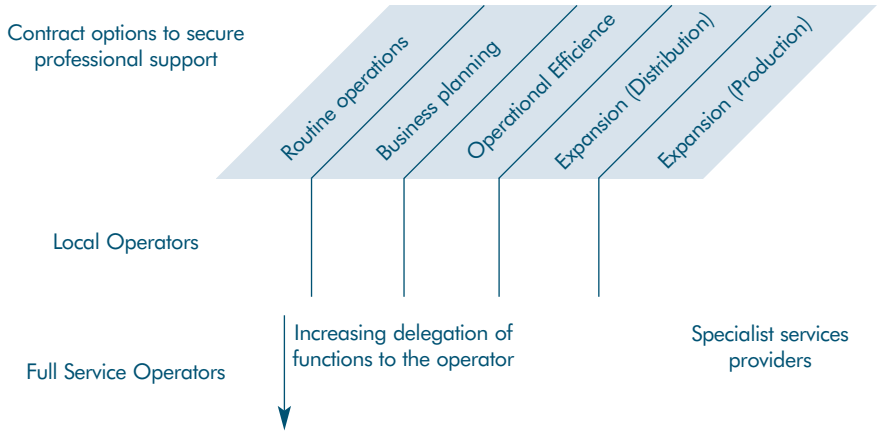
16 The planning process is not a one-time event, but rather is continually repeated in order to identify current problems and prepare updated plans.

Figure 5.2 The Business Planning Process and the Contract



The bottom line is that somehow all the key operational functions (Chapter 4) must be secured if the water supply operation is to be successful, and contracts can be used to formalize roles and responsibilities (in-house under a performance contract or training program, or outsourced under an operator or specialist service provider contract). Over time increasing responsibilities may be delegated to the operator as shown graphically in Figure 5.3.

Figure 5.3 Operational Functions Delegated to the Operator



5.3 A Note on Potential Operators

The "operator" could be a public or private entity. At the start of the business planning process, different towns will be at different stages of reform. They may have a system manager and operations staff under local government salaries reporting to a water committee within the municipal council, or in some cases the town may already have established an autonomous town water board, or even contracted a local private operator, and the operator may even be interested in investing its own funds in expansion projects.

In most towns, however, it is probable that an advisor will assist the town with the initial business planning process and preparation of a business plan, and in facilitating the contracting process.

The types of contracts that are likely to be of interest will therefore reflect the current situation in the town. In addition to directly contracting with an established operator through a competitive bidding process, other common approaches are likely to be more evolutionary in nature, such as the following:

- An internal performance contract: This is a first step when immediate institutional reform is difficult. The system manager and operations staff are put under an internal performance contract, with separate arrangements made for ongoing specialist services support.
- Introduction of a new manager: As an alternative, the town may contract a professional manager, who brings in some professional staff, and/or to whom existing municipal staff are accountable. Existing municipal staff can remain on the municipal pay role, but may receive some incentive-based payments tied to operational performance. Over time, as confidence of success builds, municipal staff may transfer to the new "operator."
- Expanding the role and responsibilities of an existing specialist services provider: A third option is for an existing specialist services provider (for example, contracted to provide billing and customer information services, or management information systems) to be delegated further responsibilities, eventually taking over as a new "operator."

5.4 Methods of Remuneration for Operators and Specialist Service Providers

A contract should typically have an agreed term in the first instance, for example, two to five years. Extension to this period is likely to be by "mutual agreement," with a maximum extension period specified. This increases the likelihood that the operator will have incentives to perform throughout the life of the contract and remain proactive in seeking improvements. The remuneration scheme can include elements based on the following:

- A fee-for-service (F).
- Reimbursables up to a fixed ceiling for emergency repairs and minor works (R).
- Performance-based bonuses (B).
- Penalties (P).
- A rate of return on investment (internal rate of return or IRR).

In total, remuneration is a function of (F, R, B, P, IRR).

The value of the elements F, R, B, P, and IRR will depend on the operational functions to be provided by the operator and the agreed performance criteria. In most cases, the remuneration package will include some, but not all, the following elements:

- A fee for service (for example, a fixed fee per month) represents a base fee to be paid regardless of performance. This method is appropriate to ensure the operator receives minimum compensation, often related to the provision of specified staff, or when there is little scope for adjustment in the quality of the service provided. It may also be used for a basic works contract (construction of facilities).
- Reimbursables up to a fixed ceiling allow the operator some discretion in minor repairs or maintenance work without delays in authorizing the release of funds. This concept can be extended to principles of output based financing for works financed by the operator who is then compensated on the basis of results (for example, in the World Bank–assisted small towns pilot project in Paraguay, operators were paid a one-time subsidy of US$150 per connection—see Case Study 5 (Box 5.2); in Cambodia the payment per connection of US$375 is actually greater than the connection cost and is meant to cover a portion of the overall investment cost).
- Performance-based payments can take many forms. The basic method is to make payments (bonuses) for achieving a specified level of performance or a specified output (this is the basis for preparing a performance standards chart and an incentive compensation chart). However, it is recommended that this be combined with one of the following methods, to ensure that incentive compensation is cumulative and that continued improvement over the baseline continues to attract reward: (a) a share of improved operating cash flows (for example, the proposed Jordan northern governorates management contract is understood to have adopted this method), (b) a share of user fees through an operator tariff per unit of water sold (this is the basic model of the affermage widely used by small municipalities in France), or (c) a share of profit (for example, Nzega town in Tanzania—see Box 5.1 below). The key characteristics in a performance-based arrangement are as follows:

  – The basis should be easily and unambiguously measurable (so cash measures are to be preferred to accruals measures, such as profit—but see the example of Nzega in Box 5.1).
  – It should be easily understood.
  – It should not provide a confusing or perverse incentive (for example, reducing operating expenses to improve cash flows but at the expense of pressure).

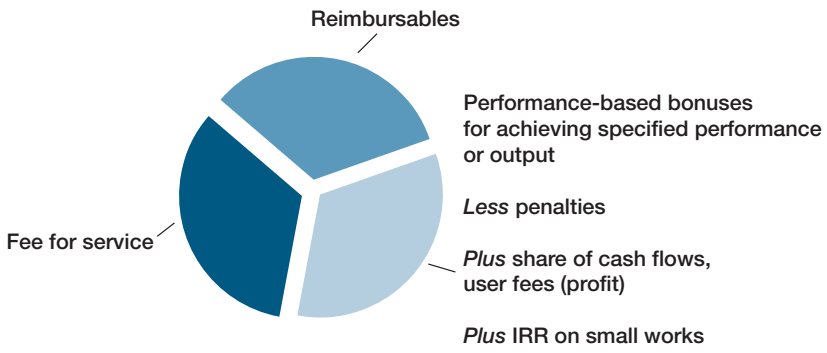
- Penalties are in general not a good way to motivate operators, not least because in practice the COB will be loath to engage in "punishment" tactics. If used, penalties are based on anything deemed important, but not captured in financial compensation, for example, failure to meet specified customer service standards.
- It is worth considering the possibility of using an IRR based payment to encourage an operator to invest in small works. Where major rehabilitation or new developments relating to production, transmission, and storage infrastructure are grant based, small investments in distribution can make large differences to revenues and profit. Examples are when the operator commits to financing a small but critical system component, such as a backup generator or new storage tank, or if the operator finances expansion of the system into an unserved fringe area.

The example of Nzega highlights the advantages of sharing revenue risks and rewards (through any of the methods identified above relating to a share of cash flows, user fees, or profit) in improving operational performance (although a word of caution is due: if contractual arrangements do not place a limit on the operator's return, this will escalate as the system expands). The potential sources of remuneration for operators are shown below in Figure 5.4.

BOX 5.1 An Example of Share of Profit in Nzega Town, Tanzania

In the small town of Nzega in Tanzania, the water board has contracted a private operator (WEDECO), who is supervised by the manager (representing the water board). Eleven percent of revenues are set aside in a capital fund. Operating costs, including staff salaries, are then paid. The water board and the operator then share the profit 70:30. The operator makes a profit of about US$1,000 a month. Improvements that are noticeable in Nzega relate to metering, number of connections, leakage control, management of illegal connections, increase in hours of service, quantity and quality of water, and coverage. The operator has begun to make limited investments, for example, in a backup generator set. (Although this arrangement has worked well in Nzega, the use of profit as the basis for reward has many pitfalls. As discussed, sharing improved operating cash flows may be preferred to profit.)

Figure 5.4 Potential Sources of Remuneration for Operators (typically a combination of two or more elements)



5.5 Summary of the Town Water Supply Contract Process

The following points are emphasized:

- The business planning process helps to identify problems and solutions and prioritize interventions. This is the basis for making decisions about what "operational functions" will be delegated.
- Other important contract objectives to consider include access to management expertise, tariff discipline, and access to private capital.
- The most basic method of payment will be a fee for service, reimbursables up to a fixed ceiling (which can include an output based component), plus bonuses for achieving specified levels of performance or outcomes.
- Performance-based contracts can be enhanced by including, or evolving toward, a facility to share improved operating cash flows or paying an operator tariff (some proportion of user fees). This ensures that incentive compensation is cumulative, and continued improvement over the baseline continues to attract reward.
  - The basis for performance should be easily and unambiguously measurable, and so sharing improved operating cash flows is preferred to sharing profit.

  - Where demand (revenue streams) are unpredictable, an operator tariff (some proportion of user fees) is to be preferred to a fixed lease fee.
- Performance-specified contracts require a performance standards chart that clearly specifies the operational functions to be delegated to the operator, and the performance standards expected over time, together with an incentive compensation chart that specifies the bonuses and penalties applicable.
- Finally, the performance standards chart, the incentive compensation chart, and the method of payment can be annexed to a contract that includes the necessary legal clauses and specified the method of contract adjustment (in Volume 2, Modules 3.1 and 3.2 provide sample charts).

Figure 5.5 presents a simple decision tree to help guide the preparation of contracts.

BOX 5.2 Case Study 5—The "Minimum Subsidy Concession" in Paraguay

Under the *Fourth Rural Water Supply and Sanitation Project* in Paraguay, the lead sector agency, SENASA, is piloting "a minimum subsidy concession" approach to promote private sector involvement in four small towns.

Private contractor-operators have been selected through a competitive bidding process on the basis of the "minimum connection charge" for users wishing to connect to the network (US$50–67 depending on community). Service standards, tariffs, and the subsidy that SENASA will provide (US$150 per connection) are defined in the concession contract. Except for the subsidy on connection costs, the contractor-operator meets all investment costs.

Three contracts govern the relationship between SENASA, the contractor-operator and the communities (autonomous water associations or *juntas de saneamiento*):

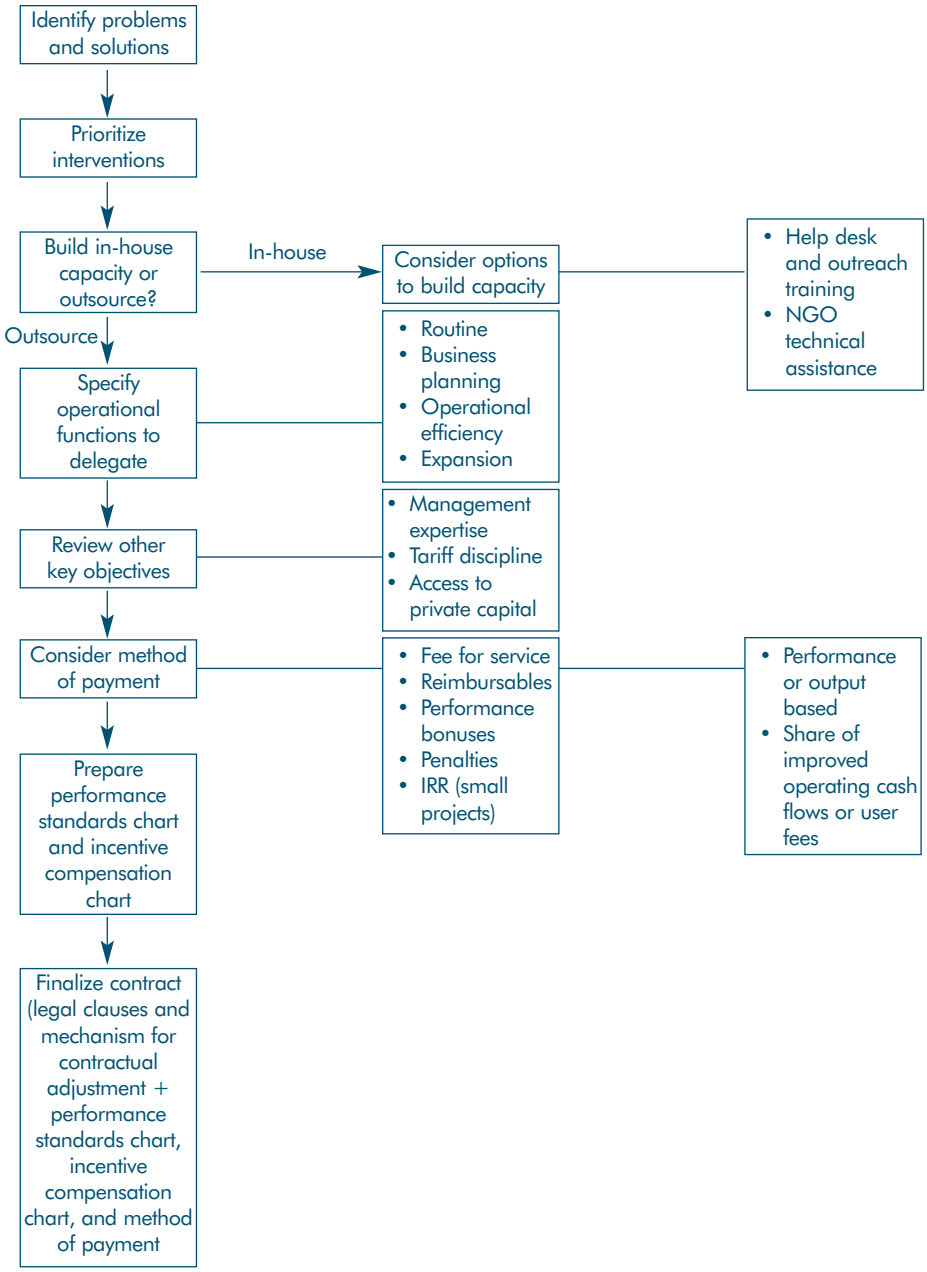
- A contract between **SENASA and the contractor-operator** is based on the standard World Bank bidding documents for small works and governs the construction phase (technical standards, supervision, subsidy, guarantees, and so forth).
- A contract between **SENASA and each water association** sets out SENASA's agreement to provide a subsidy for connections once the water users association has signed the concession contract with the contractor-operator.
- A simplified concession contract between the **contractor-operator and the water association** defines the service area and sets coverage targets for connecting the population within it. It also (a) provides the contractor-operator with exclusivity in this area; (b) defines water and service quality standards (pressure, continuity of service, and so forth) and sets out penalties for noncompliance; (c) provides formulas for adjustments to tariffs and miscellaneous fees; and (d) establishes compensation in the case of early contract termination.

Source: Extracted from Drees: *Private Sector Participation in Small Town Water Supply—Early Experiences from Paraguay.*

5.6 A Final Note on Performance Standards Charts and Incentive Compensation Charts

The last step in the contract preparation process described above is to prepare the performance standards chart and the incentive compensation chart (where these are required under a performance-specified contract), which set out the operational functions to be provided and the expected level of performance overtime. The following points should be noted when preparing the charts:

Figure 5.5 Contract Option Decision Tree



- The indicators on which performance bonuses and penalties are based need to reflect the goals set out in the business plan. They should be as few in number as possible. They may include operational performance ratios, such as unit energy use = (energy expenses / m3 into supply), or specific factors, such as an increase in numbers of connections.
- Careful attention must be paid to selecting and establishing the base year indicator values.
- The operator should achieve the specified performance standards within the funding available, and the available funds (operations and maintenance budget and any rehabilitation and repair funds) need to be identified.

- Performance standards should be reviewed as infrequently as possible, say, between two and five years, depending on circumstances, to account for changes in service area, facilities, financing, and so forth.
- The means by which improved performance will be achieved (that is, the details of any interventions and how they impact on performance) should be identified clearly in the business plan.
- If no standard is specified, the base year value can be taken as the minimum acceptable standard.

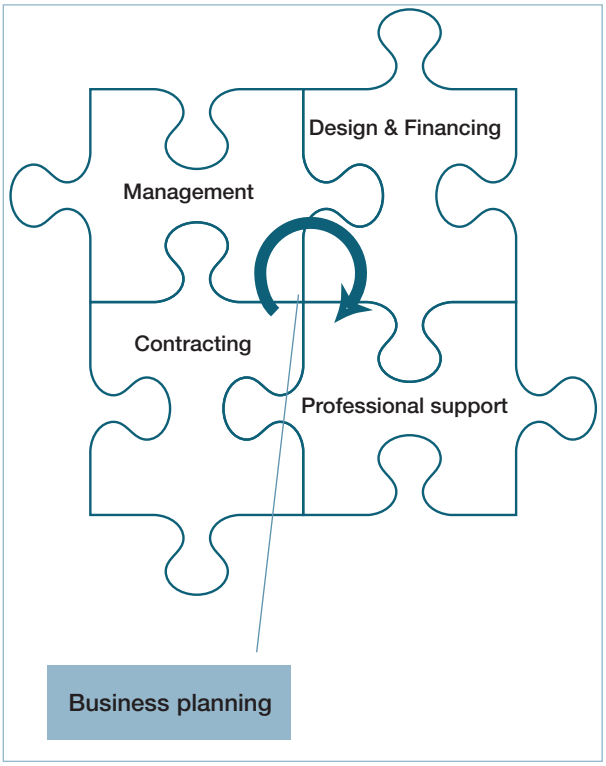
5.7 The Special Case of Sanitation

With appropriate modifications, the various contract options described in this section can be applied either to the provision of water supply services alone or to water supply and sewerage services for towns. Sewerage is expensive—even more so when sewage treatment is needed—and many small towns will want to avoid the large investments involved, at least in the early stages of a water supply and sanitation improvement program. When water consumption is low—in the 50–100 lcd range—and housing density and soil conditions are appropriate, on-site sanitation facilities may be used for waste disposal. Options include both dry and wet systems with the separation of gray and black water. All these systems require either the householder or the service provider to maintain and periodically empty on-site waste storage facilities. Towns need to establish regulations on how these tasks are to be accomplished, and delegate monitoring and control responsibilities to the oversight body established for water supply and sewerage operations, or establish a separate institution for the purpose. The town regulatory unit should ensure compliance with public health regulations.

Key Points in Chapter 6

- Towns should plan their water supply services as a business:
  - The *process* of business planning is itself a tool to help orientate and train town administrators and utility managers.
  - The business plan (document) shows the results of the planning process and consensus reached by all those involved, in terms of matching service levels, management arrangements, and investment programs to sales projections and revenue potential.
  - A financial model is the central planning tool. Technical options must be matched with willingness-to-pay survey data and tested against financial projections.
- Business planning is dynamic and, as circumstances change and opportunities arise, the plan must be adapted to take new information into account.
- A business plan delineates the long-range program of the operator, and so ensures that services will be provided not just for the short-term project period.
- A business plan is often required by the financier of the investment program to show how the system will be managed and to ensure that loans can be repaid. The plan can also serve as justification to the utility's regulator and customers for a program of tariff adjustments and other charges. It can also serve as the basis for communicating the plans of the utility to the community to show how it will improve services and expand to meet demand as the community grows.
- The business plan provides the monitoring indicators necessary to evaluate performance and the achievement of objectives so that any necessary corrective measures can be designed. It also provides the information needed to design performance incentives tied to the achievement of specific targets.

A business planning toolkit prepared as part of the TWSS Initiative is available in a separate Volume (II—Business Planning for Town Water Supply).



6 BUSINESS PLANNING

6.1 The Importance of Business Planning

Towns should plan their water supply services as a business. Business planning is the process of outlining how the utility will provide the level of service required by its customers, owners, and regulators over a given period. The business plan is a document that evolves continuously as circumstances change and more stakeholders become involved in the planning process. It is an important tool for matching service levels, management arrangements and investment programs to sales projections and revenue potential. As town water services have become more decentralized, and the authority and responsibility for service delivery has been transferred downward, the business planning function has become even more essential.

In traditional project-based approaches to town water supply, where systems are designed and built by the government and then handed over to the town on completion, the business planning process has often been overlooked. The process of designing town water supplies is often externally driven. Technical, economic, and financial feasibility studies are prepared by consultants or advisors who often do not carry out adequate stakeholder consultation. However, if those responsible for managing a water supply system are not involved in its design, and do not understand the choices made or what is required for sustainability, they may be reluctant or unable to maintain tariffs at the level required to cover costs and pay for adequate maintenance of facilities, or to retain qualified staff and contract professional support.

Business planning should therefore involve a number of actors, including financiers, regulators, customers, the COB, and operators (in-house manager and staff or contracted operator). A business plan is often required by the financier of the investment program to show how the system will be managed and to ensure that loans can be repaid. The plan can also serve as justification to the utility's regulator and customers for a program of tariff adjustments and other charges. It can also serve as the basis for communicating the plans of the utility to improve service and expand to meet demand as the community grows. The process of business planning is in itself a tool to help to train town administrators and utility managers.

6.2 The Business Plan Document

To serve these various interests, a business plan needs to include the following:

- Performance targets: To define the requirements for customer service, environmental protection, efficiency, maintenance of assets, and development of the utility.
- An investment plan: To set out what investments are needed to meet performance targets in a way that is affordable to customers and sustainable, and to explain how provision will be made for expanding and upgrading services to reach potential future consumers (see Chapter 3).
- A financing plan: Including how and from whom the money to finance the investment plan will be raised (see Chapter 3).

- An operations plan: Management and staffing arrangements, including professional support and training (see Chapters 2 and 4).
- A procurement strategy: To identify professional support needed, and the contract options best suited to local needs (see Chapters 4 and 5).
- A financial management and reporting plan: To monitor performance and meet regulatory obligations (see below).
- A marketing and communications plan: To offer informed choices to consumers, including the implications of alternative levels of service, and to keep decisions transparent (see Chapter 4).

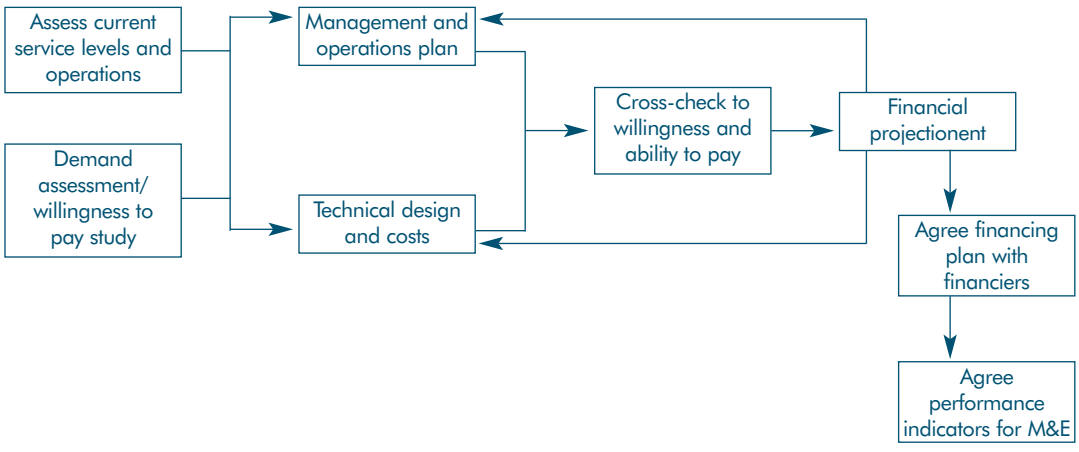
The business plan is not a static document. It will need to be adjusted over time to take into account actual performance and changed circumstances. Generally, the business plan should be revised every three to five years and updated on a rolling basis each year between these revisions. Annual budgets and requests for tariff adjustments should be prepared and reviewed in the context of the business plan to ensure consistency with the longer term plans of the utility. A substantive revision may be necessary when contracts are let, so that the appointed contractor(s) can develop "ownership" in the business plan.

6.3 The Business Planning Process

The business planning process requires extensive consultation among all stakeholders, in particular, the COB, its customers, and the operator (in-house manager and staff or contracted operator). The continuous process of consultation influences the design, development, and updating of the business plan; builds capacity among those involved; and inculcates a sense of partnership in meeting the objectives.

Business planning is best understood as an iterative process (Figure 6.1). Initially an assessment of current service levels is carried out in relation to regulatory requirements, operational performance, and consumer demand. This assessment serves as a basis for outlining requirements in technical, management, and operations plans. These parameters are then matched to the outcomes of willingness-to-pay studies, and a financial projection is prepared. If the cost of initial plans is too high, customers will not be able to afford the system, and the utility will be financially unviable. Closing this cycle requires an iterative process of analysis of information and consultation with stakeholders in order to shape the final design and/or management and operations plan.

Figure 6.1 The Business Planning Process



6.4 The Financial Model

The financial model is the central planning tool. Technical options must be matched with willingness-to-pay survey data and tested against financial projections. In the financial model, revenues are built up based on customer demand and on the capacity of production facilities and the network. Operating and maintenance expenses are projected, based on water produced, number of connections, required maintenance of facilities, the management plan, and performance indicators. The model should show how the system is to be expanded to meet customer demand and how this expansion will be financed. The projection period should be long enough to ensure that cash flows are sufficient to meet debt service obligations. For example, if the utility is to borrow and pay back a loan over 20 years, the financial model should show projected cash flows and debt service coverage over a 20-year period. In the model, initial tariffs may need to be increased over a specified period (say 3–5 years), after which they would remain static in real terms throughout the projection period. Since cash flow cannot be negative and certain financial ratios must be met, the affordable tariff will serve as an upper limit for the investment plan.

The key output of the financial model will be a cash flow projection and a set of financial and operational performance indicators, which could include those shown in the following chart (Figure 6.2). These indicators shown in the chart provide the basis for monitoring and evaluation, and are linked implicitly to business planning objectives and to contracts as discussed in Chapter 5 (performance targets and remuneration).

6.5 Role of Business Planning in Regulation and Monitoring

For small and medium-size towns, business planning provides an important tool to institute better governance at the town level. A sound business plan enables the regulator or ROB to identify and clearly specify performance targets, and monitor other information that is important to successful service provision, including willingness to pay, appropriate design, financial modeling, tariffs and connection fees, contract objectives, compliance with drinking water and discharge quality standards, and performance indicators.

A well-managed system is better able to respond to regulations promulgated by central government legislators and to interpret them in the interests of consumers. Annex F provides further details of some of the common regulatory tools that should be considered. As discussed in previous chapters, governments can support town utilities by defining cost-recovery objectives, providing standards and guidelines for tariff setting, doing financial reporting and auditing, using appropriate design, and by establishing benchmarking as a means of monitoring policy implementation and promoting efficiency.

In terms of what can be done locally to regulate service provision, an important and realistic objective for local regulatory oversight bodies, as well as corporate oversight bodies and operators, will be to put in place an effective monitoring and evaluation framework that is based on sound business planning and appropriate financial and operational performance indicators as discussed in this chapter.

Figure 6.2 Milestones and Indicators for Town Water Supply

Project progress descriptive indicators (pass/fail)

Institutional:
- Legal status: Is the "utility" a legally recognized entity? Does it have its own staff assigned to it?
- Financial autonomy: Are the utility's finances ring-fenced?
- Management autonomy: Does the utility have an autonomous corporate oversight body? Does the COB have members with professional qualifications?
- Incentives to perform: Is there some mechanism that drives performance, for example, identified "budget holders" or performance-based contracts?
- Accountability to users: Are customer complaints and their resolution logged?
- Professional capability: Are key technical and finance staff in place? Are they trained? Is there a plan to access specialist support?

Financial:
- Financial management: Is there a mechanism to report on technical and financial operational performance? Is the information audited?
- Billing and collection practices: Are records used for billing accurate and up-to-date? Is adequate financial information at hand for managerial decision making?

Operational:
- Maintenance: Is there a regular maintenance program?
- Record-keeping: Is there an up to date plan of the water system? A register of fixed assets? An inventory of spare parts and materials? Records for bulk and connection meters? Records for pump running times?
- Planning for efficiency improvements: Is there any plan to deal with efficiency improvements, for example, unaccounted for water, pipe network performance, water pressure, metering?
- Water quality: Is there a regular program to monitor water quality?
- Planning for expansion: Is there any plan for expanding the system?

Impact on consumers

Speed of response indicators:
- Average time between a complaint and response (days).
- Average time between request for and installation of connections (days).

Accessibility indicators:
- Number of households with access to a connection / total number of households in service area as a percentage.
- Average time to collect 20 liters of water.

Reliability indicators:
- Duration of supply (hrs/day).
- Number of unscheduled interruptions per month last one hour or more.

Cost indicators:
- Annual cost of water for a household consuming 3 m^3 of water per month from (a) individual connection, (b) a yard tap, (c) a public kiosk.

Financial viability

Cost recovery:
- Cash collected / m^3 into supply\
- Coverage of O&M by cash collected = (cash collected / operating expenses)
- Amount billed / m^3 into supply
- Coverage of O&M = (amount billed / operating expenses)

Liquidity:
- Collection ratio = (cash collected / amount billed)

Profitability:
- Net profit margin = Profit before interest and tax (PBIT) / income

Operational performance

Financial operational efficiency:
- Operating expenses / m^3 into supply.
- Unit energy use = (energy expenses / m^3 into supply).

Technical operational efficiency:
- Production capacity: supply (m^3/day) / production capacity (m^3/day).
- Storage capacity: m^3 of storage / supply (m^3/day).
- Number of hrs/day which borehole and intake pumps operate.
- Number of hours of storage at average daily demand.
- UFW: volume billed as a percentage of water into supply.
- Percent of water connections with an operating meter.
- Number of pipe breaks per km per year.

7 CONCLUSIONS AND POLICY RECOMMENDATIONS

7.1 The Existing Situation in Towns

Towns face many challenges in their attempts to provide adequate water supply and sanitation services to their populations:

- They straddle rural and urban space and have unique characteristics that make it difficult to apply either urban or rural strategies to them. Their limited financial and professional resources make them unsuitable for conventional utility management and technologies used in larger urban areas, but their populations are often too large for the decentralized point source systems or community-management models used in rural villages to work successfully.
- Towns are therefore faced with the complex task of offering a mix of technologies and service levels to low-income users at costs they can afford, while delivering more expensive piped services with house connections to better-off population groups—and making the whole system reliable and sustainable through careful planning, design, and management, and by leveraging the limited resources at their disposal.
- The planning, design, and management is made even more challenging by rapid population growth and wide spatial distribution, which results in unpredictable patterns of growth in demand.
- Small and medium-size towns usually do not have the big commercial and industrial clients that can generate substantial water and sewerage revenues to supplement income generated from residential customers.
- They are often unable to attract the competent professionals necessary to manage complex water supply and sanitation systems and lack the professional and institutional capacity at the local level to oversee and deliver water supply and sanitation services. As a result, towns often have to explore options that require pooling of regulatory and specialist operational functions with other towns, and/or contracts with external professional support agencies (individuals or companies) to help to regulate and operate services.
- In an effort to improve services, national governments are decentralizing the sector. Through decentralization programs, towns are increasingly being handed the responsibility for service delivery. Unfortunately, these decentralization programs often stop short of delegating the necessary authority to improve services and raise revenues without the involvement of central government.

7.2 The Way Ahead

The overall objective of any town water supply and sanitation strategy is to provide an adequate supply of safe water and facilities for the sanitary disposal of human waste. To succeed, the towns need to put in place appropriate institutional arrangements, and to design and implement technical alternatives and cost recovery mechanisms that lead to financially viable services that customers want and are willing to pay for. Meanwhile, the central government needs to implement policies that enable these changes to take place, provide incentives for towns to implement reform and improve service delivery, and support the transition to a decentralized sector with appropriate capacity building.

7.2.1 Government Policies

For towns to improve their water supply and sanitation services, the national government needs to adopt policies that encourage towns to take action. Existing sector policies may have to be expanded or new policies drafted to provide for the following:

- Ensure that decentralization is accompanied by sufficient delegation of authority so that towns can make responsible decisions, including raising revenue to finance operations (tariffs, fees, and borrowing).
- A framework that allows the issuance and enforcement of appropriate regulations and guidelines to encourage the development of appropriate institutional models (local enterprise development, market consolidation, and aggregation), as well as private sector and NGO participation in implementing and managing town water supply and sanitation services.
- Towns should be offered a range of institutional arrangements or options with which to manage their systems. Policies should define the legal conditions and process for the implementation of these arrangements.
- In the long term, the financial viability of town water supply and sanitation systems should be ensured through internal cash generation. Decentralization should provide clear directives about government conditions for financial assistance. Government should also issue directives on tariff design and other cost-recovery mechanisms. Financing agreements should create incentives for improved performance or reform.
- Technical standards should permit and encourage appropriate design, including modular approaches and sequential upgrading, to ensure that solutions reflect local conditions and that are affordable.
- Legal conditions need to be established for the formation of specialist support organizations and the provisions that bind towns to support services.
- The private sector and other NGOs should be encouraged to enter the market and, over time, to grow their business by competing for contracts in other towns.
- Legal conditions should be drafted for aggregation of towns, including the process, terms, and conditions for ensuring cooperation between these towns.

7.2.2 Capacity Building

With the correct policies and incentives in place, towns will have a greater chance of reforming their water and sanitation services. To do this, they will need support from specialist service providers on the one hand and government agencies on the other (for example, enhancing sector capacity). In fact, the provision of government support for capacity building is an integral part of the decentralization process and should be planned for ahead of time. It is not reasonable to delegate new responsibilities to towns (municipalities) without building their capacity to properly discharge those responsibilities. Examples of how such capacity building could be provided include the following:

- Licensing key operations staff: Supervisors and senior staff responsible for operations should be licensed by the government. Courses should be established to provide the necessary training with provisions or rules for funding, for example, through a fee on the quantity of water sold.
- Providing training to ROB or COB members: Town officials and administrators should be provided with opportunities to learn about the water supply and sanitation services they manage. In this way, they will acquire the necessary capacity to monitor the performance of operators and professionals that they contract to design or manage their systems.
- Sample tools and materials: Towns should be provided with sample tools and materials, such as (a) contracts and related documentation for different management models; (b) articles of association for water user associations and water boards; (c) draft agreements to support aggregation of services by municipalities; and (d) standard business planning techniques, including the collection and dissemination of cost and performance data (benchmarking).
- Business planning guidelines: Training should include instruction on preparing a business plan for town water supply and sanitation operations (see Volume 2—Business Planning for Town Water Supply Services).

7.3 Recommended Actions

Achieving the overall objectives set out in a town water supply and sanitation strategy requires coordinated action at both the local and national level. Governments have traditionally taken the lead in decision making governing sector activities, and so as the responsibility for the sector has been delegated to towns, it has become necessary to clearly delineate the roles and responsibilities of these two sets of actors.

7.3.1 Actions Recommended for the National Government and Its Planners

The report identifies a range of actions required of the national government to help to create an enabling environment for the reform of institutional arrangements and planning processes, as well as the preparation of materials and tools needed for implementation. In most cases, these activities include setting water supply and sanitation coverage targets compatible with international and national goals; reviewing the current situation and identifying specific subsector needs; addressing legal and regulatory requirements for a variety of appropriate institutional models; establishing the rules and criteria for financing improvements in service; assessing the capacity of existing professional resources and identifying support arrangements or establishing capacity building programs; and preparing standards, guidelines, and mechanisms (including dissemination and training) to support local level institutions.

Goals and coverage targets. National governments are committed to achieving the Millennium Development Goals, which include a target to halve by 2015 the proportion of their population that lacked adequate water and sanitation services in 1990. Meeting these targets will require governments to focus on town water supply. As towns account for a significant and growing proportion of the national population, their success in delivering improved water and sanitation services will be a vital contribution to achievement of national and international development goals. Targets should be set in a manner that is ambitious, but achievable. In some cases, particularly when these targets are linked to wider strategies for poverty reduction or environmental protection, the achievement of these targets will depend to a large extent on subsidies provided by national government.

Situation analysis. It is important that water sector planners gather information on towns, their growth rates, and settlement patterns that can be used for planning. This information may include the following:

- Numbers and sizes of towns.
- Population data and growth rates.
- Socioeconomic data and settlement patterns—including rural migration and slums, and linkages with rural areas and larger urban centers.
- Service levels (coverage and quality of service).
- Water resources management and environmental issues.

Information regarding local conditions and consumer preferences is best understood at local government level, which is the underlying logic for decentralization. National government, however, needs to coordinate and collate information with regional impacts, so that it can develop a longer-term vision for the subsector and the strategies needed to make progress.

Legal reforms. Examine existing legal requirements governing the establishment and operation of water services and commercial enterprises and adjust proposed regulations and existing laws, so they are compatible and reflect sector needs. Issues to be addressed include the following:

- Local regulatory and corporate oversight for different management models (for example, bylaws for water boards) that establish their autonomy and authority to act.
- Establishment of specialist support organizations and the basis for their financial viability (ability to raise revenues from fees, grants, and loans).
- Aggregation of towns and conflicts with decentralization, including asset ownership and sharing of regulatory functions.
- Market entry of private sector entities and NGO TAPs with competitive bidding for design, construction, and service provision.

Regulatory framework. National regulatory bodies should ensure that appropriate guidelines and TA are provided to help towns in complying with sector regulations. National regulatory bodies should address the following:

- Monitoring operational and financial performance to protect investments and ensure efficiency:
  - Benchmarking as a means of monitoring policy implementation and introducing comparative competition.
  - Financial reporting and auditing: standardized procedures should be developed and disseminated and support provided to towns to help with regular preparation and publication of information.
  - Public health standards—supporting the establishment of appropriate tools and local mechanisms to monitor water quality.
  - Procurement guidelines and model documents—encourage open entry and competitive bidding as a means of improving water services.

- Promotion of affordable design—regulations, design standards, and guidelines:
  - Cost effective design strategies, including modular approaches and sequential improvements.
  - Sanitation strategy.
  - Connection policy, including individual and shared options.
  - Stakeholder consultation.

- Policy and directives on how to achieve cost recovery objectives:
  - Standards and guidelines for setting tariffs.
  - Connection policy including type of connection, connection fee, and method of payment.
  - Rules governing subsidies to ensure they are better targeted.

- Environmental performance—for concerns that have regional impact:
  - Water resources management.
  - Water abstraction control
  - Wastewater discharge control
  - Sludge disposal.

- Resolving disputes that exceed local capacity to manage:
  - Tariff appeals.
  - Contract arbitration.
  - Aggregation issues such as exit and entry.

Financing. Define the rules for financing to ensure that towns receive support for reforms that improve their financial sustainability; and that there are sufficient incentives for towns to take the necessary measures to improve the financial viability of town utilities:

- Develop a national program that requires towns to implement institutional reforms as a basis for financial support from central government.
- Ensure that when financial support is provided this is done on the basis of a minimum investment option.
- Adopt national policies on cost recovery, including tariffs, connection fees, and subsidies.
- Support development of the local commercial finance market to increase the level of commercial financing available for sector development:
  - Examine existing government or donor financing arrangements, identify barriers to development of local commercial financing of water projects, and adjust approaches, as necessary.
  - Establish municipal development funds, specialized financial intermediaries, mechanisms for pooled financing for small projects with nonpoliticized governance, and management and participation of the private sector.
  - Consider providing refinance to banks to help mitigate risks and allow for longer-term financing at lower rates of interest.

Professional resources and capacity building programs. Review capacity requirements of existing institutions, and identify professional resources that towns may choose to contract services from.

- As towns take on more responsibility for water services, they require capacity to be built up in a number of additional areas, particularly with regards to regulatory and corporate oversight. The design and implementation of such capacity building programs often requires national level funding support for the following:
  - Developing financial management and business development programs to help town administrators (regulatory oversight), members of corporate oversight bodies, and system managers.
  - Establishing modular capacity building programs, such as "outreach training" programs that deliver on-the-job training to certify routine operators.
  - Identifying agents or institutions to provide relevant technical, financial, and business development support services.
  - Establishing an information clearinghouse or help desk—including a register of what professional resources are available, training programs, opportunities and rules for financial assistance, and "tools of the trade" to assist system managers and operators.

Standards and guidelines. As town water services often do not fit the profile of either an urban or a rural water supply, it may be necessary to develop or adapt specific standards and guidelines for their use. These should encourage innovation and ensure flexibility in order to ensure that the services provided are affordable to all population groups. Standards and guidelines, including practical tools, should be developed for the following:

- Undertaking institutional reforms:
  - The legal basis for regulatory and corporate oversight, for example, bylaws for the establishment of autonomous town water boards.

  - The legal conditions for contracting services from or creating specialist support organizations.
  - The legal conditions for aggregation of towns (articles of association) and related procedures and rules. Guidelines on the types of aggregated entity that may be considered, as well as its scale and scope of responsibilities, should also be available.
  - Legal framework and key provisions underpinning contracts between towns and their professional support, that is, their operator and specialist support organizations.

- Business planning processes:
  - Technical standards, and principles of engineering design (differentiated technologies, modular approaches and sequential upgrading), including strategies for sanitation.
  - Methodologies to assess demand (willingness to pay or connect) that are appropriate to towns.
  - Financial modeling.
  - Simple tariff structures and options for connection policies.
  - Billing and collection policies and methods that enable low-income customers to pay when they have the means to do so.
  - Financing to towns, including eligibility criteria.
  - Monitoring and evaluating performance, including benchmarking, financial reporting, and auditing.

7.3.2 Actions Recommended for Towns

National policies specify the powers delegated to towns, including responsibility for service provision and guidance on how towns are to implement regulatory functions delegated to them. Depending on the level of decentralization, towns may take on some or all of the functions outlined below:

Outline local policies and priorities, within the context of overall national policy framework, and prepare regulations to support the implementation of these policies. As towns take on an increasing role in regulatory and corporate oversight, they will need to provide guidance to their staff or support service providers on ways to do the following:

- Simplify the planning, design, procurement, and construction process to reduce costs and expedite service delivery.
- Institute competitive procurement and an open-entry policy.
- Establish stakeholder participation and consumer protection and create the procedures necessary for their implementation and monitoring

As towns seek to improve the performance of their service providers, they may work with central authorities to enable the participation of other actors, such as the private sector and NGOs in the delivery of services. In order to facilitate their role, towns may need to do the following:

- Support efforts to create an enabling environment for private sector and NGO participation, including the broad legal and regulatory framework.
- Bring down the transaction costs of involving the private sector and NGOs by utilizing tools such as simple bidding and contract approaches that can tailor contracts to local needs and building capacity for their use.
- Explore the use of partial guarantees to mitigate risks.

Establish a town ROB, with authority or responsibility to:

- Ensure that the systems are operated in a professional manner, local and national regulations and service quality standards—including water quality—are met, and the business plan is successfully implemented.
- Examine financial operations of the operator, in particular the justification for tariff modifications, and approve necessary tariff modifications (or recommend approval to town council).
- Report observed operational deficiencies to the town council for remedial action.
- Establish good communications and customer relations.
- Establish independent review or auditing of technical and financial performance, including benchmarking activities.

Initiate institutional reform. Assess the capacity of existing service providers and explore alternative and improved management models and professional support options. Where a town COB is created:

- Ensure that the COB has a sound legal framework (bylaws, cooperative law, articles of association), and is accountable to consumers.
- Secure training for members of the COB and specify their tasks and compensation.
- Assist in the provision of training for the service provider (operator).

Towns should enter into a contract with an operator, or provide performance-based contracts for operator employees, and secure specialist support for the ROB and the operator. One of the key tasks for the town will be to review and approve business plans. The business plans should

- Present a management and operations plan, outlining choices regarding professional support.
- Present an investment plan for both the short and long term, matching design with demand.
- Present a financing plan that ensures financial sustainability.
- Provide performance targets to be met by the operator.

Explore options to share regulatory and service provision functions with other towns—for example:

- Specialist support for key regulatory or operational functions.
- Regional associations and apex project management.
- Clustering for procurement purposes.
- Aggregation.

Secure financing for major rehabilitation or new construction works. The actions to be taken by a town to secure financing relate to the stepped approach to the upgrade of town water systems, discussed in Chapter 3, and illustrated in Figure 3.2. The four steps are as follows:

Step 1: TA to establish a COB (for example, water board) and prepare application.
Step 2: Planning, capacity building, and immediate service improvements.
Step 3: Rehabilitation or initial investment—for towns not previously improved with grant financing.
Step 4: Expansion (with loans).

The criteria to move to the next step are as follows:

Step 1 to Step 2

- Application filed with basic information on existing water supply and sanitation, and needs.
- Autonomous town COB (such as the water board) created and board members appointed.
- Stakeholder consultations held regarding program requirements, estimated costs, tariffs, and contribution required.
- Key operations staff in place for capacity building.
- Proposed immediate service improvements within per capita ceiling.

Step 2 to Step 3

To Step 2, Phase 2:

- Project proposal acceptable.
- Business plan acceptable.
- COB meeting as scheduled and involved in planning.
- Stakeholder consultations held.
- Immediate service improvements completed.
- Revenue covers current operation and maintenance costs and allowance for renewal and replacement of short life assets.
- Technical and administrative staff trained at basic level.
- Utility operating autonomously with accountability in place.

To Step 3:

- Reconfirm the above based on final design.
- Local contribution deposited to bank account.

Step 3 to Step 4

- Proposal for further development and expansion of the system is acceptable.
- Business plan acceptable.
- Operations, financial management, billing and revenue collection, and monitoring and evaluation (M&E) systems in place and efficient (as confirmed by independent audit).
- Full cost recovery tariffs in place for existing system.
- Contribution deposited to account.
- Utility operating efficiently with adequately trained technical and administrative staff, performance agreement, and provision for external TA.
- Board meeting as scheduled and involved in planning.

ANNEXES

Annex A: Preliminary Data on the Proportion of People Living in Towns[17]

Table A.1 Division of National Populations between Rural Areas and Urban Centers of Different Sizes

Nation and date of census	Proportion of the population in urban centers with:							
	Rural areas	**Under 20,000**	**20,000–49,999**	**50,000–199,999**	**200,000–499,999**	**0.5–1.99 million**	**2–4.99 million**	**5 million +**
Mexico (2000)	25.6	9.3	4.9	5.6	8.8	21.2	7.1	18.4
Peru (1993)	29.9	16.1	5.0	8.4	7.7	5.0	0	27.9
South Africa (1996)	46.3	5.9	2.0	6.9	3.7	5.1	12.1	17.9
Costa Rica (2000)	50.2	19.2	18.6	4.1	7.9	0	0	0
Thailand (2000)	68.9	9.4	3.2	6.2	1.8	0	0	10.4
Bangladesh (1991)	81.0	2.9	3.3	2.7	1.0	1.3	1.9	5.9
Sri Lanka (2001)	84.4	2.2	2.9	4.8	1.1	3.4	0	0
Uganda (2002)	87.8	1.9	2.8	2.6	0	4.9	0	0

Note: Inter-country comparisons of the proportion of the population in different size-bands may not be valid because of the differences in how urban populations or city boundaries are defined.

17 Source: Satterthwaite: Towns; Their Under-Appreciated Demographic, Economic and Social Importance.

Table A.2 Population Distribution in 2000

Nations and regions	Proportion of the total population in:				
	Rural areas	Urban areas with fewer than 500,000 inhabitants	Urban areas with 500,000–4.999 million	Urban areas with 5–9.999 million	Megacities with 10 million plus inhabitants
Africa	62.8	22.8	11.5	2.9	0.0
Asia	62.5	18.7	12.8	2.4	3.7
Europe	26.6	47.2	21.7	4.4	0.0
Latin America and the Caribbean	24.6	36.3	24.1	3.8	11.3
Northern America	22.6	30.3	35.4	2.2	9.5
Brazil	18.8	37.0	27.3	0.0	16.9
Mexico	25.6	28.7	28.3	0.0	18.4
Colombia	25.0	35.4	23.5	16.1	0.0
Venezuela	13.1	46.5	40.4	0.0	0.0
China	64.2	19.2	13.6*	1.1	1.9
India	72.3	16.0	5.9*	1.7	4.1
Pakistan	66.9	16.1	6.0	3.9	7.1
Iran	36.0	41.1	13.0	9.9	0.0
Thailand	68.9	20.7	0.0	10.4	0.0
South Korea	17.1	18.9	42.8	21.2	0.0
South Africa	43.1	28.2	28.7	0.0	0.0
Morocco	44.5	28.4	27.4	0.0	0.0

* These figures refer to the proportion of the total population in cities of 750,000–4.99 million, not 500,000–4.99 million. This also means that the proportion of the population in urban areas with fewer than 500,000 inhabitants is overstated.

Table A.3 The Number of Urban Centers in Different Size-Classes; Selected Nations

	Number of urban centers in different population size-classes						
Nation and date of census	**Under 20,000**	**20,000–49,999**	**50,000–199,999**	**200,000–499,999**	**0.5–1.99 million**	**2–4.99 million**	**5 million +**
Mexico (2000)	420	164	62	26	25	2	1
Peru (1993)	—	37	19	6	2	0	1
South Africa (1996)	—	24a	29	5	3	2	1
Costa Rica (2000)	16	26	3	1	—	—	—
Thailand (2000)	—	51b	41	4	0	0	1
Bangladesh (1991)	360	118	35	5	2	1	1
Sri Lanka (2001)	9	25	9	1	1		—
Ghana (2000)	—	318[c]	21	5	1	1	—
Uganda (2002)	43	21	9	—	1	—	—

— Not available.
a. Urban centers with 25,000–49,999.
b. Urban centers with 30,000–49,999.
c. Small towns or urban centers with 5,000–49,999 inhabitants.

Annex B: Glossary of Legal Terms

Articles of association. Set out the organization's constitution such as the name, objectives, members' rights and obligations, and internal regulations and bylaws covering procedure, meetings, shares, and directors.

Bylaws. (a) The means through which an authority (for example, town) establishes the legal status and independence of an organization (for example, water board), and invests it with ownership and oversight responsibilities. (b) Bylaws also govern specific internal affairs and actions of the organization (linked to some operational activity or regulatory requirement). Such bylaws are submitted to the confirming authority for sanction and approval.

Company law (company act, corporate law). The means of incorporating a business. A corporation has a legal identity separate from its individual members. Directors are held accountable to "manage in the interests of the company." The company is held accountable to certain actions such as holding general meetings at least once a year, appointing auditors, and keeping proper books of account.

Cooperative law. The means of establishing a cooperative (for example, a water user association). A cooperative is owned by and operated for the benefit of its members as an autonomous and democratically controlled organization.

Limited liability. The liability of private and public companies established through company law may be limited by shares or guarantee: the shareholders' (members') personal assets are protected if the business fails—and they can lose only what they put into the business.

- **Share corporation (equity-corporate model)**. A limited liability company with an important part of its money derived from the sale of its shares. It will also generate funds from its operations and from borrowing. It is generally required to satisfy investors by delivering capital growth (increased share value) and profits (dividends). A "thin equity" model is one that has a high borrowing (debt)-to-equity (share) capital ratio. The key difference between a public limited company (PLC) and a private limited company (ltd) is that a public company may offer to sell its shares to the public. A private company raises capital only from directors and members.
- **Company limited by guarantee**. A company where instead of buying shares, each member provides a guarantee to provide a predetermined amount, if needed, when the firm is wound-up.

Memorandum of understanding. A preliminary or interim agreement of cooperation between organizations defining the roles and responsibilities of each organization. Usually superseded by a more formal legal arrangement.

Partnership. A business established through partners' savings and commercial or other loans and grants. Partners may choose to float the firm as a public limited company in order to raise money in the public equity market.

Sole trader. A business established through the owner's savings, and commercial or other loans and grants where a business case can be made.

Trusts. Established through donations from "grantors" and managed by the "trustees" (who are the legal owners) on behalf of the "beneficiary" (for example, community). Trusts are not for profit, and actively seek partnership between the community, voluntary associations, and private and public sectors.

ANNEX C: MODULAR APPROACHES TO DESIGN

The following table divides the components of water and sewer systems into three categories, depending on the recommended amount of excess capacity: greater than five years, about five years, and less than five years. The rationales for each component are given below.

Component	Explanatory factors	
Provide large excess capacity, > 5 years		
Land	Future availability	
Reservoirs	Future availability	Economy of scale
Water intakes	Future availability	Economy of scale
Sewers	Compatibility	Economy of scale
Provide some excess capacity, ~ 5 years		
Wells	Economy of scale	Reliability
Network diameters	Economy of scale	Reliability
Pump stations	Economy of scale	Reliability
Treatment plants	Economy of scale	Reliability
Provide little or no excess capacity, < 5 years		
Network length	Uncertain location	Economy of scale
Storage tanks	Uncertain location	Economy of scale

Land: Sufficient land needs to be purchased at the outset to enable future expansions if they should prove necessary; otherwise, the risk is run that the land will not be available when needed in the future.

Reservoirs: They typically consume large amounts of land and have large economies of scale, both of which tend to argue for including substantial excess capacity, even if long-term demand is somewhat uncertain. However, the relatively high cost of reservoirs always makes it necessary to carefully justify their excess capacity.

Water intakes: Data from U.S. EPA show that their economies of scale are among the highest. Also, there may be a risk about future availability if they are not built at the outset with more than a little excess capacity.

Sewers: Their economies of scale (with respect to diameter, not length) are among the highest of all components (higher than water networks). Furthermore, because they must be laid on grade, it is difficult to obtain compatible expansions in the future; in addition, by the time sewers are needed, there should be little uncertainty about demand, for which reasons they should typically have more excess capacity than other components.

Wells: They have two aspects for design: the number to be constructed, and their diameters. Economies of scale are generally lacking with respect to number; like pipe in networks, the average cost per unit depth of well construction does not decrease as more wells are built. However, there are economies with respect to flow capacity, that is, building wells of larger diameter to extract more flow. Moreover, like the other components in this category for which modest excess capacity is recommended, they are dependent on mechanical equipment that can fail and thus face problems of reliability.

Network diameters: Water pipes laid underground have fairly high economies of scale with respect to their flow capacity. Trench excavation, backfilling, traffic control, and paving typically make the marginal cost of increasing diameter to provide excess flow capacity modest. Furthermore, the flows in networks are uncertain, so to provide reliability, diameters may need to be enlarged.

Pump stations and treatment plants: They need modest excess capacity for reliability, given their dependence on mechanical equipment. Moreover, their economies of scale are fairly substantial, especially components constructed below ground.

Network length: There is usually no economy of scale associated with building longer networks ahead of demand; in addition, the location of future demand is uncertain, which argues for not providing any extra length in the network.

Storage tanks: Economies of scale are modest but, probably more important, it is difficult to know where future demands will be located, making it hard to decide where in a network to provide excess capacity in storage tanks. It is usually preferable to wait and see where the tanks are needed.

Annex D: Financial Assessment of the Sector

Financing from government budget	Current situation in small town water supply and sanitation	Policy and strategy options	Target
	Often politically directed; not performance based. Interrupted flow of funds—single-year budget commitments not able to accommodate multiyear investments.	• Establish performance-based access criteria for investment financing and tie support (subsidies) to implementation of policy objectives and reforms. • Consider utilizing special funds that work independently of the regular budget cycle.	Clear criteria for accessing funds; tied to implementation of reforms and performance of utility. Once project is approved, funding is committed and available for multiyear investments.
Commercial financing	Not available or available only on terms that are unaffordable to utilities and their customers—short-term loans with high interest rates; collateral-based. Water utilities seen as high-risk investments.	• Examine existing government or donor arrangements, identify barriers to development of local commercial financing of water projects and adjust approaches as necessary. • Consider establishing special purpose funds, specialized financial intermediaries, mechanisms for pooled financing for small projects with nonpoliticized governance and management and participation of the private sector. • Support development of credit rating system for utilities.	Financing available through commercial banks and institutional investors (for example, pension funds providing funding through a well functioning bond market) on terms that match assets life and reflect relative low risk of water business. Designs based on feasibility study, which takes into consideration technical, economic and financial criteria; design process carried out in consultation with customers in conjunction with business planning process.
Project planning	Overdesigned systems; little or no consideration given to willingness and ability of customers to pay for level of service.	• Support development of system designs based on affordability; require stakeholder consultation during project preparation as precondition for accessing funds from government or donors. • Provide support for project preparation.	
Utility management and financial performance	Utilities are not financially viable entities.	• Require development of business plans showing transition to financial viability as part of project preparation in order to access financing and support development of business plans. • Support development of credit rating system.	Financially viable utilities, capable of financing investments from internal resources and by borrowing from commercial lenders.
	Utilities lack financial autonomy.	• Require financial autonomy as precondition to obtaining funds for capacity building or investments from government and donors. • Adopt and disseminate standards for financial management, reporting and business planning and support capacity building for implementation; require independent audits.	Financially autonomous utilities.

	Current situation in small town water supply and sanitation	Policy and strategy options	Target
	Utilities lack autonomy in decision making—for example, employment and contracting decisions subject to political interference.	• Require management autonomy as precondition to obtaining funds for accessing government or donor financing (for example, establishment of water board, appointment of board members; contract for operation). • Require involvement of water board in project preparation process, business planning.	Professional management provided in accordance with clear contractual arrangements—performance based contracts. Utilities operated under arms length transactions with performance targets and increased accountability.
	Low level of efficiency and lack of accountability; limited private sector involvement.	• Introduce performance benchmarking for utilities. • Create enabling environment for private sector participation as a means on improving efficiency and accountability. • Bring down transaction costs of involving the private sector by providing tools such as standard bidding documents and model contracts and building capacity for their use. • Explore use of partial guarantees for risk mitigation. • Support entry of small-scale service providers into the market.	Contract for professional support.
	Lack of professional support—unavailable at the local level and/or unaffordable.	Require contract for professional support as precondition for accessing investment financing (to be outlined in business plan).	
Regulation	Nonexistent or not independent and politicized.	Establish regulatory system that includes mechanisms designed to depoliticize tariff-setting process, increase transparency, and stakeholder consultation.	Well-functioning independent regulator, or at least effective mechanisms for monitoring performance, setting tariffs, and ensuring compliance with environmental and health standards.
Tariffs	Underfinanced or financed from government budget, with unpredictable annual allocation and subject to political interference; lacking capacity.	Provide for funding regulatory agency through surcharge on tariffs.	Financed from utility revenues; able to hire and retain professional, well-trained staff.
	Not sufficient to cover operating and maintenance expenses. OR Increased too quickly to levels that many customers are unable or unwilling to pay—leads to fall off in collections, customers dropping off the system and resorting to unsafe sources or illegally reconnecting when cut off.	Adopt national policy on cost recovery, defining full cost recovery tariffs to mean tariffs that generate sufficient cash to cover O&M expenses, renewal and replacement and expansion needs on a cash generation basis going forward; allow for phase in of full cost recovery tariffs in accordance with a business plan; develop and disseminate standards and guidelines for their implementation.	Full cost recovery tariffs phased in over time. Tariffs sufficient to cover operating and maintenance expenses plus provision for renewal and replacement of assets and expansion of the system over time.

	Current situation in small town water supply and sanitation	Policy and strategy options	Target
	Tariffs unaffordable to poorer customers.	Make specific provision for cross-subsidy in tariff policy, for example: (a) tariffs designed with life-line rate so that the poor can afford a minimum amount of water each month. (b) cross-subsidized by customers who use more water.	Poorer customers able to afford monthly water bill.
Connection fees	Unaffordable to poorer customers—serves as barrier to expansion of the system.	Use output-based aid mechanisms to subsidize access or phase in of full cost recovery tariffs over time, for example: (a) household connection fee set below cost (for example, equal to 3–6 months average monthly bill), financed by small surcharge on the tariff which goes to reserve fund); (b) direct subsidies for access (for example, OBA scheme to finance connection fees in poorer neighborhoods); (c) assistance provided directly to poorer households (for example, microfinance scheme or utility policy to allow payment of connection fee over time).	Poorer customers able to afford connection fees.
Revenue collection			
	Government institutions do not pay bills and cannot be induced to pay because of political interference.	Adopt strong government policy requiring timely payment of bills by government institutions or, as a last resort, mechanism for direct payment from treasury.	Government institutions pay water bills on time.
Subsidies			
	Utility operating and maintenance costs are subsidized, providing disincentive to improve efficiency.	O&M subsidies tied to implementation of reforms, improvement in efficiency—decline over time.	Phase-out of subsidies for O&M expenses.
	Low tariff or badly designed tariff structure ends up subsidizing more affluent customers rather than the poor.	Provide guidelines for tariff design.	Clear and equitable tariff structure.
	Badly designed tariff structure provides disincentive to utility to serve the poor.	Provide subsidies directly to the poor to the extent possible or, as an alternative, through tariff design as noted above.	Subsidies structured so that the utility has incentive to treat all customers equally.
	Cross-subsidies place an inordinately heavy burden on industrial and commercial customers, making it cheaper for them to opt off of the system and invest in their own source of supply.	Include in tariff policy and guidelines a provision that highest block of tariffs should not exceed marginal cost of water.	Subsidies structured so that highest block does not exceed customers' marginal cost of alternative sources.

Annex E: Town Utility Operation Functions (Refer to companion report A4.)

Water and wastewater		Customer services		Personnel (HR)	Financial	Capital works
Supply, distribution, collection, treatment		Commercial	Customer relations			
Operations	Wastewater treatment systems	Meter reading, billings, and collections	Complaints handling	Payroll operation	Management of (internal) accounts	Implementation of minor works
Surface water resource systems	Sludge disposal	Stores procurement and stock control	Liaison with interest groups	Welfare, safety and discipline	Use of revenue finance	Asset replacement planning
Groundwater resource systems	Emergency planning	Maintenance of current accounts (bookkeeping)	Customer information material	Recruitment	Asset inventory and valuation	System expansion planning
						System upgrade planning
Simple filtration and dosing works	**Maintenance**	Pursuit of bad debts and illegal connections	Liaison with other stakeholders, for example, NGOs, Community Associations	Use of contract labor	Corporate accounts	Demand forecasting
Simple distribution systems	Mechanical and electrical equipment routine maintenance	Management of service contracts	Public relations	Design of remuneration and benefits structures	Capital accounts	Design solutions
Public supply points	Burst mains repair	Customer contracts	Education programs	Appraisal systems	External finance	Assessment of new technology
New customer connections	Equipment servicing and parts replacement	Customer database	Research on willingness and ability to pay	Incentive systems		Procurement methods
Buildings, vehicles and plant	Leakage detection and reduction	Applications for permits and wayleaves	Research on acceptable service standards	Training administration		Capital works supervision
Water and waste quality monitoring	Civil and building works maintenance	Capital and supply contract design				Program management
Treatment works, storage works and trunk mains	Vehicles and plant maintenance	Financing agreements				
Network distribution systems, reservoirs, and pumping plants	Workshop activities	Adherence to sector, commercial, consumer and employment law				
Wastewater collection systems	Long-term maintenance planning					

Key:

Local, simple operation

Intermediate business

Full-service operator

Annex F: Regulatory Tools

Compliance with statutory obligations. This is normally confined to minimum health and environmental requirements.

Competition for the market. Competitive bidding for contracts to operate (and maintain) systems.

Competition within the market. Private operators within a town competing for individual customers (generally a nonviable option, but not to be discounted totally).

Sector best practice. This is reflected in the business case of the operator in providing a professional service, the returns often measured in improved efficiency, reduced complaints, and so forth.

Regulation by contract. Ensuring compliance with contract provisions, especially with respect to service level obligations, including expansion of services to the poor.

Ring-fencing. Ensures that revenues are reinvested and to protect the consumer.

Comparative competition. Publication of benchmark performance indicators for several operators within a single overall market. Care needs to be taken in that attainment of a higher level of service than that provided by others is not necessarily a good thing if the price is too high to be considered better value.

Self-regulation of performance. The imposition of obligations on the part of the operator to maintain adequate records of performance and to make such records publicly available. This can be supported by a guaranteed standards scheme offering compensation to consumers in the event of failure to comply with the standards guaranteed.

Monitoring and audit. To ensure that the information reported by the operator is a true and fair reflection of actual performance. This is relatively clear with respect to financial auditing, but becomes more complex when technical performance audits are required.

Tariff regulation. Price capping of tariffs to promote efficiency or allowing tariffs to rise to finance investment.

Regulatory accounts. Standard financial rules designed to serve the best interests of the sector. This is especially important for publicly owned utilities where the accounting rules tend to be standard government accounting systems that all too often fail to report the true state of the business, for example, depreciation under-reported because of historical cost accounting rules. Regulatory accounts are not only necessary to give comfort to public authorities, but also to potential investors.

Independent investment appraisal. This includes the project appraisal mechanisms adopted by development agencies as part of their financing procedures. Designed to ensure optimum technical design and often include financial covenants necessary to protect the investment in the longer term.

Formal publication of performance. To ensure that the general public is made aware how their service provider is performing. The concept is very effective in a comparative competition market environment, but not so effective when commenting about service performance in isolation of other towns.

Informal publication of performance. This includes releasing information related to performance via conventional media, such as newspapers, radio, and television. This can include public debate concerning performance, prices, and other issues.

Consumer pressure. This can be applied in several ways: investigative journalism, the ballot box in cases where the operations are part of the municipal function (although other nonwater-related political issues tend to dominate voting patterns), having consumer representatives serving on decision-making bodies, such as an oversight board, formal consumer representation organizations, and direct contact between individual consumers and the service provider.

Annex G: Contents of Volumes 2 and 3 (Available on CD-ROM)

List of Companion Reports

Town Water Supply and Sanitation Initiative
Volume 2: Business Planning for Town Water Services

Authors: Nick Pilgrim, Kevin Tayler, Sophie Tremolet, Ross Tyler, Tim Yates, Bob Roche and Mukami Kariuki

Guidance Manual
Module 0: Foundations for Town Water Supply
Module 1: Identify Critical Issues and Prioritize Interventions
Module 2: Prepare the Business Plan
Module 3: Formalize relationships and implement arrangements

Town Water Supply and Sanitation Initiative
Volume 3
Series A: Characteristics of Towns
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A2: "Appropriate Design of Town Water Systems" by Donald Lauria. Town Water Supply and Sanitation Services, Volume 3. Washington, D.C.: World Bank. September 2003.
A3: "The Case for Household Connections" by Donald Lauria. Town Water Supply and Sanitation Services, Volume 3. Washington, D.C.: World Bank. September 2003.
A4: "Management and Operation Functions" by Barry Walton and Colin Schoon. Town Water Supply and Sanitation Services, Volume 3. Washington, D.C.: World Bank. July 2003.
A5: "Procurement Planning for Private Participation in Town Water Supply and Sanitation" by Paul Stott. Town Water Supply and Sanitation Services, Volume 3. Washington, D.C.: World Bank. July 2003.

Series B: Management Models for Town Water Supply and Sanitation
B1: "Water User Associations" by Jo Smet. Town Water Supply and Sanitation Services, Volume 3. Washington, D.C.: World Bank. March 2003.
B2: "Municipal Water Departments" by Klas Ringskog. Town Water Supply and Sanitation Services, Volume 3. Washington, D.C.: World Bank. March 2003.
B3: "Water Boards" by Bruno Valfrey and Bernard Collignon. Town Water Supply and Sanitation Services, Volume 3. Washington, D.C.: World Bank. March 2003.
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C3: "NGO Technical Assistance Providers in the USA" by Stephen Gasteyer. Town Water Supply and Sanitation Services, Volume 3. Washington, D.C.: World Bank. August 2003.

C4: "A Comparative Study of Market Consolidation and Aggregation in Town WSS Service Provision in Colombia" by Mariela García V. Town Water Supply and Sanitation Services, Volume 3. Washington, D.C.: World Bank. July 2003.

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