

Town Water Supply and Sanitation

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Foreword

This report is an output of the BNWP Funded Project #43 investigating the challenges of providing water and sanitation services to towns. The report captures the key issues to be faced in the town sub-sector, 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 key sub-sector issues together in one place.

A number of country assessments are to be undertaken as part of the next phase of the project using the knowledge gained in the preparation of this report. The country assessments will test the proposals presented here to improve service delivery in towns. Each assessment will develop a set of proposals based on sub sectoral analysis and discussions with a range of stakeholders. Through this learning process the conclusions and recommendations presented in this report can be verified and adapted, leading to preparation of a guidance note, based on the conclusion of the country assessments.

Executive summary

One third of the population of Africa and Asia live in towns of between 2,000 and 200,000 people. Both the number of towns and the number of people living in towns in Africa and Asia, as well as Latin America, is expected to double within fifteen years, and double again within thirty. 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 key to a town's prosperity. But service provision in towns has been extremely poor... most often characterized by sporadic government hand-outs 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 the two, relatively well established approaches to managing rural and urban water supply and sanitation services. Towns in the 2,000 to 50,000 population range generally fall within this “management gap”, and 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 water demand and spatial growth requires planning, design and management skills that exceed “rural” community-based management approaches. But, unlike larger towns or cities, these smaller towns lack the financial and human resources to independently plan, finance, manage and operate their water and sanitation systems.

The challenge for government planners is to allocate limited government resources amongst a large number of dispersed towns. For every large town (50,000 to 200,000 people) there are ten smaller ones (2,000 to 50,000 people). The goal should therefore 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 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 upon the following elements of success: *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, appropriate design and financing, effective professional support, and contracting to secure continuity in professional support. A business planning concept is presented that integrates these four aspects of service provision, and provides a tool to build the capacity of utility managers (service provision) and town administrators (regulatory oversight). A final set of policy recommendations and actions for government / project planners and for towns is outlined.

Some of the key findings of the report are summarized below:

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. Towns then need to choose from a range of different types of

management models. Promising models for those towns in the 5,000 to 50,000 population range include water associations, autonomous town water boards, and small-scale private water companies. For larger towns traditional urban models are usually applicable.

In 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. Whereas 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. 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/financial specialists to supplement local operators. In all cases, the town should establish its own regulatory oversight body, which is separated from service provision. This separation helps to limit bureaucratic or political interference in utility management and operations, and allows the service provider (operator) flexibility to compete and innovate.

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. With 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 align the incentives of the key players, and provide incentives for good performance through performance or reform based lending. A stepped financing approach is outlined which demonstrates this approach, whereby 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, to be 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 brought up to match costs.

Technical solutions, like management models, must be based on consultation with the community, to ensure that levels of service match existing customers' willingness and ability to pay. 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. 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 that match water consumption and consumers' increasing ability to pay.

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. Innovative ways are needed to support town administrators to carry out regulatory functions, and service providers (operators) to carry out service delivery functions. Three basic models 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.

- Model 1 - Small, more remote towns can probably only afford a local operator (one capable of routine operations) and limited external professional support. Towns may individually or collectively contract specialists to supplement the skills of local operators and owners. Successful models of this kind treat water and sanitation service provision as a business or "**local enterprise**".
- Model 2 - Successful local operators may develop their business by expanding to other towns as

full service operator (one capable of 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**”.

Most small towns will need some additional support due to their lack of capacity either in providing the service, regulating the provision of service or both, but even larger towns may choose to outsource some functions to improve their effectiveness or efficiency. External professional support for the owner / regulator should be provided separately from that for service providers in order to avoid potential conflicts of interest. The basic types of external professional support mechanisms that have been identified are: (i) consulting engineers and financial advisors on a retainer basis through service contracts; (ii) private firms through a franchise or joint venture arrangement; (iii) umbrella organizations such as NGO technical assistance providers; and (iv) directly from larger utilities. Support may be organized directly by individual towns, or collectively through a regional association or through apex project management. Other options are to improve the capacity of the existing staff through, for example, national certification schemes and outreach training programs.

Contracting – Provision of water services in towns is often hampered by lack of direction, trying to achieve multiple and conflicting objectives, and routine political interference in day to day operations. Contracts are a vehicle which can start to address many of these issues. In particular, they support improved governance because they help to increase autonomy, introduce competition and innovation, define roles and responsibilities, set incentives for good performance, identify meaningful performance targets, and fulfil the achievement of social objectives. Internal (Performance) Contracts are a valuable tool to improve and monitor staff performance within the service provider. External contracts buy in services from consultants and contractors to provide towns with the flexibility they need to successfully serve their population, regardless of the capacity of the town’s own staff to perform water supply and sanitation tasks, or oversee the service provider.

Making the right choices in terms of key provisions of operator contracts is critical for towns and operators alike. They need a strategy that allows them to make the best use of available resources, including available financing and professional skills, and to meet their own particular objectives without undue exposure to risk. In the towns context, contracts must be understood as providing continuity in professional support: services that the operator is not contracted to provide need to be secured from a specialist service provider (external professional support). The best balance between these two depends on local context, which is not static, since both capacity of service providers and owners, and the needs of the community can be expected to change over time. This will be reflected in the key provisions of the contract – the more capable the operator, the more service delivery functions that can be delegated to it (perhaps not immediately but over time), and with proper incentives built into its contract, an operator will innovate to improve operational efficiency and find lower-cost ways of expanding the distribution system.

An important area of innovation in town water supply and sanitation concerns bundled approaches to design, build and operate contracts. When a private contractor assumes operational risk he has incentives to innovate through appropriate design, rapid high-quality construction, and operational efficiency. Experience is growing in the use of Design-Build-Operate contracts (linked to a management contract) and Design-Build-Lease contracts, as well as minimum subsidy concessions, as a means of replicating the positive aspects of privately financed water supply systems.

Business Planning – The principles of management, design and financing, professional support and contracting outlined above call for a dynamic planning and expansion process, where business planning is an essential tool for matching management arrangements and investment costs to water sales revenues. 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.

Key aspects of service provision are put in context in an integrated way through the business planning process, including willingness to pay, design strategy, professional support, financial viability, tariffs and connection fees, the financing plan, and performance monitoring. Business planning can therefore be adapted as an important tool to help build capacity of town administrators responsible for regulatory oversight, and utility managers responsible for service provision.

Policies and capacity building - For towns to improve their water supply and sanitation services, and address the key shortcomings identified above, 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 various 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 the provisions that bind towns to support services.
- Entry of private sector and NGO technical assistance providers should be encouraged, with successful enterprises able to grow their business 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 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.

Next Steps - The focus of this report is towns in the range 2,000 to 50,000 people, that lack the financial and human resources to independently support a full set of technical and management skills. Potential solutions have been set out in terms of institutional arrangements and demand-based planning processes that are appropriate to towns.

In the next phase of the *Town Water Supply and Sanitation Initiative*, a number of “country assessments” will be carried out to test the viability of institutional options in the country context, leading to refinement of the findings in this report, and preparation of a Guidance Note to help decision makers prepare better town water supply and sanitation projects.

1 The Towns Challenge

Water supply and sanitation in both rural villages and urban centers has received much attention during the last two decades. Given the fact that as many people live in towns as in villages and urban centers, and the relatively poor level of service in them, there is growing consensus that they deserve better. In particular, there is a need for innovative management models that provide *good quality, affordable services that are sustainable and able to be expanded*.

This document sets out the issues facing towns in providing water supply and sanitation services, and proposes a strategy for addressing the main elements of success based on sound institutional arrangements and demand-based planning processes appropriate to towns.

1.1 Towns are growing rapidly

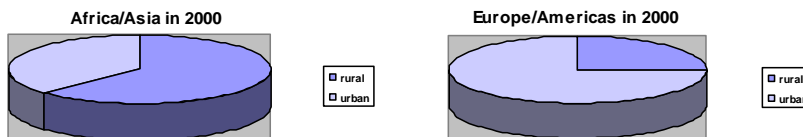
Between twenty and forty percent of the population in African and Asian countries live in towns. And as villages grow and develop to become towns, and as towns grow in size, the number of people living in towns in Africa, Asia as well as Latin America is expected to double within fifteen years, and double again within thirty. Figure 1.1 illustrates population distribution by region in 2000¹. It is expected that the current 60% rural – 40% urban split in Africa and Asia will shift to the current 25% rural – 75% 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).

The Size 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.

Figure 1.1: Population distribution by region in 2000



1.2 For every large town there are 8 to 10 small towns

Further disaggregation of demographic data is important if the towns challenge is to be properly understood. Figure 1.2 shows some typical distribution patterns in several countries for the numbers of towns in the following three size-classes: small towns of between 2,000 and 20,000 population; medium-sized towns of between 20,000 and 50,000 population; and large towns of between 50,000 and 200,000 population. Typically, for every large town there are 2-3 medium-sized towns, and about 8-10 small towns (Figure 1.2); but there are an equal number of people living in each size-class (Figure 1.3). The high proportion of small to large towns has important implications to how they should be managed.

¹ Satterthwaite: *Towns: Their Under-Appreciated Demographic, Economic and Social Importance*.

Figure 1.2 Number of towns in different size-classes

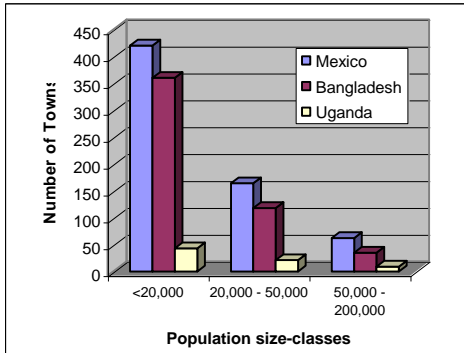
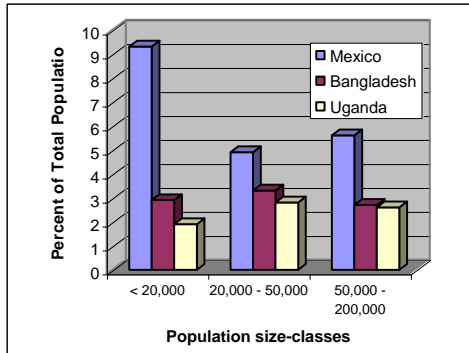


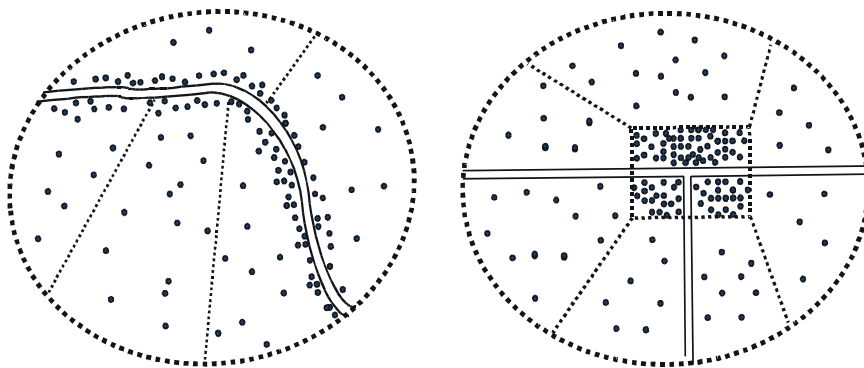
Figure 1.3 Distribution of population between different size-classes



1.3 Growth in individual towns is unpredictable

Typically towns are located along roads and at crossroads (Figure 1.4), or near water sources, but a feature of town settlement patterns is that they change over time. Furthermore, while the collective growth rate of towns in a country may be high, the growth and development pattern in individual towns is difficult to predict. In terms of water supply, towns usually have a dense core best served by piped water, and a more sparsely populated fringe area better served by public standposts or point sources. Satellite communities can be served by piped extensions or separate systems. The key principle is that alternative technologies should be considered that are best suited to local conditions and settlement patterns.

Figure 1.4: Town settlement patterns²



² Hopkins: *An Alternative Perspective on WSES Services (including the "Grey Area")*.

1.4 Wastewater disposal must be planned

Few towns can afford to invest in water supply and sanitation facilities at the same time. But few towns need to. If water demand is not too high, and local conditions (housing density and soil conditions) are favorable, wastewater disposal can be by on-site systems and investments for central wastewater facilities can be delayed. It is important, however, that both water supply and wastewater disposal be planned together to ensure proper sequencing. It's a question of providing on-site waste disposal systems now, and when, not if, sewers will be needed – starting with the town center when housing density and water consumption exceed the capacity of on-site systems.

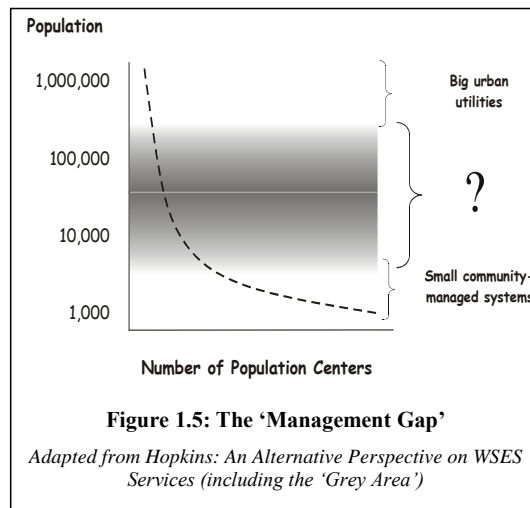
1.5 Most towns lack professional capacity

In general, the larger the town, the smaller the proportion of the population working in agriculture and the greater the importance of market and administrative functions. As 'market towns', or points on transportation routes, towns play a key role in concentrating 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 public services, such as health care and schools, and in commercial or industrial enterprises. These activities 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. Most towns, however, suffer from a lack of competent professionals and have difficulty attracting them. Towns can not go it alone, they must share the limited professional support available locally for improving efficiency, and planning and managing expansion.

1.6 The 'management gap' means that towns are neglected

In recent years good success has been achieved in rural villages with a 'bottom up' approach based on community management and development of local supply chains for goods and services. Urban utilities have also benefited from this decentralization process by being able to consolidate their operations in larger, more profitable urban centers. (See Case Study 1: Sector reform in Ghana). However, just as 'top-down' approaches, typified by the wide-mandate national/regional utilities found in many developing countries, result in a higher proportion of failure as settlements become smaller, so too does the 'bottom-up' approach that has worked for rural villages fail as systems become larger and more complex.

Towns are neither urban nor rural. As a sub-sector, they fall between two, relatively well established approaches for providing water and sanitation services. Town water supplies require management skills that exceed "rural" community-based management approaches, but are too small for standard "urban" utility-managed approaches which require sufficient revenues to support a full complement of professional staff, and the potential for full cost recovery. What is needed is a management system for towns that fills the gap in between, 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 management gap which also illustrates the fact that the boundaries of this management



gap cannot be determined with precision. Evidence suggests that towns between 2,000 to 50,000 lie within this management 'grey area', although there are regional and country differences.

1.7 Town Water Supply and Sanitation is a marginal business

Town water supply and sanitation is a marginal business – small savings and frugal spending add up to sustainable service provision. Technical solutions require cost effective design and operations, so that they are affordable and match local capacity to manage and operate. They should be expanded over time as actual, not projected, demand and revenues increase. Towns must also consider the management and operations plan that best suits their needs. Smaller towns in particular may only be able to afford a local operator, and limited external support. Community participation and cooperation between stakeholders is important to cut costs and ensure that consumers get services they want and can afford. This calls for a dynamic planning / expansion process, where business planning is very important as a planning tool for matching management arrangements and investments to water sales and revenues.

Case Study 1: Sector reform in Ghana

Until the early 1990s the Ghana Water and Sewerage Corporation (GWSC) operated as a wide-mandate organization 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 (\$376 million by the end of 2000) and operation and maintenance standards showed signs of deterioration. Following international trends at that time, 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 (NCWSS, 1994).

The reform process led to separation of GWSC into autonomous urban and rural units: GWSC to consolidate its activities in larger urban centres 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 (DAs) to pass legislation, award contracts, loan or borrow funds, and levy taxes.

A key feature of the NCWSS is that communities self-select for DA sub-project financing, and so in principle small towns are able to choose between community management (under the CWSA mandate), or to remain under GWSC. Of the 300 small town systems in Ghana under community management, over 100 of these systems 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, the Water Boards were established without formal organization or training, and they lack the business, managerial and technical skills needed to operate and maintain their systems, and to expand them to meet demand.

A recent PPIAF study 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 licence in Dzemeni (population 5,000, which doubles during market days three times a week). In all three cases, the Water Board takes responsibility for overseeing the contract/licence. These pilot studies have drawn on experiences from Uganda (see Case Study 4) and Paraguay (see Case Study 6), but are notable for the level of participation of the beneficiary communities throughout the planning and contracting process.³

³ Manu: *Involvement of Local Private Enterprises in the Operation and Maintenance of Small Town Water Service Delivery* (Volume 1), and *Manual for Community – Private – Partnership for Operation and Maintenance of Small Town Water Supply Systems in Ghana* (Volume 2).

1.8 The challenges and opportunities of decentralization

In the past governments have often attempted to service the town sub sector by means of centralized management through regional or national service providers. The problems authorities tried to overcome by centrally managing town water supplies and sanitation are the following:

- Individual towns do not have the financial and human resource base needed because there are no major industrial and commercial clients, nor a sufficiently large consumer group, that could generate the income needed to sustain water supply and sanitation systems.
- Towns acted independently, not realizing that sharing some or all service delivery functions with other towns, either through informal or formal means, could result in economies of scale.
- Actions by towns in furtherance of their service delivery usually followed the principle of greasing the squeaky wheel, rather than being based on a business plan designed to provide efficient and expandable service at the lowest possible cost.
- Towns had insufficient financial resources because decentralization did not provide towns with the authority to levy adequate fees and tariffs. Grants and subsidies were subject to competing demands on central government resources and often were not provided, or were provided in insufficient amounts.

Unfortunately, national operating organizations have rarely been able to provide efficient and sustainable services, thus aggravating, rather than solving the problem of inadequate service delivery in towns. They often lacked local accountability, had few incentives to serve dispersed urban areas around the country, and were constrained in their operations by bureaucracy and politics.

- Facilities often have been over designed to take advantage of grant or loan financing resulting in capital costs exceeding the capacity of consumers to finance or even maintain.
- Design of facilities followed traditional approaches and lacked flexibility in selecting appropriate technical standards, and design periods were too long and did not consider the possibility of upgrading and sequencing of improvements over time matching consumers increasing financial capacity to afford higher standards of service.

Decentralization has played a key part in the emergence of alternative management models for town water supply and sanitation. The biggest driver for decentralizing responsibility for water supply and sanitation is the belief that lower levels of government (or community groups) are better placed to respond to local conditions and consumer preferences, and that consumers are more willing to pay for services that respond to their demands. This approach appears more likely to succeed than the centralized approach but has itself faced many challenges, including:

- Towns lack the organizational capacity
 - to operate and maintain water supply and sanitation facilities – they lack adequately trained operating staff and do not have access to contractors capable of operating municipal water and sanitation systems.
 - to organize service delivery by others, or judge the competence of contractors willing to assist the town, or determine whether solutions proposed by others are best suited to solve water supply and sanitation problems in an effective manner.
- Small contractors potentially available as service providers lack the necessary skills, and large contractors are not interested in single towns.
- Decentralization is often not accompanied by the simultaneous decentralization of authority that would permit local managers to take timely problem solving actions.
- Decentralization usually proceeds without the corresponding training and technical assistance required by towns to assume responsibility for managing water and sanitation services.

- Towns do not have the financial resources to pay for standard approaches, nor do they have the ability to raise the financial resources required.

1.9 The ingredients of successful town water supplies

Solutions to all these problems exist. Drawing on the outcome of the small towns conference in Addis Ababa (June, 2002)⁴ and experience since then, the following key features for a successful outcome in the town sub sector can be identified:

Autonomy: Town water supplies are a marginal business, with no room for error. As a result, it's important that management decisions are based on what's best to provide good quality, affordable water to the expanding communities, and that revenues are not diverted to other uses, even if it may benefit the town. Utility operators should be able to hire/fire staff, set attractive salaries, offer performance incentives, disconnect both public and private non-payers, and be free to improve and extend services. Revenues should be ring fenced, and reinvested in the town to pay salaries, operate/maintain facilities, and expand the system.

Transparency and accountability: Transparency and accountability are essential to gain and maintain the trust of users and investors. They are founded on: (i) clear roles and responsibilities, (ii) independent audit and monitoring, (iii) disclosure of information and (iv) consultation with consumers. They are particularly important in situations where there is a monopoly in service provision. Arms length, written agreements between the Corporate Oversight Body (e.g. Water Board) and the operator improve transparency and accountability, eliminate the conflict of interest that exists when a Corporate Oversight Body supervises its own staff, and provide a means of introducing incentives for good performance. Similarly, regulatory (e.g. town council) and corporate oversight functions should be separated.

Demand responsiveness: Approaching small town water supply with the basic goal of offering services that diverse customers want and are ready to pay for is a powerful ingredient of success. Increasing the revenue base by providing house connections to customers that can afford larger volumes of water is particularly important. At the system level demand responsive approaches lead to higher cost recovery and internal cash generation ensuring sustainability and allowing further development. At the country/program level demand responsiveness allows for more efficient use of public funds.

Cost effective design and operations: The technical design and the operations and management plan for the town utility must reflect local conditions, capacity and culture, and match consumers' expectations in terms of service levels and affordability. The community should be provided with information needed to make informed choices about technical options, management models and professional support. Business plans that match investments to future water sales and revenues, based on demand assessments and realistic financial projections, greatly improve the prospects for long term sustainability.

Professional capacity: The fatal mistake that most towns make is underestimating what's required to successfully manage their water supply facilities, and assuming that they can go it alone. Experienced professionals are needed to operate town water supplies efficiently and to expand them to keep up with a growing population. What's required are skilled operators to perform routine operations, plus specialists to formulate and guide efficiency improvement programs and to handle the technical and financial aspects of system expansion. The challenge is to secure these services given a small revenue base and limited human resources. Innovative ways must be found to share the services of scarce, relatively expensive specialists between towns.

⁴ 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.

Competition: Towns that rely on their own staff to operate their water supplies are effectively small monopolies. There's little incentive to perform effectively, and it's often impossible to fire staff for poor performance. The usual process is one of rehabilitation and expansion, followed by long periods of deteriorating service. However, if private operators were allowed into the market on a competitive basis, local entrepreneurs would have the opportunity to create and grow new businesses, innovation would be encouraged, and the price for a sustainable water supply service that meets local demand would drop.

Ability to expand: Expansion is essential for a successful town water supply. This serves to meet the water demand of a growing population, and to raise the revenues needed to meet cost recovery objectives. Facilitating factors for system expansion include: (i) access to adequate water resources, (ii) a stable legal framework to allow a fair return on investments, (iii) limited administrative barriers related to service areas, (iv) access to technical and financial expertise, and, (v) incentives built in operators' contracts.

1.10 Organization of the report

The previous sections set the scene for the Towns 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 addresses the main elements of success. It is set out in terms of sound management structures, appropriate design and financing, effective professional support, and contracting to secure continuity in professional support. A business planning concept is presented that integrates these four aspects of service provision, and provides a tool to build the capacity of utility managers (service provision) and town administrators (regulatory oversight). A final set of policy recommendations and actions for government / project planners and for towns is outlined.

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 and 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. The need for stakeholder participation in the selection of technical alternatives and the design of cost recovery methods is emphasized.

Professional Support (chapter 4) reviews a key element for town water supply and sanitation. Most towns probably will require assistance in the operation of water supply and sanitation facilities, at least in the near term. The chapter presents the many possibilities available to towns that are unable to manage some or all of the tasks required for successful service delivery. This ranges from buying in particular services through to the formation of aggregated entities at a scale which can support a full range of professional staff.

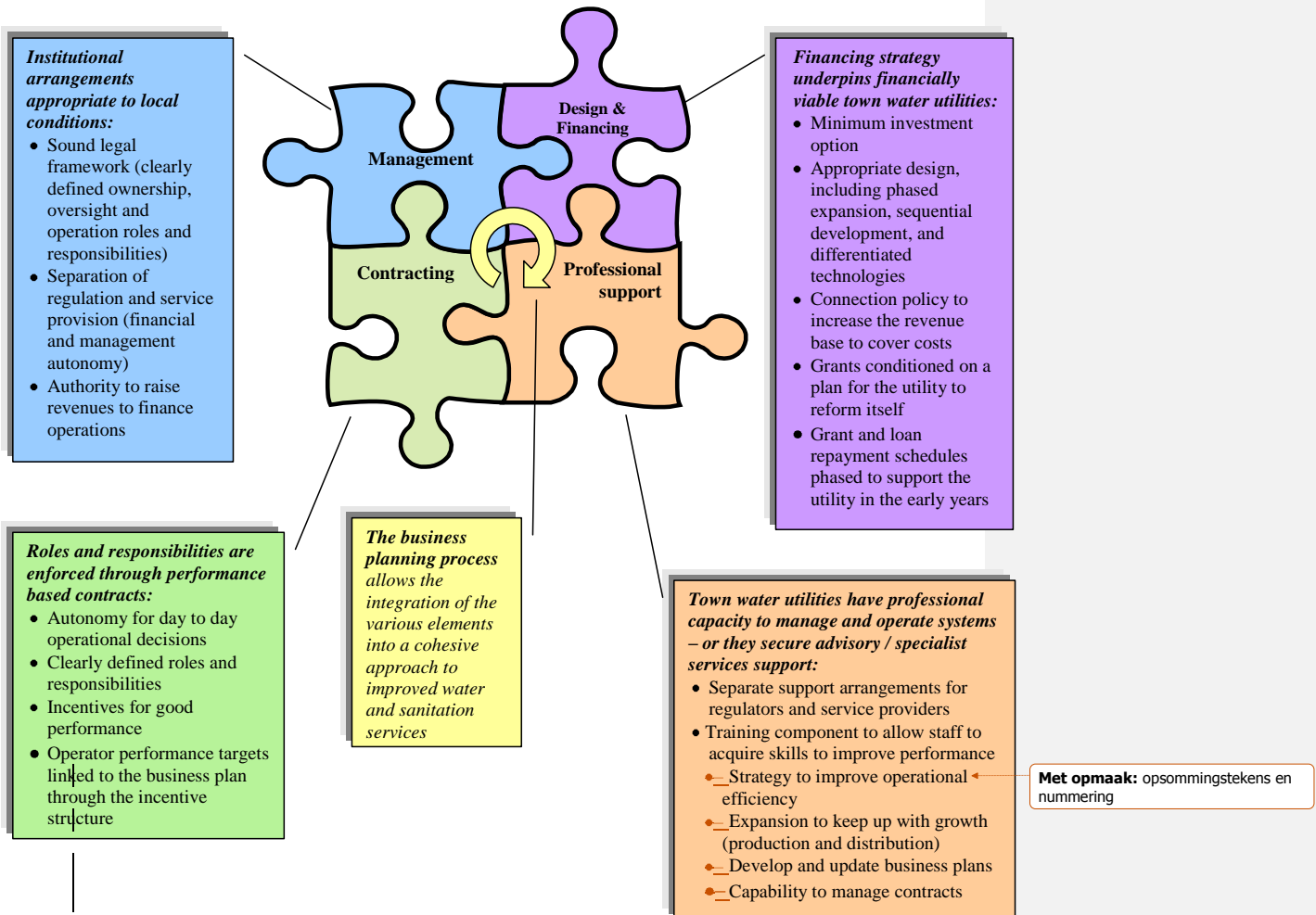
Contracting (chapter 5) presents approaches for service delivery based on contracting the design and construction of facilities and part or all of the operating functions to private or publicly owned operators.

Business Planning (chapter 6) provides information on how to plan the provision of services for both the short and long term. For the long-term viability of the service, a business plan drafted with the input from all stakeholders matching service needs with an investment plan, a financing plan, an operations plan and performance targets, is essential.

Conclusions and Policy Recommendations (chapter 7) summarizes the conclusions of the different chapters and proposes policies that would promote the successful implementation of the improvements described in the document.

Figure 1.6 graphically presents how the various aspects of water supply and wastewater management interlock to make a single whole defined in the business plan.

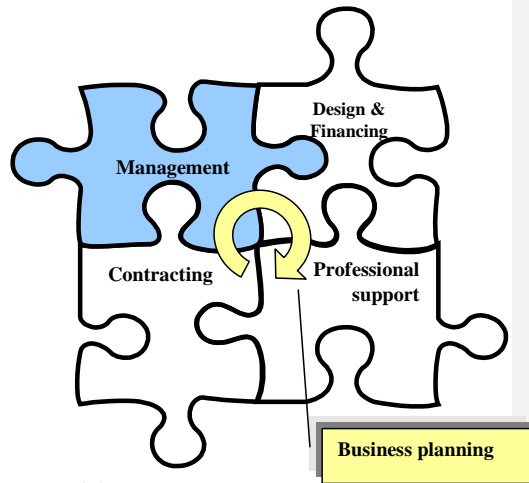
Figure 1.6: The four aspects of service provision and their key ingredients for success



2 Management

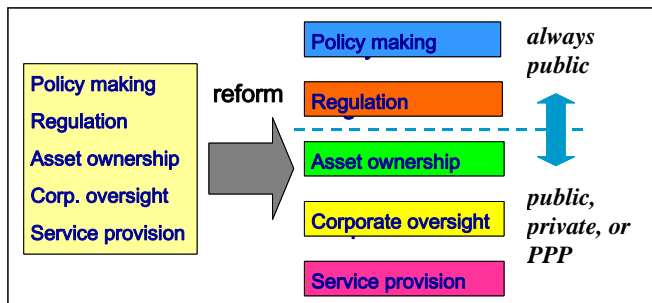
As a result of decentralization a number of alternative management models have emerged in towns. These include Community Water Associations, (ring-fenced) Municipal Water Departments, autonomous Town Water Boards⁵, and small scale Private Water Companies. In addition, larger utilities and share corporations with a mix of public/private ownership can serve larger towns or groups of towns.

Towns are therefore faced with a wide range of possible management and institutional arrangements for water supply and sanitation. These are presented below and analyzed from the perspective of the town on the basis of ownership, oversight and operations functions. It is assumed that national government will exercise its duties of sector policy making and regulation, although some of these duties may be delegated to local authorities.



For each model the degree of separation between the functions is the defining feature, along with the legal basis under which the entity operates. These issues are discussed in more detail in other documents (such as the World Bank’s Operational “Guidance Note”, and BNWP Project # 33: Public Modes of Engagement) and are graphically represented in Figure 2.1. Critically, increased separation of functions (in practice, not just in theory) is likely to improve the chances of a successful water sector. One of the failings of the water and sanitation sector in the past has been the lack of clarity of roles and responsibilities which has resulted in poor governance and conflicting objectives for the service providers. This has typically resulted in a deteriorating service to customers and increased drain on scarce municipal resources.

Figure 2.1: Separating functions within the water and sanitation sector⁶



⁵ World Bank documents often use the more formal term Statutory Body. Water Board is used here because the term is common in the town sub-sector. The model is defined in Section 2.3.

⁶ World Bank: *Public and Private Sector Roles in Water Supply and Sanitation Services: Operational Guidance for Bank Group Staff*.

2.1 Policymaking 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 to provide water supply and sanitation services to towns. They should always include the delegation to the towns of the authority to raise revenues to finance operations (tariffs, fees, borrowings).

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 performance of service providers and to judge whether standards are being met. To be effective, standards should also provide for remedial measures in cases where standards are not being met.

The central government usually establishes a regulatory oversight body, such as an environmental protection agency, to whom it delegates the responsibility of monitoring and enforcing environmental standards. Other agencies (ministries) generally provide oversight of specific aspects of utility operations and ensure that applicable national laws are observed.

Towns also set policies and regulations for the operations of service providers serving the town. National policies and regulations usually specify the powers delegated to towns, and provide guidance in how towns are to implement regulatory functions delegated to them. Few town councils have the expertise required to successfully perform regulatory oversight. They therefore have to contract external professional support to assist them in the regulatory oversight function.

2.2 Ownership, Oversight and Operations

All management models require a sound legal framework that defines ownership, regulatory oversight, corporate oversight and service provider roles and responsibilities.

Ownership (*Owner*): Legal ownership is based primarily on political / constitutional considerations and/or sources of financing. In most towns, ownership is important insofar as stable conditions help to ensure that revenues are reinvested in the system (or alternative financing secured) for maintenance, renewal and replacement, and expansion. Ownership is usually vested in the served town or community, unless they decide on the privatization of services and divestiture of its assets.

Regulatory Oversight (*Regulatory Oversight Body*): The owner always acts as the local regulatory oversight body, **ROB**, or appoints an agent to act in that capacity on his behalf. Among the regulatory oversight responsibilities are the approval of tariffs, fees and investment plans, ensuring that public health conditions are met, monitoring service provider performance (technical and financial standards), and performing any environmental monitoring and enforcement tasks delegated to the town by the national government.

Corporate Oversight (*Corporate Oversight Body*): A corporate oversight body, **COB**, (e.g. board of directors, town Water Board) is responsible for providing overall direction to the management of the service provider, approve budgets and business plans and perform such other duties as defined in the articles of incorporation and national laws governing corporate enterprises.

Service Provision (*Operator*): Service provision is the responsibility of the utility manager / staff or a contracted operator. Responsibilities include day to day operations and preparation of business plans.

The legal framework under which the entity operates is important. Some operate under public law, others under commercial. Typically public law limits the flexibility of the service provider in the critical areas of procurement and staff management, while reducing the rigor associated with reporting and accounting. Entities operating under commercial law will have greater obligations in relation to reporting of audited financial statements, yet have much 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

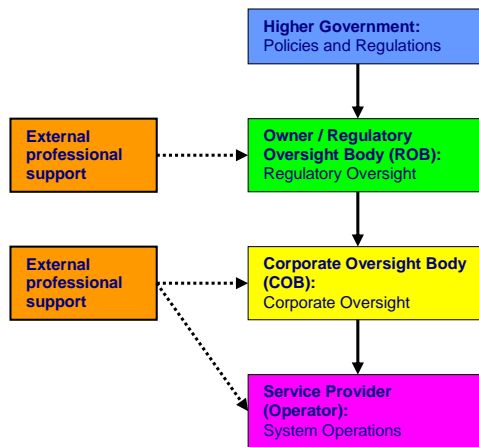


Table 2.1 Summary of five management models commonly found in towns*

Model	Water Association	(ring-fenced) Municipal Water Department	Water Board	Small-scale Private Water Company	Share corporation
Ownership	Town / Water Association	Town	Town / 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 utility staff
Who controls decision making?	End-users	Mayor / 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-sized and large towns

* Regulatory oversight in every case is assumed to be the responsibility of town council

Management

2.3 Management model options for towns

Water Associations are typically registered under 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 is usually through government grants. Ownership either remains with central / local government, or it is transferred to the Water Association via permit or some other legal instrument. Water Associations are typically established in more 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, they are not always formally accountable to local government. Decision making is largely in the hands of end-users, represented by an elected executive committee. Operating staff may be employed locally, or the executive committee may choose to contract a Private Operator. (Example: Paraguay, the Water Associations or *Juntas* in small rural towns contract private operators or *Aguateros* under a ten-year concession contract).⁷

In the case of Municipal Water Departments, the municipality owns the assets, although these assets have usually been financed by grants from the central government. In smaller municipalities, the Water Department is directly under the Mayor or the Municipal Council, and in larger municipalities under a Public Works Department. Operations and maintenance are carried out by municipal staff. Very often a Water Department has little autonomy under the Municipal Council that has created it. Accountability is often imprecise and not based on business plans with agreed performance targets. Water Departments may have their assets and finances ring fenced, or they may be co-mingled with other municipal services.⁸

Box 2.1: Municipalities and towns

The terms 'municipal' and 'town' are often used interchangeably. However, a 'municipality' can be a larger administrative area which includes one or more towns and the surrounding rural areas, whereas a 'town' clearly denotes a single settlement.

With Town Water Boards, the town establishes the Water Board through bye-laws, and invests ownership and oversight in the Board, subject to the conditions set out in a performance contract. The Water Board represents various stakeholders besides consumers, and can include representatives from local government or local professionals. As a local stakeholder model, successful Water Boards therefore balance the interests of consumers, with accountability to local government, and securing their own professional capacity. Unlike Water Associations, Water Boards are established where local government is active, and the model scales up to even large towns. Operating staff may be employed locally, or the Board may choose to contract a Private Operator. (Example: Uganda, Water Boards contract private operators under a two-year management contract).⁹

Regulated Small-scale Private 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. They provide services having first been granted a license or a concession contract. Most Small-scale Private Companies in the town sub-sector are owner-managed and operated. The ownership of physical assets will depend on the legal basis (license or type of contract) including the method of financing. 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. (Example: Ghana, PPIAF pilot study for a Build-Own-Operate license in Dzemeni).¹⁰

⁷ Smet: *Water User Associations*.

⁸ Ringskog: *Municipal Water Departments*.

⁹ Collignon and Valfrey: *Water Boards*.

¹⁰ Meyers: *Private Sector Water Entrepreneurs and Companies*.

National or regional companies. In the past in some developing countries, wide-mandate national or regional utilities have provided services in towns and rural areas. Their performance has not met expectations, but recent sector reforms and internal restructuring related to decentralization and introduction of private operators have led to significant improvement in many countries. The typical reformed National Utility is 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. In some cases individual towns have their own system manager, and where system managers are under performance contracts this can improve autonomy and accountability at the local level. Further reform can lead to establishment of autonomous Town Utilities (although unlike a town Water Board management model, the system manager would typically remain accountable to a Board of Directors appointed at a higher political level). Local staff may be under contract, rather than government salaries. (Examples: Uganda, the National Water and Sewerage Corporation ¹¹; and Tanzania, the Urban Water and Sewerage Authorities, e.g. for the town of Arusha). ¹²

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 particular, where towns aggregate together, new forms of “regional utilities” appropriate to local conditions can be expected to emerge (described in more detail in Section 4.5).

Case Study 2: Experiences from Europe – the Netherlands, Spain and France

In Europe there are a number of examples that may be relevant in the developing country context. In the Netherlands, Public Limited Companies (PLC) 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. In Spain, Mixed-Ownership Companies (Empresa Mixtas) are established through local government bye-laws, and the contract 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.

The two management models 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. The Netherlands is an example ‘aggregation’, where towns group together, while the Spanish model is an example of ‘market consolidation’, where the operator serves more than one town through separate contracts.

In France, where the average size of 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. ¹³

The ownership, oversight and operations arrangements for Water Departments, Water Associations, Water Boards and Small-scale Private Companies are summarized in Table 2.2.

¹¹ For details on NWSC visit www.nwsc.co.ug

¹² Walton and Schoon: *Regional and National Utilities*.

¹³ For further reading on the Netherlands and Spain see the documents prepared by Schwartz and Ringskog. For France, see *Models of Aggregation for Water and Sanitation Provision* by ERM.

Table 2.2: 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 Association (see Smet)	Water 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 central / local government, or it is transferred by the state to the Water Association via permit or other legal instrument.	Water Associations are more common in rural areas, with little history of public administration (e.g. no Town Council, weak ties with 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.	<ul style="list-style-type: none"> ▪ Smaller or less formal Water Boards / 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. <p>Business planning is minimal (including expansion plans and efficiency improvements) and local operating staff may need extensive TA even with routine operations.</p>
Water Board (see Valfrey and Collignon)	The Town establishes the Water Board through bye-laws, 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/approval for business plans, procurement activities, investment programs and tariff revisions. The Water Board represents various stakeholders besides users.	<ul style="list-style-type: none"> ▪ Larger or more formal Water Boards / 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. <p>TA may be needed for operation efficiency improvements and expansion planning, to help the operator prepare business plans, or to help the Oversight Board manage the operator contract.</p>
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.

In most countries a range of management model and professional support options is needed, and Water Departments, Water Boards, Water Associations (in rural towns), Private Companies, and National / Regional Companies have their own market niche (See Case Study 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 twelve other towns. The largest of these is about 110,000 population, but the smallest is only about 20,000. 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 'delegated' management contracts, and recent 100-day 'stretch programs' have lifted performance so that most of the larger towns achieve full cost recovery. On the down side, towns have little control over investment and management decisions, and it is worth noting that the practice of over-sizing systems to serve projected rather than current demand means that only 42% of total capacity in NWSC served towns (excluding Kampala) is operational.

In the 'small towns' in Uganda an alternative model has been established that requires the town to establish an autonomous Water Board, and to have them contract a Private Operator through a Management Contract. At present six operators serve 24 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 to 30,000 people) and those served by NWSC (20,000 to 110,000 people), and some of the Private Operators are ex-NWSC staff.

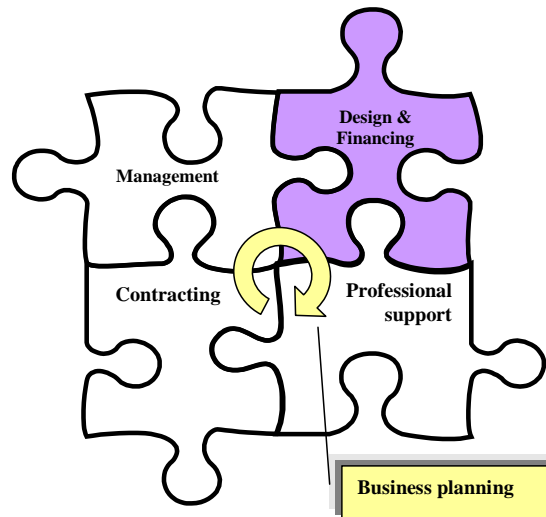
A third category of settlement in Uganda are the 'rural growth centers' (1,000 to 5,000 people), where the prevalent model is for Water Associations to contract 'one-person' operators, and form umbrella Regional Associations with donor financial and technical support. It is worth noting that the Water Association model was first adopted in the small towns but with a general deterioration in service standards which led to the introduction of Water Boards/Private Operators.

2.4 Key Points

- National governments generally have policies that define how services are to be provided, with regulations about how policies are to be implemented.
- Decentralization policies delegate ownership (together with some regulatory functions), as well as the responsibility for service provision, to the town. They should also include the delegation to the towns of the authority to raise revenues to finance operations (tariffs, fees, borrowings).
- Management models should clearly separate regulatory and operational responsibilities. The generic arrangements and responsibilities include: higher government (policies and regulations); the owner / regulatory oversight body (regulatory oversight); the corporate oversight body and service provider (operations).
- In most countries a range of management models is needed. Town decision makers (elected and non-elected leaders) need to be provided with information to enable them to choose amongst management model options.

3 Design & Financing

Design of water supply and sanitation systems has traditionally been carried out by engineers (consultants or utility staff), who have prepared system designs based on prescribed national demand/design standards to meet projected demands for 20 to 25 years. The resulting systems are often expensive to construct and operate and, as a result, end up providing piped service to only a small portion of the population who can afford to have their own connections. This problem is more pronounced in towns with smaller and often more homogeneous population and, therefore, less opportunity for economies of scale and cross subsidies.



More recently, social scientists have begun to participate in project design by working with local stakeholders to identify effective demand (user willingness *and* ability to pay). Engineers and financial analysts participate at this stage by providing preliminary designs and associated cost estimates (construction *and* operation). Representatives of all three disciplines then assist the stakeholders to identify the most suitable option, satisfying cultural preferences at affordable costs. After successful completion of this joint planning effort by stakeholders, social scientists, engineers and financial analysts, the project moves to the detailed design stage, the identification of financial resources, final agreements and implementation.

This chapter therefore discusses both the physical and financial design of water supply and sanitation systems to emphasize the need to integrate technical and financial viability. For town water supply and sanitation, the room for error is very slight and any oversight in the design phase will have significant financial implications on tariffs and, ultimately, on financial sustainability. It is important, therefore, that an iterative process is undertaken which identifies the trade-offs that exist when designing town water supply and sanitation services.

3.1 Design ¹⁴

3.1.1 Introduction

With the increasing rate of urbanization, many towns are growing and need piped water systems with appropriate sanitation and drainage to accommodate commercial and industrial growth as well as residential demand for household connections. However, standard designs applied in larger urban centers may be unaffordable or simply unnecessary to the current population in towns, in terms of physical scale, investment cost and ongoing operation and maintenance obligations. The first part of this chapter discusses possible strategies for design of town water supply that allow town 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. Design strategies should also aim to minimize government financing required in the sector and target resources most effectively. The strategies discussed include:

¹⁴ This section draws extensively on the work of Don Lauria in *Appropriate Design of Town Water Systems*, and *Connection Policy for Town Water Systems*.

- Design of service level based on customers' willingness and ability to pay (i.e. the effective demand);
- Phased expansion and sequential upgrades corresponding to demand;
- Connection policies designed to increase the number of household connections;
- Government promotion of affordable design – regulations, design standards, and guidelines for design, connection policy and stakeholder consultation; and
- Systems and technologies appropriate to local capacity and culture.

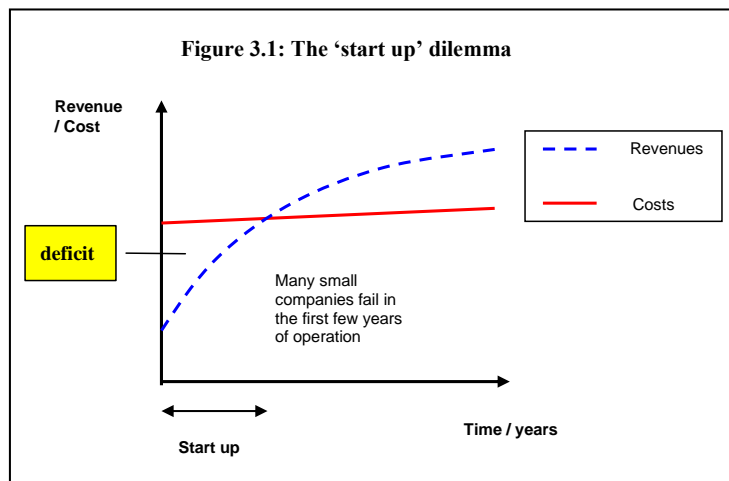
3.1.2 The start-up dilemma

In the early years of their development 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 and, therefore, demand for water and revenues, take 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 over-designed, or if grant financing is not available at start-up where construction costs are high and revenues are low. Even where design matches short-term demand, it takes time for revenues to increase to cover costs. The smaller the gap, however, the more sustainable the utility. 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, face several problems:

1. Customers supplied with 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;
2. Low income consumers and immigrants from rural areas previously supplied by wells or standpipes, are not accustomed to pay for water and may be reluctant to pay connection fees and tariffs; and
3. 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.



3.1.3 Designing service levels based on demand and willingness and ability to pay

The first steps in design of a town water supply system should be (i) assessment of the current situation, including institutional capacity, (ii) preliminary identification of technically feasible options, (iii) a survey of customer demand and willingness and ability to pay for improved service, and (iv) an assessment of regulatory requirements (e.g. design standards). This phase of program/project preparation probably requires the participation of a social scientist, and in some cases public health specialists, in addition to engineers. The four steps may be implemented more or less in parallel to reach conclusions at an early stage.

Preliminary identification of technically feasible options: Technologies and approaches suitable for the provision of services (reflecting user cultural preferences and costs) need to be assessed. Governments may also want to issue guidelines on identifying and estimating the cost of technology options for town water supply and sanitation, emphasizing lower cost options.

Survey of customer demand. 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 preferably should participate throughout the design process. Guidelines have been developed for conducting willingness to pay surveys in towns (WEDC, 2003) that can be adapted to local circumstances as necessary. (Also, see Section 3.2.3 notes on connection agreements).

Estimating future demand is particularly important for small towns because their customer/revenue base is small and thus any errors in demand (quantity or spatial) will have serious repercussions on a system's financial viability. Careful sequencing of investments for system components designed for short design periods (see table 3.1) to accommodate future changes in demand is essential.

3.1.4 Government promotion of affordable design

Governments can facilitate affordable design by adopting appropriate regulatory requirements and standards for town water supply and sanitation. These requirements should cover standards for materials and design, development and dissemination of guidelines for design, assessment of willingness to pay and alternative connection policies. Local decision making by beneficiaries is fundamental to town water supply and the major force behind decentralization. However, towns cannot 'go it alone.' They need good financial and technical advice to make the right decisions. Most likely, it will be necessary to train local consultants in the use of these guidelines so that they are better able to assist towns with appropriate design.

3.1.5 Phase expansion to minimize fixed costs

Appropriate design of town water systems is about 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 should therefore plan for the current population, but should also plan to gradually expand the system based on actual demand. Such a 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 piped networks for both water supply and sewerage depends largely on the length of the network, far less on the diameter of pipes. A 20cm diameter water main requires the same excavation as a 10 cm diameter pipe but carries four times the amount of water, at the cost only of the increase in pipe size which, depending on local conditions and materials, is likely to be less than 20% of total installation cost. As a consequence, increase in density of population is less significant than changes in the spatial distribution of the population. Conditions are similar for sewer networks.

House Connections - It is important to ensure that connections be carefully constructed of high quality materials because experience shows that most system water leakage occurs through defective house

connections. Because the individual leaks are relatively small, many connections must be repaired to have a significant effect on water savings, yet because there are such large numbers of leaky connections, the water and therefore the financial loss to the utility is substantial. The cost of fixing so many leaks is also expensive, thus the need for high quality material and craftsmanship.

Modular Approaches mean that design and construction must be viewed as ongoing activities, rather than onetime investments. The underlying principle is to construct only when the investment leads to increased water sales and revenues within an acceptable timeframe. Modular approaches require that system components are initially designed with only limited excess capacity determined on the basis of: economies of scale (there are usually significant long-term cost savings in building the component as large as possible, but there is a risk that demand may not grow as much or as quickly as predicted, or that changes in the spatial distribution of the population to be served changes), mechanical reliability (some excess capacity is needed to cover for short term mechanical failure of similar components, e.g. reserve pumps or wells), security against future availability (the component may not be readily available at a future date), and uncertainty over 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 below shows some example recommendations for three categories of components (a more detailed explanation is provided in Annex C).

Sequential improvements are possible for both water supply and sanitation. For the latter, the siting and design of on-site facilities will reduce the cost of connecting to a sewer system. For the former, designing networks so the later addition of transmission capacity can increase the quantity of water delivered through the first stage network helps to increase capacity at reasonable cost.

It is more difficult to design a sewer system using the modular approach. Once the need for evacuating sewage exists, it is best to install pipes adequate for future demand. The reason is the much higher cost of installing sewers as compared to water (laying pipe to accurate grade at a greater depth than water mains).

As long as water consumption is low, on-site disposal may be the first step in the modular design of a sanitation system. The solution 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.

Table 3.1 Modular approaches to design – recommended excess capacity¹⁵

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

¹⁵ Lauria: *Appropriate Design for Town Water Systems*.

3.1.6 Economies of scale

Economies of scale can offer significant savings in both 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, i.e. 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 by 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 to the cost of building several treatment plants without the large trunk mains. The comparison needs to cover both construction and operating costs. If costs are relatively comparable, a decision should be based on a comparison of the damage caused by the failure of one of several plants versus the cost of the 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 always result in administrative economies of scale, but connecting their systems may increase the total cost of facilities.

3.1.7 Connection policy

The connection policy plays a very important role in creating a financially viable town water and sanitation utility. The 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/commercial connections as possible. For sanitation, encouraging connections to the sewer system is not only good financial policy but also a requirement to protect public health and the environment. The main issues to be considered are (i) the type of connection, (ii) the connection fee, (iii) the method of payment for connections, and (iv) the frequency of billing of 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 (e.g. with service through shared connections or stand posts), on-site and other, less expensive alternatives to standard sewers may be acceptable.

Type of connection. Some of the alternatives are: an individual connection; shared connections with neighbors (joint account); buying from neighbors; and buying from a public or private kiosk.

- Individual connections – connecting indoor plumbing to the system or a yard hydrant on the private property being served.
- Sharing connections - if connections are metered, then selling water to unconnected neighbors, or sharing one connection between a group of households, is a legitimate option for the utility to reduce the cost for individual consumers without connections. In these cases, increasing-block-tariffs drive up the price of water for those sharing a connection, unless the tariff is adjusted to account for sharing.

- Public or private kiosks - kiosks provide another method to sell water to unconnected consumers. Whether the kiosk is operated by the utility, or subcontracted to a private entrepreneur is less important than the staffing and operation of the kiosk during appropriate hours. Payment at the kiosk may be in cash, or with pre-purchased tickets at a price that is affordable (lifeline tariffs with a surcharge to pay the attendant).
- For a fuller discussion of tariffs, see Financing, section 3.2.2

3.2 Financing

3.2.1 Introduction

Strategies for financing water supply and sanitation in rural communities or in large urban centers are well developed. 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 spectrum. There is broad acceptance that investment in new rural water supply systems for small communities usually require a large share of government grant financing with sufficient community contribution and training for ongoing maintenance and management to establish capacity and ensure a sense of local ownership. It is also widely acknowledged that local governments (usually at the district level) will need to assist with contracting for construction of new rural water supply systems and for consultants to carry out community preparation and provide ongoing support in the form of technical assistance and monitoring and evaluation. For large urban water supply and sanitation systems, the utility model is followed and economies of scale allow for full cost recovery, with governments and donors possibly financing subsidies during phase up of tariffs and new connections to serve the poor. In these larger cities, various forms of private sector participation have proved feasible to improve service levels and efficiency. Cross-subsidies between customer categories and consumption blocks promote connections for low income consumers and may be a permanent feature in cities.

It has proved difficult to adapt these models to water supply and sanitation for towns. The 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. Further, 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. As noted in the first part of this chapter on affordable design, in most cases towns will not be able to afford to borrow for the full investment cost. They will usually need grant financing to establish themselves as financially viable, creditworthy entities, whose subsequent revenues can cover their recurrent, replacement and expansion costs. The long-term objective of the initial concessionary assistance is to implement the measures and policies that will eventually lead to financial self sufficiency.

This section first reviews sources of financing typically available for town water supply and sanitation and then develops possible strategies for financing based on an understanding of the current situation and options available.

3.2.2 Sources of financing¹⁶

The sources of finance available for town water supply and sanitation may include:

- Central government with donor support.

¹⁶ 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.

- Local government.
- Tariffs.
- Connection fees.
- Special purpose funds.
- Private sector financing.

These are described in more detail below.

Government/donor financing: Government financing with donor support has been and will probably remain the chief means of financing town water supply and sanitation projects for the foreseeable future. With reforms in place and investment financing appropriately targeted and performance-based in a way that helps to implement the reforms, governments and donors can improve sustainability of systems, open up more options for future financing sources and thus reduce dependence on limited government funds. The goal should be to help utilities develop and transform into financially self sufficient entities, able to finance operation and maintenance, systematic renewal and replacement of assets and expansion of the system to meet growth needs over time through internally generated revenues and loans. Government can also help to bring down the cost of investment by requiring competition for design and construction contracts.

Local government financing: Decentralization has increased the responsibilities of local governments to provide public services, including water supply and sanitation. With decentralization, local governments are gaining more central government budget transfers and are being granted increasing powers to raise local revenues. In addition, capacity and systems are being developed at the local level to plan, implement, manage and regulate local service delivery. Along with their new responsibilities, local government officials are increasingly accountable to their local constituents and are expected to be more responsive to their needs. In the least developed countries, most local governments still lack sufficient resources to fully fund needed improvements to water supply and sanitation, but can play an important role in mobilizing resources and providing the enabling regulatory environment and institutional arrangements. 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 often include tariff covenants – guarantee by the local government that tariffs will be maintained at levels sufficient to allow for loan repayment.

Tariffs: Tariffs can provide internally generated funds for ongoing operation and maintenance, systematic renewal and replacement of assets and expansion of the system to meet growth needs over time. Reforms may be needed at the national level to define cost recovery objectives, provide standards for tariff setting and establish sound regulation. Even where there is no national regulator, at a minimum the government can provide for benchmarking and transparency as a means of monitoring policy implementation and promoting efficiency. Tariff reform is more likely to be implemented if national governments and donors predicate financing on implementation of appropriate tariffs and appropriate 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 sometimes 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 and, therefore, financial viability.

Experience indicates subsidized connections for low-income households is an appropriate strategy for town utilities in order to increase water sales. For example, in Cote d'Ivoire¹⁷ the following policy is adopted: commercial, industrial, institutional and wealthy domestic consumers pay the full connection cost up front; low-income domestic consumers can apply for a subsidy, and pay part of their reduced

¹⁷ Lauria: *Connection Policy for Town Water Systems*.

connection fee together with a security deposit up front and part in installments; subsidies can be financed from a revolving fund, paid for from a percentage surcharge on the tariff¹⁸. An alternative approach would be to include materials and labor for a certain number of initial connections in the capital investment plan financing and offer subsidies for individual connections to low income households or groups of households. Offering consumers a choice in the type of connection and the connection fee gives more people access 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: Special purpose funds can be used to provide investment financing for the sector, but these should 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 finance water supply and sanitation, among other things. Such funds can provide grant financing and loans on commercial terms to fund implementation of reforms (e.g. improved financial management systems, project planning and procurement), pay for project preparation and finance investments. These funds have worked best when the commercial banking sector and/or representatives from the private sector have been involved in their management and governance.

Private sector financing: Private financing should eventually be available to utilities that are creditworthy – directly from the financial market or brought to the project by private operators. In most developed countries such 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. The financing is often provided by pension funds and other institutional investors who view water utilities as good credit risks due to their financial autonomy, steady revenue streams, strong financial management systems and financial planning, routine external audits, and credit ratings by reputable agencies. 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 institutional 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 operations management, usually evidenced by several years of audited financial statements that indicate no major issues. Other factors that affect creditworthiness are management capacity, governance/accountability of the institutions and customer demographics. Utilities applying to borrow will need to present financial projections showing how tariffs and user charges will be sufficient to meet cash requirements, including routine operation and maintenance costs, renewal and replacement of assets, expansion of the system to meet customer demands and generate the revenues projected and debt service. 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 and/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.

3.2.3 Financing strategy for towns

The strategy to be adopted in any given country to improve town water supply and sanitation will depend on the present status and need for policy reform in the sector as a whole, and experience to date with implementation. The first step is to conduct a diagnostic to review the current situation, identify the needs of the sector, what has worked well and what has not resulted in sustainability. Based on the

¹⁸ About 90% of the domestic connections in Cote d'Ivoire are subsidized.

diagnostic and information about good practice in the country and internationally, the strategy should be developed. It should also take into account the fact that water is a contributor to economic development, and not just a recipient of aid. Annex D lays out questions to be addressed in an assessment of the sector.

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, 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.

The following strategies are suggested:

Establish town utilities with a minimum investment to provide a level of service existing customers are willing and able to pay, with a plan for expanding and upgrading the system: The aim should be to minimize government financing required in the sector by establishing town utilities with a minimum government investment, after which utilities should be able to finance all costs including operation and maintenance, renewal and replacement, expansion and upgrades from revenues or borrowing. Efforts should be made to ensure design standards are affordable to town customers.

The initial investment may be from a mix of grants, equity and loans. The principle is that the combination of grant/equity/loan should allow the utility to move to financial sustainability. The amount of initial grant required will depend on the size of the town, population growth rate and rate of new connections. This is consistent with an approach based on phased expansion with minimal excess capacity at each step. It also means that limited government funds can be used to support a larger number of towns.

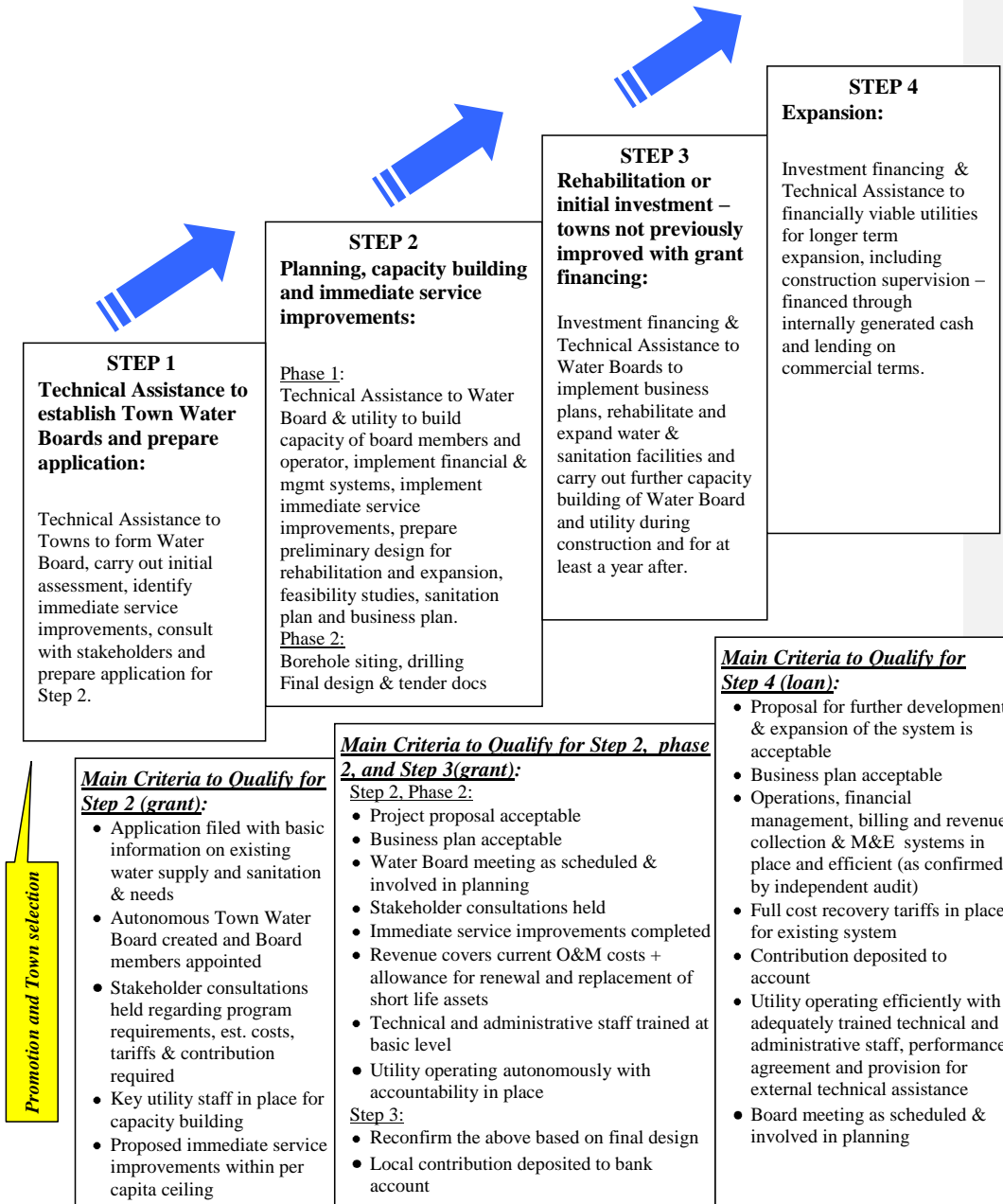
Encourage local equity in development of the water supply and sanitation system: It is useful to have at least some of the initial investment provided in the form of local equity by municipalities and/or regions and their water companies, to ensure their involvement in planning, decisions about service levels and tariffs, and performance monitoring.

Government and donor investments should promote reform: Government and donors should target resources most effectively, based on clearly defined priorities and rules for accessing financing. 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. Grant financing will usually be needed for initial investment or for major rehabilitation to enable the utilities to become financially self-sufficient. 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 a 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, to be followed by 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 shows a stepped approach to investment, which makes grants conditional on institutional reforms and improved business planning:

- Eligibility should be conditional on institutional reform and business plans that underpin the move to creditworthiness and full cost recovery.
- Rehabilitation can be phased, starting with immediate repair work, followed by major works when reforms are instituted.

Figure 3.2: Stepped approach to the upgrade of existing town water systems

Example shown applies to the Water Board management model



In cases where there is no existing water supply service (“Greenfield” projects) there is the potential to start out with “good practice” institutional and financial arrangements. A stepped approach would still be appropriate to establish institutions, plan adequately in consultation with stakeholders and build capacity before making major investments in a new water supply system.

Special financing mechanisms should be designed 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 financing. 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 for on-site sanitation facilities is a special case. Funds should be made available and provided to households on a concessionary loan basis so sanitation facilities can be built by householders and their contractors. Loan funds could also be used to purchase materials for self-help construction.

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 to 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 should not normally be passed through to smaller utilities in the form of lending.

Innovative approaches can be used to attract private sector equity financing: Among the innovative approaches used to attract private sector equity financing for development of water supply and sanitation systems 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).

Box 3.2 Examples of financing town water supply

Examples from World Bank funded projects show a wide variation in the method of financing and level 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) a ‘rural’ strategy was adopted with government grant financing and a community contribution of 5% in Ghana and 2% in Uganda.
- In the Philippines (Local Government Unit – Urban Water and Sanitation Project), financing has been channeled through local government sub-loans and recovered through a lease fee. The LGUs received a substantial fiscal transfer from central government called the Internal Revenue Allotment (IRA), of which 20% had to be used for any investment project the Mayors and Councils agreed upon. This provided the collateral to the lending institutions. The Mayors / Councils also had to decide on the tariffs (on how much of the loan would be amortized by the users). Most opted for full cost recovery, but the lease fee has raised concerns for operators in towns where expected demand (water sales) has not materialized.
- In Colombia (Water Sector Reform Assistance Project), a minimum subsidy concession has been adopted: the operator invests to a level that they believe they can recover through the tariff (which is fixed before bidding), and central and local government subsidise the remaining costs. Operators submitted detailed investment plans as the basis for their bids. In general, the level of local

government financing in medium towns is usually over 50% of the total subsidy, while in small towns it is less than 20% of the subsidy and sometimes almost nothing (in which case the central government finances 100% of the subsidy).

- In Paraguay (Fourth Rural Water Supply and Sanitation Project), the operator meets all costs, excluding a subsidy of \$150 on connections. The operator bid on the connection charge per connection to be charged to users knowing that he would receive a fixed US\$150/connection subsidy. The tariff was fixed at a level thought to cover operating costs (and some profit) and give the operator an incentive to stay engaged once he had collected his subsidy. In practice, 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 will contribute equity for initial investment in water supply systems in unserved towns. For the portion of investment that is borrowed, on-lending terms are designed so that the project is always cash positive to the operator: a grace period will allow for build up 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 build up in revenues.

Connection agreements can be used to ensure cost recovery from the outset: Depending on tariffs and costs, financial analysis will indicate the percentage of the capacity of a water supply or sewerage system that needs to be utilized 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 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 a minimum number of customers sign up and pay a connection fee before construction commences. For example, in the Philippines (See Box 3.2 above) this was set at 60%. 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: For towns, regulation is usually informal and local. National standards for setting tariffs should be established and disseminated and performance indicators for all utilities should be collected and reported for comparative purposes to create incentives for improving efficiency. Whether regulation is by contract or carried out by a regulatory body, it should provide for transparency and accountability to customers.

Utilities should be financially autonomous with sound financial systems, standardized financial reporting and auditing supported by monitoring and evaluation: It should be noted that financial autonomy of utilities does not necessarily imply that no operational and/or investment subsidies would be provided by the national or local government; only that the utility would have its own bank account and financial systems, would be able to retain its revenues for development of the utility, and that any subsidies or funds transfers would be transparent.

Town water supply and sanitation should be priced properly: All customers should be able to afford the amount of water they need, and at the same time tariffs should discourage waste and over-consumption. Tariffs should be kept simple so 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 this is with a two step tariff having a lifeline block that ensures that low income households have access to the quantity of water they need to satisfy personal needs, and a second block set so the utility can maintain its financial viability. Political imperatives often require a more nuanced approach, with more than two consumption blocks. In any event, an attempt should be made 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 so that they benefit those in need. Subsidies should be transparent and well understood. As noted earlier in this chapter, subsidies for connection that help the poor afford individual connections can also benefit the utility by increasing consumption and revenues so that financial viability can be achieved sooner.

Tariffs should be phased up to full cost recovery over time: Full cost recovery tariffs are defined as tariffs sufficient to provide for financing of investments as well as operating and maintenance expenses. Most often it is taken to mean that tariffs should cover operating and maintenance expenses plus depreciation expense (and interest financing /return on equity). However, customers of town water utilities may not be able to afford to implement full cost recovery tariffs immediately. Therefore, 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.

Targeted technical assistance and incentives should be provided to improve service level, customer relations and operational efficiency: Funds should be made available for technical assistance to improve service, 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. Some 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. Leakage of water amounts to a waste of money. While all water systems leak to some extent, it is important to reduce physical leaks to not more than 15%, a level that can be achieved with effective operation and control. But physical leaks are not the only way utilities lose money. There are administrative leaks as well: defective, unread or misread meters, faulty billing, late- or non-payment of bills. The financial loss from such “leaks” can be as high as that caused by physical leaks. High unaccounted water rates (physical and administrative leaks) are a clear 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 water and sanitation service has as its purpose to improve and maintain human health and well being so that the users of the service can be productive members of society. At the same time, the sustainability of town water supplies depends on generating the revenues needed to cover costs from the sale of water and sanitation services.

Often town water systems are based on standpipes, which require users to carry water to their homes. As a result, water consumption is limited and sales are not sufficient to generate the revenue needed to sustain and expand the system. At that stage, sanitation facilities are often rudimentary, built and maintained (often inadequately) by the householder. On the other hand, in towns and cities where the demand for individual connections is met, typically less than 25% of the customers contribute more than 75% of the revenue. Everyone benefits from high connection ratios: 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.

Of course, with high water consumption, wastewater disposal requires attention and the total cost of water supply and sewer service increases dramatically (sewage disposal typically costs more than water supply). Water conservation and reuse therefore can play an important part in reducing costs, by postponement of sewerage investments or reducing sewage disposal costs through reuse. Such efforts can contribute to making service affordable to low income consumers.

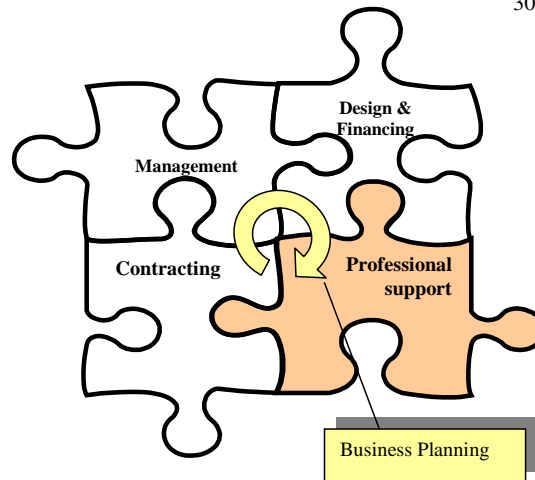
3.4 Key Points

- Water supply and sanitation services need to be sustainable for both the short- and long-term. Towns should therefore plan for the current population, but should also plan to gradually expand the system based on actual demand. Key elements of a design strategy are:
 - Design of service level based on customers' willingness / 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, 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, 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.

4 Professional Support

Professional support is needed whenever an organization requires help in performing functions for which it is responsible. In the context of town water supply and sanitation, such support may be needed to assist:

- Towns to perform regulatory oversight to ensure that the service provider meets performance standards and regulations, and fulfils contractual obligations; and
- Service Providers to perform planning and operational functions for which they do not have required capacity.



Both regulatory oversight and operational functions can be carried out “in-house”, provided that they are rigidly separated, or they can be outsourced. Likewise both regulatory and operating functions can be “aggregated” between a group of towns. In both cases a distinction can be made between routine tasks, i.e. those *which local operators or town administrators with a basic education can be trained to carry out*, and specialist services that may require external support. The mix of routine tasks/operations and specialist services is collectively referred to as professional support.

Professional support = routine tasks + specialist services

The type of support needed will depend on the size and complexity of operations, the levels of service that consumers want and can pay for, and on the strictness of regulations and standards. For example, in the USA even small rural systems need to meet increasingly stringent regulatory standards set by the Environmental Protection Agency which requires greater technical expertise at the town level. However, even larger towns/utilities with full service operators can benefit from the advice of specialists to review performance and suggest efficiency improvements.

It is important that support services for regulatory oversight be contracted separately from those for operational functions, and from different organizations, so as to avoid conflicts of interest. Professional support for regulatory oversight and for operational functions are discussed in the next sections.

4.1 Regulatory functions

Regulatory oversight is usually the responsibility of the owner of the water supply and sanitation system. In small towns, the regulatory oversight function may be provided by a member of council, in larger towns possibly by a committee of the council, or a council established regulatory oversight body (ROB). Small towns generally need more external support than large towns.

Box 4.1 Key requirements for effective regulation

The principal requirements for effective interpretation and enforcement of regulations are independence, fairness, transparency and accountability supported by effective mechanisms to apply them. These qualities are essential for attracting the support of the private sector without which regulation would be perceived as a negative risk factor that would result in a risk premium attached to the cost of capital.¹⁹

¹⁹ Burwell: *Regulation and the Pursuit of “Best Value”*.

The ROB must be legally and operationally separate from operational units, such as the corporate oversight body (COB), to avoid conflicts of interest and maintain the ring fencing of water supply and sanitation operations. The ROB requires professional support, including initial orientation and training of members. Its role is 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 successfully implemented. The ROB is also responsible for the examination of financial operations of the operator, in particular to examine the justification for tariff modifications, and approval, or recommending approval to town council, of necessary tariff modifications. Operational deficiencies observed should be brought to town council's attention for remedial action.

Environmental regulation often requires decision making and monitoring of compliance at a higher administrative level, or by an umbrella support organization, for water resources management and water abstraction and wastewater discharge permits. Table 4.1 gives a summary of routine tasks and specialist services needed for effective regulatory oversight of town WSS service provision²⁰.

Table 4.1 Professional support for regulatory oversight

	Routine Tasks	Specialist services
Economic regulation	Operational performance <ul style="list-style-type: none"> – Service quality performance indicators – Accounting – Financial reporting 	Benchmarking performance Appropriate design Promote competition <ul style="list-style-type: none"> – Procurement – Contract supervision Financial performance <ul style="list-style-type: none"> – Cost recovery objectives – Tariff setting – Audit
Environmental regulation	Sanitation and hygiene	Financial modelling Environmental performance <ul style="list-style-type: none"> – Water resources management – Water abstraction control – Wastewater discharge control – Sludge disposal – Sanitation strategy
Public health regulation Customer relations	Water quality monitoring Communications Publication of information Community consultations	Water quality testing Demand assessments
Remedial actions	Social fairness <ul style="list-style-type: none"> – Discriminatory practices – Services to the poor Customer complaints	Contract arbitration Tariff appeals

Regular publication of information, and good communication on decisions and activities is a important aspect of service delivery management in town water supply and sanitation (Table 4.2). Communications are the primary tool to inform all stakeholders of accomplishments and difficulties, financial needs and

²⁰ 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.

tariff decisions, planning for the future, and the resolving of consumer complaints. Where performance indicators are consistent with town business plans, they also provide the basis for benchmarking.

Table 4.2: Communications strategy²¹

For the Regulatory Oversight Body	For the service provider (operator)
<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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 / Oversight Bodies and consumers • When things go wrong admit it and try to put things right

4.2 External professional support options for regulatory oversight

There are various examples of specialist services being organized for regulatory oversight. Most of these focus on specific functions, but could be part of a more comprehensive support arrangement (similar to the arrangements described below in Section 4.4 for operational functions).

In France, where the average town population is less than 1600 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, estimation of 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 US, the Environmental Protection Agency provides financial support for NGOs to help train and mobilize rural small towns to meet environmental regulations (see RCAP report on NGO Technical Assistance Providers in the USA).²²

4.3 Operational functions

Table 4.3 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, requiring higher skill levels and experience, involve business planning, operational efficiency improvement, and expansion management.

Both routine and specialist support services are essential to a sustainable water supply system that meets the needs of a growing population. The intensity of support depends on existing capacity of the operator.

²¹ Taylor: *The Importance of Communications in Regulation and Town Water Supply*.

²² *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.

It is clear that the larger the system the more sophisticated the skills required, but also that even smaller systems require a full range of skills. (see Annex E for more details for large utilities.)

Table 4.3: Professional support for operational functions

	Routine Operations	Specialist services
Business planning		<ul style="list-style-type: none"> Customer demand assessments Investment planning, including expansion Financial modeling Tariff setting Access to finance M&E, including external audit
Operations	<ul style="list-style-type: none"> Meter reading Billing and collection Accounting Routine O&M Monitoring <ul style="list-style-type: none"> - Production - Water quality House connections Stores 	<ul style="list-style-type: none"> Operating efficiency improvement <ul style="list-style-type: none"> - Technical training - Financial management training - Problem solving - Unaccounted-for-water reduction - Power and chemical usage - Procurement services (goods/chemicals) - Customer relations - Benchmark indicator analysis
Expansion Management		<ul style="list-style-type: none"> Management of operator contracts Engineering design Contract management <ul style="list-style-type: none"> - Bid document preparation and evaluation - Construction supervision

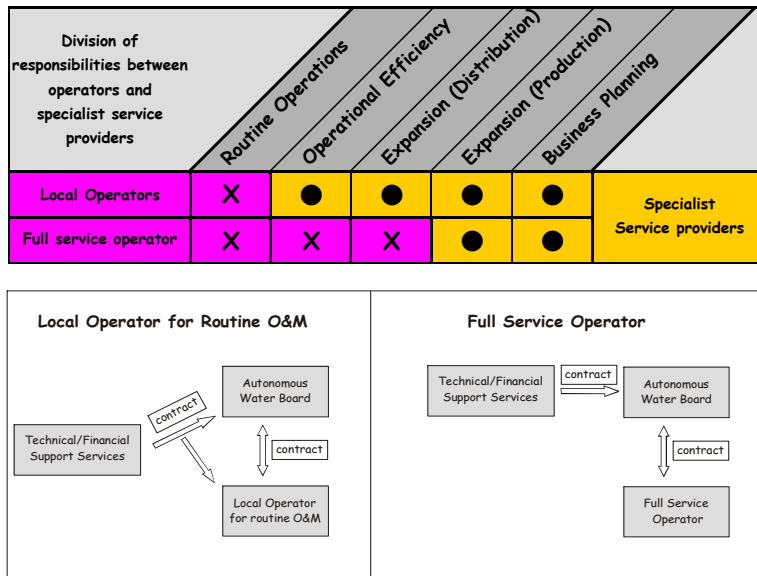
Towns need professional support for a range of services including routine operations, business planning, operational efficiency improvement, production and distribution expansion, and management of operator contracts (see Figure 4.1 below). If a local operator with limited experience in water supply and sanitation can only handle routine O&M, then there is a need to secure separate technical/financial assistance to improve operational efficiency and manage system expansion, and to help the operator prepare / update business plans. If a Corporate Oversight Body (COB), such as a Water Board established by a town council, secures the services of an intermediate or full service operator (e.g. one capable of routine operations as well as operational efficiency improvements and distribution expansion), it still needs technical/financial assistance to help with production expansion and management of the operator contract. Even full service operators may need help with business planning, and the Corporate Oversight Body will also benefit from advice to help them supervise business planning to make sure that the community's expectations are fulfilled. Unlike the regulatory oversight body (ROB), the COB may receive support from the same organization supporting the operator.

Professional Support Options

(i) Local Operator + Specialist Services to Operator and COB

(ii) Full Service Operator + Specialist Services to COB

Figure 4.1: Division of responsibilities between operators and specialist service providers



The town should secure the services of the best operator it can afford. The more capable the operator, the more a COB can delegate to it. With proper incentives built into its contract, an operator will innovate to improve operational efficiency and find lower-cost ways of expanding the distribution system. The operator can also play a partner role in business and expansion planning, forming a tripartite arrangement with the COB, e.g. Water Board, and technical/financial advisors. In this dynamic planning process, support services must complement the increasing capacity of the town's COB and its operator, and the changing needs of the community. Specialist support must be an ongoing process of periodic refinement of the town's business plan, (described in Chapter 6), operational efficiency plan and expansion plan. It is not a one-time intervention.

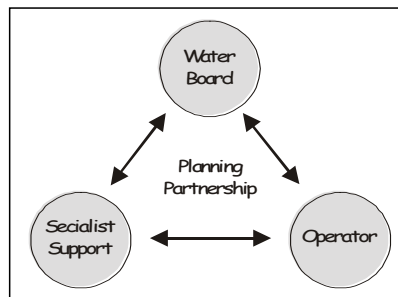


Figure 4.2: The planning partnership

4.4 External professional support options for operational functions

The challenge for towns is to secure the services of a qualified operator and technical/financial specialists at an affordable price. Various approaches for securing specialist support services have been tried. One or more could fit a given situation. What they all have in common is spreading the cost of these specialist support services directly or indirectly over a number of towns to make it financially viable to the service provider and affordable to the community. These approaches to technical assistance are usually associated with Water Board and Water Association management models, but could be applicable to any

Professional support

decentralized management model. Some of the options are described below, with attention to the particular ‘drivers’ for the approach, and the method of financing.

Many of the case studies that underpin this report provide examples of how professional support can be secured. The basic types of support mechanisms are: (i) consulting engineers and financial advisors on a retainer basis through service contracts; (ii) private firms through a Franchise or Joint Venture arrangement; (iii) umbrella organizations such as NGO Technical Assistance Providers; and (iv) directly from larger utilities to smaller communities. Specialist support may be organized directly by individual towns, or collectively through a Regional Association or through Apex Project Management. Other options that aim to ensure quality of service include operator certification and Outreach Training Systems.

NGO Technical Assistance Providers: (Case Study: USA).²³ NGOs typically focus on capacity building and broader development, often working over a period of years, progressively offering services to help with access to safe water, upgrades, wastewater, solid waste, housing, economic development, and aggregation options. The main drawback is that drivers for support services may be external to the community, and most technical services are grant based. In the USA, for example, NGOs are financed through a percentage of the loans and grants allocated by federal government for community infrastructure. This is considered necessary to protect the large investment in infrastructure, and to ensure health and safety standards.

Table 4.4: The US NGO TAP tripartite arrangement

Institution	Financing
USDA, EPA and HHS	Federal loans and grants programs.
	Information
Environmental Finance Center Network	EFCN was established by the EPA and is located at universities around the US. EFCN institutions carry out research and pilot projects to help communities in financial management.
National Environmental Services Center	NESC publishes magazines and articles on best practices and key issues, and carries out training activities. They additionally manage a demonstration project for small wastewater management systems.
	Technical Assistance
National Rural Water Association	NRWA is a non-profit, membership organization (National Association) providing TA throughout the US to 22,000 water and wastewater systems whose communities pay membership dues. NRWA State Associations carry out training programs and circuit rider programs (field visits), and development of source water protection plans. EPA and USDA also contract with NRWA to provide services.
Rural Community Assistance Program	RCAP has a national office, but is made up of institutions in six regions (Program Directors), and field representation through State Directors. At field level, TA providers often live in the area where they work. RCAP provides services free of charge to help communities develop higher level capacity to plan, finance and manage water, wastewater, or solid waste systems.

Regional Associations: (Case Study: Uganda). Regional Associations are usually non-profit, membership organizations providing TA to communities that pay membership dues. The model is most often associated with rural communities. For example, in the US, the National Rural Water Association has State Associations that carry out training programs and circuit rider programs (field visits), and development of source water protection plans. In Uganda, the South Western Umbrella of Water and Sanitation (SWUWS) has been set up to provide support to member schemes, based on a similar model in Austria, the Upper Austria Umbrella, which has a history of over 50 years supporting small community

²³ Gasteyer: *NGO Technical Assistance Providers in the USA*.

schemes with reduced government involvement and cost. SWUWS is governed by a General Assembly, a seven member executive committee, and a management team for day to day activities.

Associations of this kind are set up to help solve problems relating to management and maintenance common to smaller schemes, and which the towns have difficulty solving on their own. A disadvantage of the model, as found in a number of African countries, has been its dependence on donor financial and technical support, and the perception that stand alone associations do not draw in higher-level skills but simply pool the skills of participating communities. Nevertheless, since they need only fund a small technical unit, associations have good potential to achieve substantial cost savings while providing a full range of financial / technical support services needed for management and maintenance of small schemes.

Apex Project Management: (Case Study: Estonia).²⁴ An Apex Project Management Institution operates as an independent company to provide planning and implementation services for participating towns, including (i) applying for the external loans; (ii) preparing financing plans; (iii) managing project implementation; (iv) transferring the fixed assets to the town on completion of the investment project; and (v) ensuring that appropriate arrangements have been made to operate and maintain the assets. The institution can also undertake training, and provision of goods and services – although these are subject to market competition.

In Estonia the company Eesti Veevark was established as an apex investment agent and project management institution to support its municipal owners (shareholders)²⁵. The municipalities buy services from the company at competitive commercial rates. The innovation of Eesti Veevark has been to aggregate specialist functions that towns cannot perform cost-effectively (Box 4.2) and leave routine functions at town level; to keep competitive pressures on Eesti Veevark by not according it an exclusive role as investment agent; and that towns would buy services on conditions that would permit Eesti Veevark to attain financial and legal autonomy.

Box 4.2 Statutes of Eesti Veevark (extract)

- Provide design, expert advice and project management of new construction activities (including of treatment plants);
- Build technical facilities, and service, safeguard and rehabilitate the same;
- Develop and apply new technological facilities and processes;
- Undertake theoretical and applied research of technical processes and analysis of water and wastewater services;
- Organize courses of supplementary training;
- Organize workshops and exhibitions;
- Undertake commercial activities in the areas contained in these Statutes;
- Purchase and sell goods and services to legal and physical persons;
- Provide consulting services.

An apex 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 is less in a mature sector where investment is lower, competition is higher, and towns / operators and local partners have acquired the necessary know-how to plan, design, construct, operate and maintain their systems.

Outreach Training / Help Desk: (Case Study: Nigeria).²⁶ Outreach training is coordinated by a Help Desk in a region which town water utilities/operators can contract to request assistance to fix a particular

²⁴ Nordström and Ringskog: *Apex Project Management and Technical Assistance, The Example of Eesti Veevark (Estonian Water Company)*.

²⁵ The arrangement facilitated external financial and technical assistance Estonia sought from the European Bank for Reconstruction and Development and the Nordic Environment Finance Corporation.

²⁶ Cresswell: *Outreach Training Systems in Nigeria*.

problem or build particular skills. The Help Desk puts the applicant in contact with a practitioner in its vicinity with the requisite skills to help them. Training is on-the-job by local professionals, so fees and travel costs would be affordable to the applicant. The primary advantage of Outreach Training is the provision of practical, tailor-made training provided by the experienced practitioners within the participants' own work environment. Outreach Training works best where the intended beneficiaries have identified a problem and are motivated to improve efficiency.

Box 4.3: Five steps to provision of training by the Help Desk in Nigeria

- Identification of training needs based on requests from towns;
- Specification of objectives for each course;
- Development of modular courses by training design experts working with private sector experts;
- The delivery of training in the workplaces of the requesting town; and
- An assessment of the impact of the training.

A databank of nearly 500 experts was created based on response to advertisements in national and local newspapers.

A help desk can also serve as a focal point for information about financing opportunities and associated eligibility criteria. It can also prepare and disseminate practical materials that help Oversight Bodies and operators do their jobs better. Outreach Training is most often provided by a government institution as a subsidized support service, but could be provided by others, e.g. NGOs or the private sector. In Nigeria, training was supported 60 percent by Federal Ministry of Water Resources, and 40 per cent by project loan funds. The creation and equipping of the Help Desk was directly paid for by the Ministry. However, as described above the approach can be designed for full cost recovery.

Franchising.²⁷ Franchising is a means of leveraging scarce professional resources available to towns, while supporting local enterprise development. Under a franchise arrangement, a local independent operator (franchisee) receives specialist services support from a franchisor in exchange for a fee – effectively making the local 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. Alternatively the Oversight Board could contract a Franchisor to arrange and support operator services in the town. The relationship is defined by contract.

The driving force behind the franchise arrangement is the franchisor reputational risk, and motive to ensure the quality of services provided by the franchisee. Potential franchisors in the town sector could include established private operators/companies or technical NGOs, or new entities such as local contractors who have gained operational experience or redeployed national / regional public utility staff.

Joint venture arrangements are similar to franchising in that the higher-level partner risks its reputation and provides specialist services support to the local partner, but the two partners work as a single operator. Joint ventures are a means of accessing external expertise, using a local operator/company as the base. Neither model is well tested in the town water sub-sector, but two pilot projects of interest are the Bank-Netherlands Water Partnership pilot work on franchising, and the RWE Thames Water MDG Project based around a local joint venture arrangement.

Drivers, financing and organizational arrangements for the specialist support case studies mentioned above are summarized in Table 4.5 below. The application of these approaches in different countries can be tailored to meet local needs, and in particular alternative financing arrangements can be considered.

²⁷ Van Ginneken, Tyler and Tagg: *Can the Principles of Franchising be used to improve Water Supply and Sanitation Services? A Preliminary Analysis.*

Table 4.5: Summary of specialist support case studies

	Outreach Training Systems - Nigeria	NGO TAPs – USA	Apex Project Management – Estonia	Franchising	Regional Associations - Uganda
Drivers	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 (e.g. USDA Rural Development), local engineering firms, and social justice or conservation groups. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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/operator identifying the need for support and/or requiring it to access financing. 	<ul style="list-style-type: none"> Umbrella financial / technical support to improve management and maintenance of small schemes. Donor initiatives to protect investments, together with stakeholder consultation.
Financing	<ul style="list-style-type: none"> 60 percent by Federal Ministry of Water Resources (i.e., the federal government's own funds), and 40 per cent by project loan funds (World Bank). Creation and equipping of the Help Desk office was directly paid for by the FMWR. FMWR withheld 5 per cent of the project funds allocated to each state to create a dedicated fund. 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Municipalities buy services at competitive rates. Project financing from donors (EBRD and NEFCO). 	<ul style="list-style-type: none"> Franchise fee: <ul style="list-style-type: none"> upfront charges cover the costs of training, and ongoing fees as a percentage of revenues. Upfront charges could be subsidized. 	<ul style="list-style-type: none"> Initial project funding from donor (Federal Republic of Austria). Ongoing costs to be financed from membership fees.
Organization	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Tripartite support: Federal loans and grants (EPA, USDA, HHS); EPA and NESC training materials; RCAP, EFCN & NRWA TA. RCAP robust apex structure: national Head Office, regional Program Directors, State Directors and field workers. 	<ul style="list-style-type: none"> Share corporation (municipal owners). Only one office – catering to a small country. 	<ul style="list-style-type: none"> Independent local operators, supported by a higher level Franchisor. 	<ul style="list-style-type: none"> General Assembly (two members from each scheme); seven member executive committee; day to day management team.
Potential barriers	<ul style="list-style-type: none"> Lack of stakeholder support for the model. Locating experts. 	<ul style="list-style-type: none"> Mostly grant based. Contract awards (programs) for TA may be politically determined. 	<ul style="list-style-type: none"> Less important in mature, decentralised sector. Top down planning. 	<ul style="list-style-type: none"> Creates service monopolies. 	<ul style="list-style-type: none"> 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 Regulatory Oversight Board (ROB), a Corporate Oversight Board (COB) and a system manager / hired staff or a contracted private operator. As discussed above the town secures professional support from both its contracted operator or hired staff, and from specialist services providers. This arrangement is used in several different institutional models. Four basic models are described below. All can be adapted to local conditions, but field experience also shows that they can also be implemented sequentially, reflecting changing conditions and stakeholder preferences.

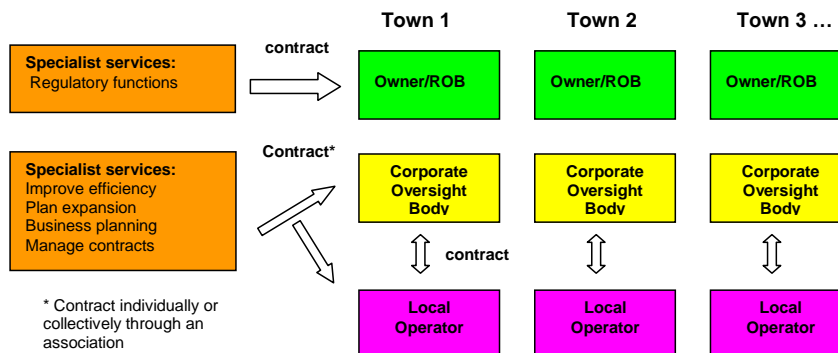
- Small, more remote towns can probably only afford a local operator (one capable of routine operations) and limited supplemental specialist services. Specialist services are provided by umbrella organizations or “specialist service providers”. Successful models of this kind treat water and sanitation service provision as a business or “**local enterprise**”.
- Successful local operators may develop their business by expanding to other towns as a full service operator (one capable of routine and specialist services) operate numerous 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 separate autonomous utility with a full 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. Such an approach also builds opportunities for local professionals in the water sector.

A variation on this model, is that individual towns have independent Oversight Bodies, but organize specialist services collectively, e.g. a Regional Association, or Apex Project Management.

Figure 4.3 - Model One: Local Enterprise (Independent towns with local operators for routine O&M)

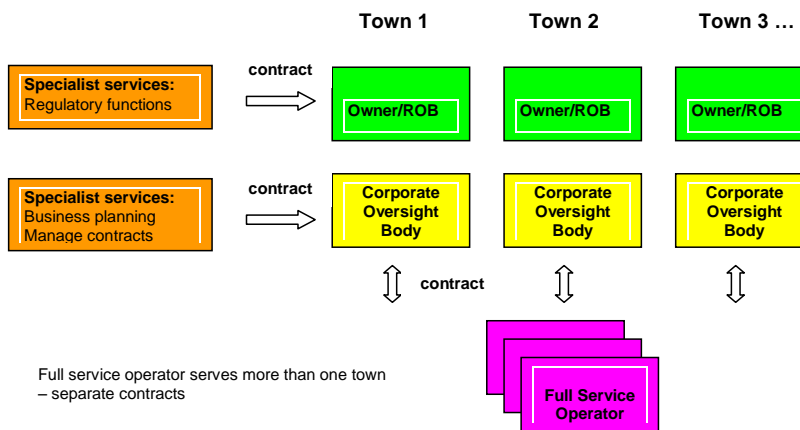


Professional support

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 local operator builds sufficient capacity through experience, and as a full service operator is then able to operate numerous town supplies through individual contracts with each town authority. The large number of individual contracts provides the full service operator with the revenue base to support the professional staff to meet all the needs of the sector. Figure 4.4 below is a graphic presentation of the institutional arrangement of market consolidation.

Figure 4.4 - Model two: Independent towns with a full service operator



One example of market consolidation is France where three full service operators meet the needs of the majority of French towns/municipalities through contracts which are individually bid and awarded on a periodic basis. Another example, presented in Case Study 4, below comes from Colombia.

The key to a successful market consolidation approach is the availability of reasonable numbers of individual contracts which will allow the full service operator to build a business sufficiently large to support the technical and managerial staff competences required. The availability of such contracts will not occur quickly and thus the market consolidation approach is likely to evolve over time. Towns may also be grouped for purposes of contract bidding, but enter into separate contracts with the operator. The need for individual towns to contract with the full service provider means that some support is likely to be needed to the system owner/ROB and reference should be made to earlier sub sections for information in this issue.

Case Study 4: Market Consolidation – 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 tendering process led to 8 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. Overtime 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 of the companies have a central office, and branch offices in the small towns. The local offices do all of the operational work, system business planning, manage relations with the town/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/expansion.

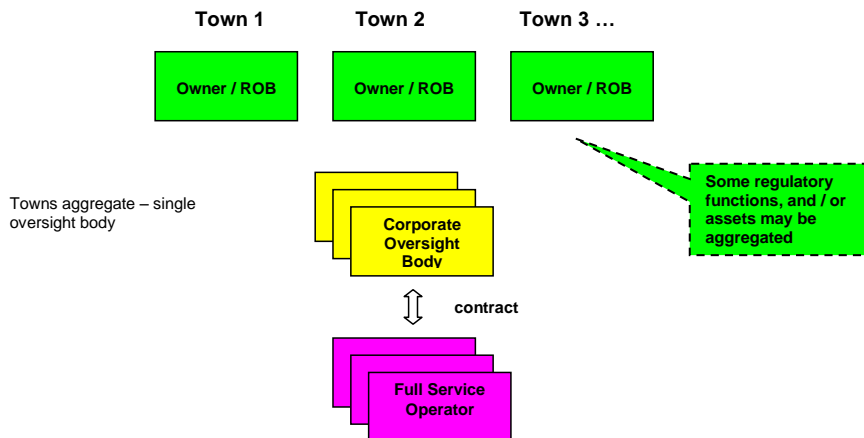
The main challenges faced by the companies have included: establishing themselves as creditworthy with financial institutions; initial skepticism from local communities and authorities; achieving financial sustainability, including tariffs appropriate to small town needs; training professional staff; and updating obsolete systems inherited (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/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, e.g. suspension of service; and information videos.²⁸

4.5.3 Aggregation

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

Figure 4.5 - Model Three: Aggregated towns with full service operator



²⁸ Garcia: *A comparative study of market consolidation and aggregation in town WSS service provision in Colombia.*

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

Such aggregated structures can vary widely, generally along three dimensions: scale, scope and process. These are presented in Table 4.6 with a comparison made against market consolidation. In making this comparison, it should be kept in mind that while market consolidation is a process on the supply side of service provision, aggregation is a process on the demand side.

Table 4.6: Market consolidation versus aggregation

	Market consolidation – supply side	Aggregation – demand side
Scale	Operators can 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 can group two neighboring municipalities, or several ones in a single locality 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, e.g. the role of NGO technical assistance in the USA.	Aggregated structures, can provide a single service (for example, bulk water supply) or all services, from raw water abstraction to sewerage treatment. For each of these services, they may carry out certain 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 choose to group some regulatory functions under a common ROB, e.g. as 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 done 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, e.g. for purposes of 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 incentivise 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 service providers offer ‘one stop shopping’ for complete water supply services to towns. In particular they can handle rapid urbanization and growth, including industrial and commercial interests. They are also generally better able to raise service levels while riding out periods of negative cash flows in individual towns.

Aggregation is particularly advantageous when it comes to accessing financing for new investments, especially large projects like reservoirs and treatment works which may be shared between towns. The transfer of oversight responsibilities to a higher level can bring other benefits. For example, it reduces oversight costs in individual towns while improving its quality. Contracts can be better managed and environmental standards including control of abstraction can be better controlled. Bulk supply by national or regional utilities is often linked to regional water resources issues, such as water scarcity in some areas (e.g. ONEP in Morocco). Bulk supply is also an important option at local levels through

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district or multi-village type schemes.

With aggregation individual towns can lose direct control over investment and management decisions, so a town's particular priorities may be lost in the collective decision making process. This concern can lead to high transaction costs in reaching consensus on the formation of a single administrative unit to oversee water supply. Also revenues and investments are not necessarily ring fenced within individual towns, so conflicts can arise. This can be exacerbated where high overheads associated with larger administrative units need to be recovered from the aggregated towns. For example, customers in large towns may object to subsidizing smaller towns, while customers in small towns may complain that the operator is limiting investments and services in order to minimize its financial losses. Aggregation also results 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 (for example experiences 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 types of aggregation include²⁹:

Voluntary: drive by local governments

- France: high level of decentralization and municipal responsibilities for water; long experience in the formation of aggregated structures for public services; process is largely voluntary; legal framework defines aggregation forms and rules for aggregation; representative of central government 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; water rights have created obstacles.

With incentives provided by a higher level of government

- Hungary: decentralization of formerly aggregated entities during communist period and creation of new entities for expanding service in rural areas; financial incentives for aggregated entities with favorable lending terms from Central Government.
- Brazil: financial incentives (access to finance) provided during Planasa era for creation of State Water Companies; following decentralization of Planasa structures, re-aggregation process failed when incentives proved insufficient (as in Mato Grosso); similar re-aggregation 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: Central law (Galli) mandated aggregation; implementation was left to local governments (voluntary) and was much slower than anticipated.
- 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, process was slow.
- England and Wales: Central government created regional water service providers based on river basin boundaries; process was quick (9 months).

A fuller discussion of the aggregation process, its benefits and costs, can be found in the complementary report prepared as part of the Towns Initiative (reference to ERM). The key findings of the report, and the key issues to be addressed, are summarized below:

Key Findings:

- Aggregation provides opportunities for improved efficiency of service delivery through

²⁹ ERM: *Models of Aggregation for Water and Sanitation Provision*.

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economies of scale and scope

- Aggregation facilitates enhanced 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 and 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, be careful to not over-emphasize 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 check list of key issues that forms the basis for Articles of Association.

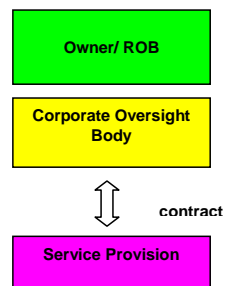
These key issues include:

- 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
- Issues related to the harmonization of service levels and tariffs.

4.5.4 Conventional urban utility

Upwards of 50,000 inhabitants or 5,000 connections a town is likely to have an economic base that provides sufficient capacity to support all the necessary senior management and professional skills needed, or to provide incentives for a large operator to manage services efficiently. This model may also come into being as a result of towns aggregating into a metropolitan area government structure. The organisational requirements are the same as those for a full service operator serving an aggregation of towns, except that contractual arrangements are with a single owner.

Figure 4.6 - Model four: Conventional urban utility



4.6 Review of professional support options

Figure 4.7 provides a graphic presentation and brief explanatory notes of professional support options.

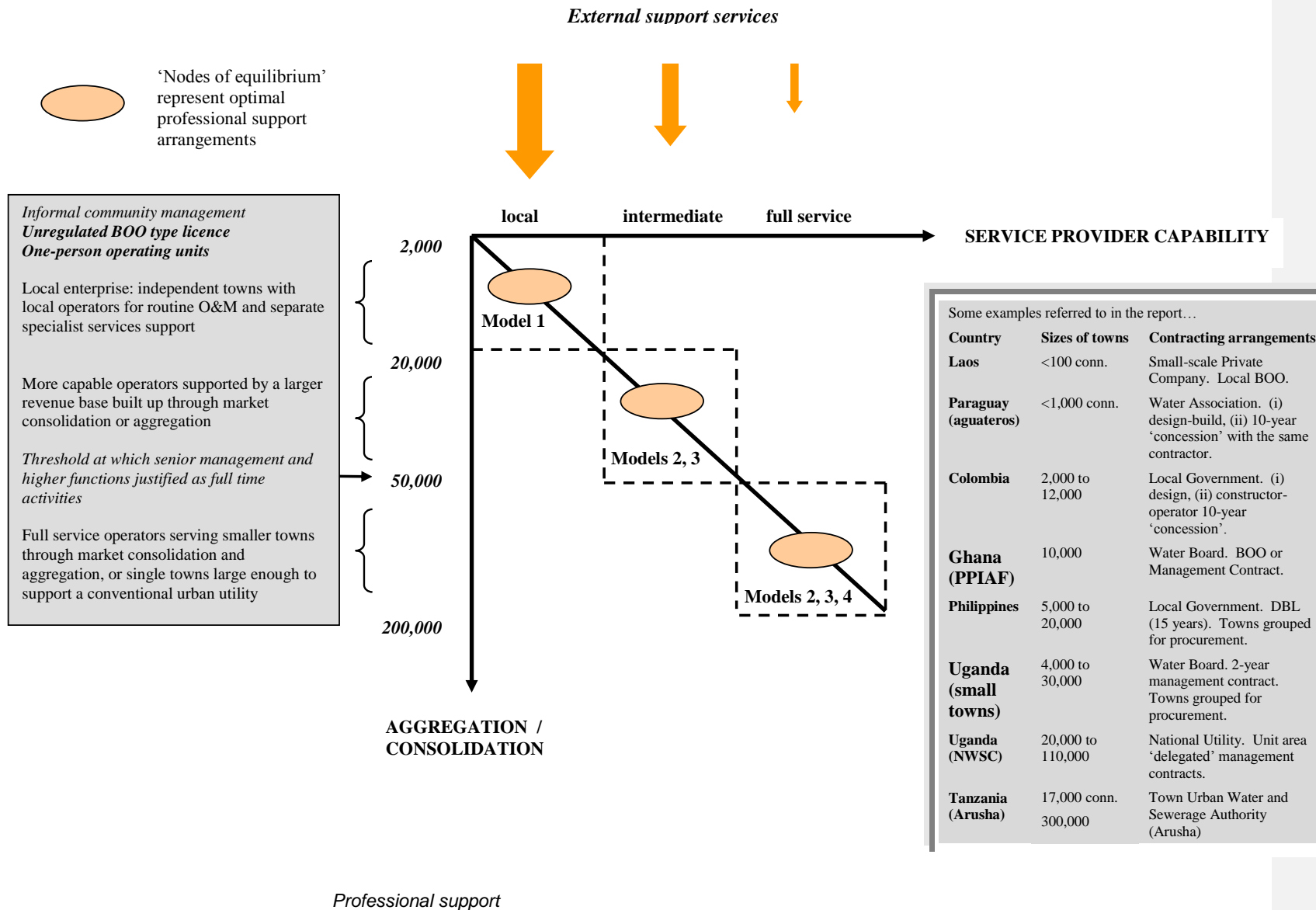
- The horizontal axis shows increasing size and capability of service providers from local operators who provide routine tasks only to national/international operators who provide a full range of support services.
- The vertical axis shows increasing sizes of towns/demand base from small (2,000 to 20,000) to medium-sized (20,000 to 50,000) to large (50,000 to 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 with different “sweet spots” on the diagram:

- In the top left a small town (2,000 to 20,000) is served by a small, local operator, with specialist services from external technical / financial advisors. Model One is associated with this zone (e.g. small towns in Uganda - Case Study 3).
- Moving diagonally from top left to bottom right, an intermediate level service provider could serve consolidated/aggregated groups of towns. Models Two and Three can fit this zone (e.g. for aggregated approaches, the large private operators in France serving groups of towns many with less than 2,000 inhabitants, and NWSC in Uganda serving mostly medium-sized towns – see Case Study 3; or for market consolidation, the activities of private operators in Antioquia, Colombia – see Case Study 4).
- Continuing down and to the right, a single large town may support a conventional urban utility (e.g. 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, local operator serving a large town, although they may be active in serving part of a large town (e.g. the Aguateros working in peri-urban areas in Paraguay).

Figure 4.7: Professional Support – Aggregation



4.7 Key Points

In exploring possible solutions to help towns secure professional support a number of key points seem to emerge:

- Operational and regulatory functions should always be separated to avoid conflict of interest. Professional support for the regulator should be provided separate from that for operators.
- Unlike the regulatory oversight body (ROB), the COB may receive support from the same organization supporting the operator.
- Small, more remote towns can probably only afford a local operator (one capable of routine operations) and limited supplemental specialist services. Specialist services are provided by umbrella organizations or “specialist service providers”.
- A local operator may develop his capacity through experience, and as a full service operator (one capable of routine and specialist services) operate numerous town supplies through individual contracts, or larger town supplies. This is called “market consolidation”.
- Where full service operators serve smaller, independent towns, town administrators will need specialist services support to help them manage the contracts.
- As an alternative to providing professional support to individual towns and their service providers, or full service operators serving towns through individual contracts, 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”.
- Most small towns / utilities will need specialist services support due to their lack of capacity, but even larger towns / utilities may chose to outsource some functions to improve their effectiveness or efficiency.
- Whatever the purpose of outside professional support, its tasks ought to include a training component so both part-time and permanent staff is given the opportunity to acquire the skills to improve their performance. Appropriate information or training should also be provided to members of corporate oversight bodies (as well as operators and regulatory oversight bodies) so those not familiar with water supply and sanitation operations gain an understanding of the purpose of the various functions and their impact.

5 Contracting

5.1 Contractual framework

Typically the stakeholders involved in town water supply and sanitation include the central Government (policy maker, regulator and financier), local government (responsible for public services and regulatory oversight), the Corporate Oversight Body, COB, (overseeing operations and planning), and the operator.

Central and local governments share responsibility for sector policies and regulations, and the enforcement of regulations. As discussed in the previous chapter, where a town is responsible for service delivery, it is important that the town establish a separate unit (Regulatory Oversight Body, ROB) without management or operating responsibilities, to provide regulatory supervision. As discussed in the management chapter, there are a number of options when it comes to corporate oversight. Towns can establish a Water Association or Water Board, assign responsibility to the town Water Department, or join with other towns to establish a single COB. COBs can hire their own staff or contract out services to a private operator. They can hire a local operator for routine tasks plus specialist services for higher level skills or a full service operator.

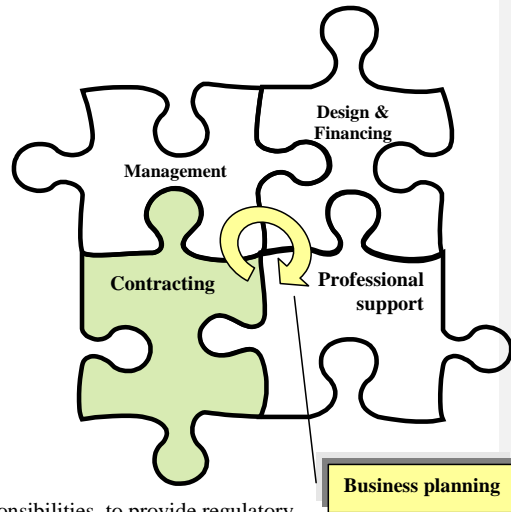
Specialist support should be organized separately for the ROB, and the COB / Operator. In small towns, with inexperienced small operators that require significant technical assistance, the COB may contract support services for the benefit of the operator.

Figure 5.1 shows a sound contractual framework. Contracts are important because they:

- Underpin the legal basis for ownership, oversight and operations, and the responsibilities of the owner, COB and operator.
- Define the criteria for obtaining government financial assistance.
- Ensure arms length written agreements between the COB and its operator – that define responsibilities, service targets and performance incentives; and
- Secure continuity in professional support – the financial and technical assistance needed to build the capacity of the ROB, and the COB / Operator.

The first two points above, regarding the legal basis for town water utilities and the criteria for obtaining government financial assistance were discussed in the Management and Financing Chapters. Professional Support was discussed in the Professional Support Chapter. This Chapter focuses on the contractual relationship between the Corporate Oversight Body (COB) and operator, and identifies the additional advisory or specialist support services required under different arrangements.

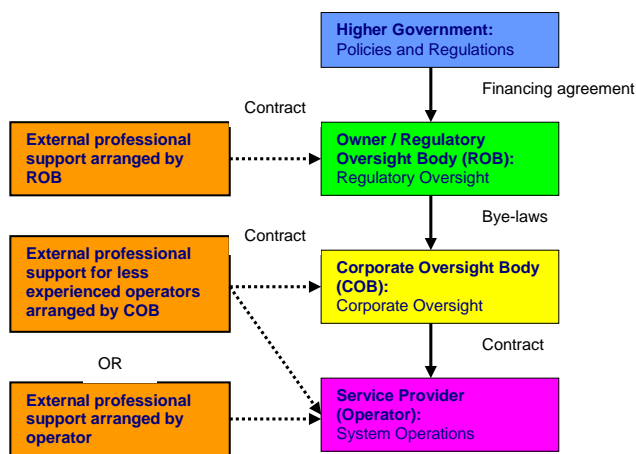
To recap from the Professional Support Chapter, the basic options for securing technical/financial support services include: (i) consulting engineers and financial advisors on a retainer basis through service contracts; (ii) private firms through a franchise or joint venture arrangements; (iii) umbrella organizations such as NGO Technical Assistance Providers; and (iv) 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. Other options that aim to ensure quality of service include operator certification and Outreach Training Systems.

These services can be packaged in different ways but basically require an operator, a contractor and technical/financial advisors.

Figure 5.1: Stakeholder contractual framework (Water Board management model)



5.2 Contract options for operating services

The contract between the Corporate Oversight Body and operator underpins day to day operations. The main advantages of operating service contracts are management autonomy, clearly defined roles / responsibilities and performance targets set out in contracts, and incentives for good performance.

Box 5.1: Contracts for operating services

Contracts underpin good governance through:

- **Autonomy** for day to day operational decisions (no political interference), including hiring / firing staff, budget management, procurement...;
- Clearly defined **roles and responsibilities** (improved transparency and accountability);
- **Incentives** for good performance, including performance based remuneration, rewards and bonuses, and penalties and sanctions;
- Clearly defined operator **performance targets**, that are linked to the business plan through an appropriate incentive structure; and
- The achievement of social objectives established by towns, such as service to all at affordable rates.

There are a number of different contract options from which to choose, each of which has its own set of specific objectives, or is most suitable under a given set of conditions. The first distinction to be made is between performance contracts with hired staff, and contracts with private operators.

Performance contracts³⁰

Performance contracts are a good tool for improving internal efficiency of public utilities or water departments. They are usually in the form of memoranda of understanding between managers of public utilities / departments and government. They are not legally binding. The Managing Director or the system manager is usually held accountable.

Performance contracts can have a range of objectives that typically include: improving autonomy in operations, introducing commercial practices; creating a results oriented approach to management and performance, clarifying the accountability of the COB and system manager, setting authority limits, improving cost effectiveness, and introducing performance incentives/penalties for specified tasks. Performance contracts are a valuable personnel management tool whether the service provider is a municipal department or a large public or private utility.

Performance contracts are effective if their provisions make sense. Very often they take the form of a long list of indicators and targets based on benchmarks for water utilities. For example, “decrease unaccounted-for-water by 5% per year, increase operational efficiency by 3% per year, decrease customer complaints by 10% per year, increase customer connections by 5% per year”. They are simply a wish list, without a financially viable plan to underpin them. Fundamentally the challenge is one of linking performance targets to the system business plan through a carefully designed incentive structure. The challenge is the preparation of a good business plan.

Contracts with private operators

Contracts with private operators go beyond performance contracts by removing the conflict of interest that exists when the COB directly manages its own staff. When things go wrong the COB will no longer seek to rationalize its own performance, but can enforce the terms of a contract with an independent operator. Contracts with private operators are also important for broader sector goals. They introduce competition and contestability (comparative performance) to help improve performance and replace town monopolies. They discourage political interference in investment and management decisions, and tariffs. Perhaps most importantly, they provide opportunities for entrepreneurs and professionals in the water business. Different contractual arrangements provide different benefits, as shown on Table 5.1 below:

Table 5.1: Likely benefits from different forms of contractual arrangements (private sector participation)³¹

	Service Contracts	Management Contracts	Leases Affermages	Concessions/BOTs
Management expertise	Yes but limited to scope of contracted-out functions	Yes	Yes	Yes
Tariff discipline	No	In some cases, but limited to O&M	Yes, but limited to O&M	Yes
Access to private capital	No	No	Yes, but limited to working capital, and partial financing of network renewal	Yes

Typically operator contract options are analysed against the risks to the contractor and owner. This is essential, but in so doing it is important to remember that a full range of professional support is needed:

³⁰ Jude Mwoga : *Performance-Based Contracting as a Tool for Water Sector Reform*.

³¹ From World Bank: *Public and Private Sector Roles in Water Supply and Sanitation Services: Operational Guidance for Bank Group Staff*.

services that the operator is not contracted to provide need to be secured from an independent technical /financial advisors. The best balance between these two depends on local context. Figure 5.2 shows on the left the main operator contract options and the professional support services with which they are most commonly associated, and on the right the additional specialized services needed. Even with the more complex contracts, towns need an advisor to help them with business planning and contract management.

Figure 5.2: Contract options to secure professional support

Contract options to secure professional support	Contract Options					Specialist service providers
	Routine Operations	Operational Efficiency	Expansion (Distribution)	Expansion (Production)	Business Planning	
Local Operators	MC	●	●	●	●	Specialist service providers
Full Service Operators	Enhanced MC	●	●	●		
	Lease		●	●		
	Concession			●		

Table 5.2: Typical investment project risks in town water supply

Risk Area	Characteristics	Avoidance/Mitigation
Capital Cost	Inappropriate design; design changes; unanticipated ground conditions; delays; accidents; unforeseen environmental impacts; inefficiency due to corruption and fraud.	Minimum investment based on demand / willingness to pay surveys; phased expansion; thorough investigations; construction supervision; competition and improved transparency in procurement. Legal measures (cost control and variation procedures; liquidated damages; dispute resolution mechanisms; insurance; anti-corruption measures).
Performance	System does not perform as efficiently, life cycle shorter, raw water quality varies more widely than expected.	Performance based specifications; functional guarantees; operators involved in planning.
Commercial (Demand)	Operating costs higher; volume sales and revenues lower; low numbers of connections; breakdowns; short term deficit during start up.	Design to match demand; expansion to keep up with growth; active connection policy; incentives linked to performance targets; strategies for efficiency improvement; tariff adjustments; stepped debt repayments and grace periods; lease fee adjustment.
Financial (Investment)	Income does not meet debt service; commercial lending unavailable or too costly; poor financial management.	Performance-based access criteria for government investment financing and subsidies; development of local financial market and credit rating system; financial modelling; standards for financial management, reporting and business planning.
Political	Interference in management; regulatory changes; tariff control; expropriation.	Institutional reforms; stakeholder contractual framework; national policies on cost recovery (tariffs, connection fees, subsidies); increase transparency and stakeholder consultation/ communication; comfort letters.

Management contracts, leases/affermages, and concessions are described below. Typical risks and their characteristics in town water supply are given in Table 5.2.

Management Contracts: Under a Management Contract, the owner is responsible for investment (financial risks), including expansion and major rehabilitation, and retains the revenue (demand risk), but transfers performance risks to a private operator, including routine maintenance where this is linked to operating efficiency. Management contracts are used primarily in order to: increase technical and managerial expertise; improve efficiency in some specified tasks; as a step towards longer term private sector participation (e.g. a lease arrangement, or affermage), by first achieving certain necessary conditions such as gradually increasing tariffs to meet cost recovery objectives, universal metering, and improved financial management, reporting and audit.

Standard Management Contracts are on a fixed fee-for-service basis, but *enhanced* management contracts are performance based. For example, in Uganda the small towns management contracts have a service fee with five components: a fixed base fee, and four components depending on outputs related to water sales, connections billed, network maintenance and new connections. Monitoring of performance is a challenge so it will require specific support. Service targets should be tied to the business plan, and the incentive structure carefully designed to ensure that the operator meets all its targets and not just the most profitable ones.

Affermage: Under an affermage, the operator is allocated an operator tariff or affermage rate (price per cubic meter) that is less than the customer tariff. The difference is passed on to the owner, and covers debt service and investments. The affermage rate is based on water sales (volume), and so commercial risks are shared between the employer and operator. This reduces the risk to the operator of paying a set lease fee (described below). It also controls unexpected profits if demand or efficiencies exceed projections. A potential difficulty with the affermage option is that universal metering is required in order to determine the operator's fees. A management contract may be required in the short term to prepare for the affermage contract.

Leases: A lease transfers more of the financial risk from the owner to the contractor. The principle advantage of a lease over a management and affermage contract is the expectation that by transferring commercial risk to the operator, the operator has immediate incentives to improve operating efficiency and increase profits. A lease arrangement allows the operator greater autonomy in meeting these objectives than a management contract does, and so there is an implicit assumption that more experienced operators will be involved. At the same time, the system will need to be financially and technically sound if operators are willing to take on commercial risk.

Under a leasing arrangement, the owner retains financial risks including expansion, but assigns the commercial risk associated with operating costs and revenue to the operator in return for a lease fee. In some cases, limited investment in expansion of the distribution network may be expected from the operator. Since the cost of operation and maintenance are paid from revenues, the costs declared by the operator and activities carried out need to be carefully monitored by the owner to ensure that the system is properly maintained.

Usually the lease fee is fixed to cover debt service and future investments that are identified in the business plan. These can be updated periodically, and the lease fee adjusted accordingly. Where commercial risks are high, mechanisms can be introduced to allow for adjustment of fees and/or tariffs. An enhanced Management Contract may be preferred to a lease if commercial risks are highly uncertain – where, for example, collection efficiency is low especially due to non-payment by government institutions, tariffs need to be increased substantially, or where existing systems have specific design/operating inefficiencies or need of rehabilitation. This may then be phased into a lease arrangement after improvements have been made.

Concessions: Concession contracts essentially transfer all risks to the operator. The operator is responsible for operation as well as planning and financing expansion. Most concessions are awarded for existing systems, and so financing is limited to expansion and rehabilitation. At present there is limited experience of pure concession contracts in town water supply.

As the discussion above suggests, there are a number of ways in which risks and responsibilities can be shared between the owner (the COB where the town has transferred asset ownership to the COB) and operator:

- Incentive based payment mechanisms.
- Provisions for adjustment of fees and/or tariffs.
- Joint arrangements for sharing information, problem solving and performance monitoring, including shared business planning between the Corporate Oversight Body and the contractor/operator.
- An opportunity for the contractor to contribute to design, e.g. DBL/DBO options (see below).
- A selection process that makes use of value-based competitive bidding by evaluating both the quality and price of the offer through a competitive bidding process. (see Case Study 5).

Case Study 5: The “minimum subsidy concession” in Colombia

The minimum subsidy concession approach used in the small town project in Colombia includes elements of a value-based competitive bidding process.

The principle is that the public sector (local and central government) provides some grant financing based on a minimum subsidy bid. The operator, who is also responsible for design and construction, agrees to invest to a level that they believe can be recovered through the tariff (which is fixed before bidding), and requests a grant to cover the remaining investment costs. In doing so, the operator is required to specify an investment program including the type of works to be done each year and their costs. The winning bidder is the one that requests the minimum subsidy from the public sector.

5.3 Separate versus bundled contracts for design, construction and operating stages

The scenario presented in the last section (5.2) assumes that towns will award separate contracts for planning/design/supervision, construction and operations. However, a number of recent World Bank funded projects have sought to bundle the design, build and operate contracts. Where contractors have the capability, bundled contracts offer the potential of better services at lower cost with “one-stop shopping” to reduce COB involvement in supervising and coordinating separate contracts. The main advantage for bundling contracts together is that when the contractor assumes operational risks there is also an interest in optimizing both operational efficiency and capital costs through the design and construction phases. As a result they are more likely to (i) design systems based on actual demand rather than standard design practices, (ii) introduce lower-cost, more-efficient designs based on their practical experience, and (iii) employ quality construction materials and techniques with a view towards minimizing maintenance costs. This avoids the situation where an operator must maintain a system that is over designed, poorly constructed, and unnecessarily expensive to operate and maintain. In addition, the construction process is expedited since it is in the operator’s interest to generate revenues as quickly as possible.

While bundled contracts can attract more experienced companies or a consortium of companies, by offering the opportunity to profit from the design and construction, they carry the risk of the contractor defaulting on his operating responsibilities after being paid for the more lucrative construction. Performance bonding may keep the contractor on the job, but he may not invest much effort in what to him are marginal efficiency gains, particularly if revenues are not what were expected and he is losing

money. These risks can be mitigated (e.g. as in the Vietnam DBL pilots) by introducing a more conservative approach to design based on demand, e.g. a phased or modular approach, phasing up debt repayments and allowing a grace period in which connections are made to build up the revenue base to cover costs, and inclusion of mechanisms to revise lease fees and tariffs, or share demand risks with the owner.

Figure 5.3: Bundled design, build and operate contracts

Bundled design, build and operate contracts	Design	Build	Routine Operations	Operational Efficiency	Expansion (Distribution)	Expansion (Production)	Business Planning
	Full Service Operators	Design-build-operate		●	●	●	Specialist service providers
	Design-build-lease		●	●			
	Minimum subsidy concession				●		
Small-scale private company (BOO & BOOT)							

The difference between a DBO and a DBL is that one is associated with an operations contract, and the other with a lease. Under a DBO, the contractor/operator bids to design and construct the assets for an agreed price, and bids to operate or manage the system for a fee (typically based on a fixed monthly payment and/or per cubic meter sold). The contractor/operator carries performance and capital cost risks and some of the commercial risk, while the Oversight Board carries the remainder of the commercial risk as well as the financial risk. Under a DBL, the contractor/operator carries all the commercial risk (receiving the revenues and paying a lease fee), while the owner retains the financial risk. The best known example of DBL is the Local Government Unit – Private Contractor/Operator 15-year lease in the Philippines.

In addition to the *publicly funded* DBO/DBL options described above, *privately funded* Build-Own-Operate (BOO) and Build-Own-Operate-Transfer (BOOT) contracts are becoming more common in Latin America and East Asia, mostly as small scale local enterprises. The key characteristics of these schemes is that the contractor/operator finances and retains initial ownership of the assets (in order to guarantee bank loans), and carries almost all risks, but the eventual owner may carry some financial risk through guarantee arrangements.³² Replication has been limited, partly by the lack of creditworthy enterprises and the availability of capital at reasonable rates, but project planners have had some success attracting private investment by introducing incentives through subsidy mechanisms. The best documented example is the PPIAF pilot in Ghana (Dzemeni town).

A variant of the BOO type contract, is the “minimum subsidy concession” approach that has been used in Colombia (see Case Study 5) and Paraguay (Case Study 6 below). Under this arrangement the contractor designs, builds and finances the system (based on a minimum subsidy bid), and then operates the system under a simplified concession contract.

³² At the end of a BOO contract, the facilities are not transferred to the public sector, as in a BOOT, although ownership may change. The term Build-Operate-Transfer (BOT) is used loosely, but is widely accepted to indicate that the contractor does not provide financing as in a BOO or BOOT. See Economic and Social Commission for Asia and the Pacific: Guidebook on private sector participation in water supply and sanitation.

At this point in time, the use of bundled contracts in town water supply projects remains at a pilot stage. These advantages and disadvantages need to be weighed against those of towns working with independent advisors for planning / design / construction supervision with separate contracts for construction and operating services – but even with bundled contracts, towns still need help with business planning and operator contracts, and possibly expansion.

Case Study 6: The “minimum subsidy concession” in Paraguay

Under the *Fourth Rural Water Supply and Sanitation Project*, 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 – US\$67 depending on community). Service standards, tariffs, and the subsidy that SENASA will provide (US\$150/connection) are defined in the concession contract. Apart from 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. This contract is based on the standard World Bank bidding document for small works and governs the construction phase (technical standards, supervision, subsidy, guarantees etc.)
- A contract between SENASA and each Water Association. This contract 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. This contract defines the service area and sets coverage targets for connecting the population within it. It also (i) provides the contractor/operator with exclusivity in this area; (ii) defines water and service quality standards (pressure, continuity of service etc.) and sets out penalties for non-compliance; (iii) provides formulas for adjustments to tariffs and miscellaneous fees; and (iv) establishes compensation in the case of early contract termination.

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

5.4 Special contract provisions

Experience with contracts with WSS utilities has proved that certain issues deserve special attention:

- Long term utility contracts (as opposed to contracts for goods, works and services of relatively short duration) are likely to require renegotiation. This in turn necessitates having the right skills for contract renegotiation, as well as the right information (on operations, especially costs) available to the owner/public authority. In towns, the process of Business Planning is important, because business plans are updated periodically and can be used as the basis for setting performance targets and incentives.

- Under all of the contracting scenarios in sections 5.2 and 5.3, there is merit in having a provision in the contract (typically a provisional sum with ceiling) which allows the operator to undertake specified work related to leak repairs, connections, etc...) at his initiative; this can be paid to the operator on a cost basis as it is not advisable to make it a competition factor for the contract; in this way, the operator has an incentive to optimize the use of this provisional sum in pursuing his contractual performance objectives, which if well designed are fully consistent with public interest.

5.5 The special case of sanitation

The arrangements discussed above apply equally to water supply and sewerage. Where water consumption is low, in the 50 to 100 lcd range, and housing density and soil conditions appropriate, on site sanitation facilities may be used for waste disposal. The literature discusses many possible alternatives, ranging from dry to wet systems, including the separation of grey and black water. All of these systems require either the householder or organisation to maintain and periodically empty on-site waste storage facilities. Towns will have 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 that public health regulations are complied with.

5.6 Key points

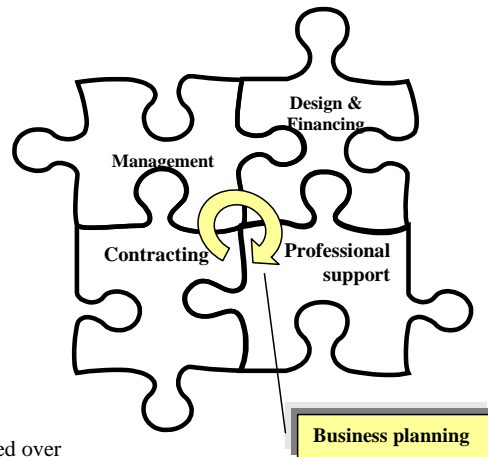
- Contracts underpin good governance through:
 - Autonomy for day to day operational decisions (no political interference), including hiring / firing staff, budget management, procurement...;
 - Clearly defined roles and responsibilities (improved transparency and accountability);
 - Incentives for good performance, including performance based remuneration, rewards and bonuses, and penalties and sanctions;
 - Clearly defined operator performance targets, that are linked to the business plan through an appropriate incentive structure; and
 - Achievement of social objectives set by towns, such as service to all at affordable rates.
- Internal (Performance) Contracts are a valuable tool to improve and monitor staff performance. They can be used to motivate and reward performance. By defining “rules of the game” they reduce the risk of political influence on hiring and firing of staff.
- External contracts provide towns with the flexibility they need to successfully serve their population, regardless of the capacity of the town’s own staff to perform water supply and sanitation tasks.
- Services not provided by town administrators (regulatory functions) and operators (operational functions) must be secured through external professional support.
- In small towns, with inexperienced small operators that require significant technical assistance, the Corporate Oversight Body 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 to assist in this task.

6 Business Planning

6.1 The importance of business planning

For town water supply and sanitation, business planning is the process of outlining how the utility will develop over time to provide the level of service required by its customers, owners and regulators. This process has become much more important with the implementation of the decentralization process that delegates power and responsibility to manage water supply and sanitation services to towns in many countries.³³

In traditional project based approaches to town water supply, where systems have been designed and built by the Government and handed over to the town on completion, the business planning process has often been overlooked. Often design has been restricted to technical, economic and financial feasibility studies prepared by consultants without adequate stakeholder consultation. If those who inherit management of a water supply system have not been 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 a level required to cover costs and to pay for adequate maintenance of facilities or to retain qualified staff and contract for professional support.



Parties interested in business plans include financiers, regulators, customers, as well as the Corporate Oversight Body and system managers / utility staff or contracted operators. A business plan is often required by the financier of the investment program in order to show how the system will be managed so that loans can be repaid. A business plan can also serve as the justification for a program of tariff adjustments and other charges to the utility's regulator and customers, and it can serve as the basis for communicating the plans of the utility to improve service and expand to meet the demands of growth in the community. Finally business planning can be adapted as a tool to help 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 (see below);
- **An investment plan** - To set out what investments are needed to meet performance targets in a way that is affordable to customers and sustainable, including appropriate design (matching design with demand, based on willingness to pay surveys) and financial sustainability, and to understand potential future consumers, and plans to expand and upgrade services (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

³³ The concept of “asset management” may also capture many of the elements discussed here. However, the term “business planning” is retained since it conveys the sense of town water supply and sanitation as a local enterprise.

training (See Chapter 2);

- A procurement strategy – To identify professional support needed, and the contract options best suited to local needs (See Chapter 5);
- A financial management and reporting plan - To monitor performance and meet regulatory obligations (see below); and
- A marketing and communications plan - To offer informed choices to consumers, including the type of connection, and to keep decisions transparent (See Chapter 4).

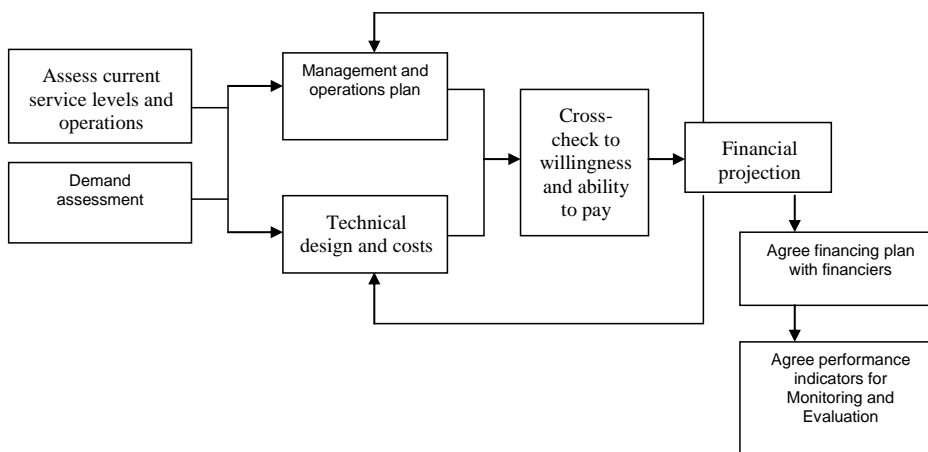
The business plan is not a static document. It will need to be adjusted over time to take into account actual performance and changed circumstances. Generally, the business plan should be revised every three to five years and updated on a rolling basis each year between these revisions. Annual budgets 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.

6.3 The business planning process

The business planning process builds capacity of those involved to understand, manage and oversee the water supply service and to grow it over time to meet increasing demands for service, while at the same time providing a clear document laying out the inputs and outputs needed to deliver improved service. Extensive consultation is required between all stakeholders, in particular between the Corporate Oversight Body, their customers, and the system manager / utility staff or contracted operator. The continuous process of consultation leads to development and updating of the business plan, and to a sense of partnership in meeting the objectives.

Business planning is best understood as an iterative process (Figure 6.1). Initially an assessment of regulatory requirements, current service levels and operations and demand assessment are carried out, which serve as the basis for identification of an initial technical design and a management and operations plan. The design is then cross-checked to customer willingness and ability to pay and a financial projection is prepared. If the design cost is not affordable, if customers would not be willing to pay the cost of the system or if the utility could not be financially viable, the design and/or management and operations plan must be revised.

Figure 6.1: The Business Planning Process



6.4 The financial model

A financial model becomes the central planning tool: technical options must be based on willingness to pay survey data and tested against financial projections. In the financial model, revenues should be built up based on customer demand and capacity of the production facilities as well as the network. Operating and maintenance expenses should be 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 cash flows will be sufficient to meet debt service obligations, e.g. if the utility is to borrow and payback a loan over 20 years, the financial model should show projected cash flows and debt service coverage over a 20 year period. It is recommended that in the model tariffs be set to phase up to the affordable level over a specified period of time (3-5 years) and then remain at that level 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 a limitation on the investment plan. The key output of the model will be a cash flow projection and a set of financial and operational performance indicators, which would include:³⁴

Financial performance indicators:

- Average tariff per m3 (operating revenues / water sold)
- Average cost per m3 (operating expenses / water produced *or* water sold)³⁵
- Cost coverage ratio [operating revenues / (operating costs + depreciation)]
- Debt service ratio (cash flow before debt service / debt service)
- Current liquidity ratio (current assets / current liabilities)
- Collection performance
 - Collection efficiency (%)
 - Debtor months outstanding

Operational performance indicators:

- Water produced (m3)
- Water sold (m3)
- Unaccounted for water (%) [(water produced - water sold) / water produced]
- Number of connections by type
- Density of connections (length of distribution main per connection)
- Staff efficiency ratio (staff per '000 connections)

6.5 Role of business planning in regulation and monitoring

For the smaller town models, business planning provides an important tool to institute better governance at town level. This is a good starting point for improved regulation of town water supply and sanitation, because Regulatory Oversight Bodies are better able to generate performance data and be aware of other information that is important to successful service provision, including: willingness to pay; appropriate design; financial modelling; 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 these in the interests of consumers. Annex F provides further details of some

³⁴ This is not a full set of performance indicators – not all indicators can be quantified and included in the financial model.

³⁵ Operating expenses exclude depreciation, interest and debt service. The preferred denominator for average cost is the amount of water sold. This ratio then reflects the cost of providing water at the customer take off point. (See the Indicator Definitions of the Benchmarking Start-up Kit, World Bank)

of the common regulatory tools Regulatory Oversight Bodies should consider. As discussed in previous chapters, 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.

Business planning toolkit – Planning Affordable Town Water Supply

The Town WSS Initiative (through WRc, the Water Research Centre) has developed a toolkit for *Planning Affordable Town Water Supply* to help towns develop their own business plan. The toolkit is a disc with a Pro-forma in WORD document and an Excel workbook with guidance notes that can be used to create a financial model of the town water utility. It is user friendly and provides guidance, explanation and examples to help the person using it.

The Toolkit works by first using the Pro-forma and guidance notes to start writing a business plan. The approach is based on the WEDC *Streamlined Willingness to Pay Methodology*, thereby linking technical design to willingness to pay. This may result in new construction being done in a phased approach that will ensure that the town water utility is financially sustainable.

The user is guided to the input screens of the spreadsheet indicated on the Welcome page of the financial model. The model works by taking data and financial inputs on costs on operations and investments and inputs on revenue such as tariffs to provide a long term projection of costs and revenue and provide a financial profile of the utility. The data inputs areas are clearly marked and a HELP text is available for each input.

The financial results are the predicted performance of the town water utility over a 20 year period. Financial performance is measured by the results of (i) the profit and loss account, (ii) the cash flow, (iii) the balance sheet, and (iv) selected indicators.

The results from the Toolkit show how costs for investment and operations match income from customers and therefore whether the utility can remain financially viable.

Although the Toolkit is a stand-alone document and spreadsheet, it is advised that some training takes place. WRc has prepared a four-day training course and guidance document for the application of the Toolkit based on initial work in four towns in Ethiopia, which is also suitable for use for training utility managers and town administrators in other countries.

6.6 Key Points

- The principles of management, design and financing, professional support and contracting outlined above call for a dynamic planning / expansion process, where business planning is very important as a planning tool for matching management arrangements and investments to water sales and revenues.
- A business plan is essential because it delineates the long range program of the operator, and thus ensures that services can be provided not just for the short term (project) period.
- The business plan is an excellent training tool that fosters understanding of planning, financing and operations, particularly for utility managers and town administrators.
- The business plan can also be used to initiate the dialog with consumers that is essential to keep the public up to date on activities and progress and, when necessary, explain performance problems
- The business plan provides the tools (monitoring indicators) necessary to evaluate performance and the achievement of objectives on the basis of which necessary corrective measures can be designed.
- The business plan can also provide information needed to design performance incentives tied to the achievement of specific targets.

7 Conclusions and Recommendations

7.1 The existing situation in towns

Towns face many problems in their attempts to provide adequate water supply and sanitation services to their populations. These can be summarized as follows:

- Towns have both rural and urban characteristics yet are unable to use exclusively rural or urban approaches to service delivery: their financial and professional resources are too limited to use urban systems and technologies, and they cannot employ rural solutions because they could not adequately serve urban type areas.
- Towns are therefore faced with the complex task of using flexible approaches and alternatives able to serve low income users at costs they can afford, and providing more traditional and more expensive solutions for better off population groups.
- Towns usually do not have big commercial and industrial clients that generate substantial financial resources to supplement income generated from residential customers. Without the economic base that larger-scale industry and commerce provide, towns are adversely impacted in two ways (i) they have more limited financial resources to fund water and sanitation development compared to larger towns with bigger industrial / commercial customer bases, and (ii) they do not attract the competent professionals necessary to manage water supply and sanitation systems.
- Towns lack the professional and institutional capacity at the local level to oversee and to deliver water supply and sanitation services. Therefore, towns will have to explore options to share some or all regulatory and service delivery functions with other towns, and / or contract external professional support (individuals or companies) to help regulate or operate services.
- In an effort to improve inadequate service, national governments are decentralizing the sector, giving towns the responsibility for service delivery. Unfortunately, that decentralization often does not include the concurrent delegation of authority to take the steps necessary to implement service improvements and raise revenues.

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 they need to design and implement technical alternatives and cost recovery mechanisms that lead to financially viable service providers which customers want and are willing to pay for. Meanwhile 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 through 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 will enable towns to take action.

Existing Sector Policies may have to be expanded (or new policies drafted) to provide for the following:

- Decentralization must be accompanied with the delegation of authority for towns to act, including authority to raise revenues to finance operations (tariffs, fees, and borrowing).
- National Governments need to create the enabling environment that encourages 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 service, by issuing and enforcing appropriate regulations and promoting policies to guide town activities.

- Towns should be allowed to choose from the various 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 the provisions that bind towns to support services.
- Entry of private sector and NGO technical assistance providers should be encouraged, with successful enterprises able to grow their business by competing for contracts with towns.
- Legal conditions for aggregation of towns should be drafted, including the aggregation process and the conditions binding the aggregated towns.
- Financing arrangements should align the incentives of the key players, and provide incentives for good performance through performance or reform based lending.

7.2.2 Capacity building

With the correct policies and incentives in place, towns will have a greater enthusiasm to reform and improve their water and sanitation services. To do this they will need support. Some of this can come from specialist service providers as noted in the report. However, there will remain a need to enhance sector capacity – an activity where government can take some action. In fact, the provision of government support for capacity building can be considered an integral part of the decentralization process. It is not reasonable to delegate new responsibilities to towns (municipalities) without providing support to allow them to properly discharge those responsibilities. Examples of how such capacity building could be provided include:

- Creation of a licensing system for key operations staff: supervisors and senior staff responsible for operations should be licensed by government, and courses established to provide the necessary training. Funds for training could be generated through a fee on the quantity of water sold.
- Providing training to ROB/COB members: 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.
- Standard material: towns should be provided with standard materials such as (i) contracts and documentation, appropriate to towns, for the various operator contract options available to them, (ii) articles of association for water boards, (iii) draft agreements to support aggregation of services by municipalities, (iv) standard business planning techniques including the collection and dissemination of cost and performance data (benchmarking).
- Training should include instruction in how to prepare a business plan for town water supply and sanitation operations that provides investment plans for the short and long term and also the information needed for performance monitoring.

Conclusions and recommendations

7.3 Recommended actions

Achieving the overall objective of a town water and sanitation strategy requires activities at local and national level, all with specific objectives of their own. The two principal actors are the National Government and its agencies, and the towns. Historically, the government has made the decisions governing sector activities. More recently, responsibility for the sector has been increasingly delegated to towns.

Recommendations designed to overcome past problems are therefore presented separately for national government authorities and for towns:

7.3.1 Actions recommended for the National Government and its planners

Various actions required of the National Government have been identified in the report, that can 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. This can include: review current situation and sub-sector needs, address legal and regulatory requirements for identified institutional models, establish the rules for financing, assess professional resources and establish capacity building programs, and prepare standards and guidelines and the mechanisms for dissemination and training.

Situation analysis – Establish a data base with basic information on the current situation in towns, local conditions and consumer preferences, including:

- Numbers and sizes of towns.
- Population data and growth rates.
- Socio-economic 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) – including water resources management, and environmental issues.

Information regarding local conditions and consumer preferences is best understood at the local government level, which is the underlying logic for decentralization. But better coordination by national government of information with regional impacts is important for it to develop a longer-term a vision for the sub-sector, and shorter term strategies needed to make progress.

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

- Local regulatory and corporate oversight for different management models (e.g. bye-laws 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 technical assistance providers under competitive tendering for design, construction and service provision.

Regulatory framework – Establish a National Regulatory Body and also provide for the delegation of appropriate actions to Town Regulatory Oversight Bodies.

Conclusions and recommendations

The National Regulatory Body should address:

- 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 / auditing - standardized procedures should be developed and disseminated and support provided to towns to help with regular preparation and publication of information.
 - Public health – supporting local mechanisms to monitor water quality.
 - Procurement guidelines and supporting model documents for an open entry policy and competitive tendering.
- Promotion of affordable design – regulations, design standards, and guidelines:
 - Cost effective design strategies, including modular approaches and sequential improvements.
 - Sanitation strategy.
 - Connection policy.
 - Stakeholder consultation.
- Policy and directives on 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 and institute the measures needed to improve the financial viability of town utilities:

- Develop a national program that requires towns to implement institutional reforms in exchange for financial support, based on a minimum investment option.
- Adopt national policies on cost recovery (including tariffs, connection fees, subsidies).
- Support development of the local commercial finance market in order to increase the level of commercial financing available for sector development:
 - Examine existing government/donor financing arrangements, identify barriers to development of local commercial financing of water projects and adjust approaches as necessary.
 - Establishing municipal development funds, specialized financial intermediaries, mechanisms for pooled financing for small projects with non-politicized 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 existing institutional arrangements and conduct a market survey of professional resources leading to measures to increase the availability of professional support to towns:

Conclusions and recommendations

- Support entry of private sector and NGO technical assistance for technical and managerial inputs to improve efficiency:
 - Create an enabling environment for private sector and NGO participation, including the broad legal and regulatory framework.
 - Bring down transaction costs of involving the private sector and NGOs 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 capacity building programs - The overall lack of professional capacity at the local level requires a massive investment in capacity building that should be tackled at the national level. A human resource development program should include:
 - Develop financial management and business development programs, to help town administrators (regulatory oversight), members of corporate oversight bodies, and system managers.
 - Establish modular programs to train and certify local operators, such as Outreach Training.
 - Identifying agents/institutions to provide relevant technical, financial and business development support services.
 - Establishing an information clearinghouse or help desk – including a register of who/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 – Many of the activities discussed above require that standards and guidelines are prepared, or existing ones modified as required, with emphasis on measures needed to encourage towns to use flexible and alternative approaches to the provision of services that are affordable to all population groups.

Standards and guidelines, as well as practical tools, should be developed for:

- The institutional framework:
 - The legal basis for regulatory and corporate oversight, e.g. bye-laws for the establishment of autonomous town Water Boards.
 - The legal conditions for establishment of specialist support organizations.
 - The legal conditions for aggregation of towns (articles of association).
 - The aggregation process, which brings together possible candidates for aggregation as well as identifying the drivers and constraints, the costs and benefits, and the form of aggregated entity as well as its scale and scope of responsibilities.
 - Key provisions needed to underpin contracting arrangements that tie the town to professional support, i.e. their operator, and specialist support organizations.
- Business planning processes:
 - Technical standards, and principles of engineering design (differentiated technologies, modular approaches and sequential upgrading), as well as sanitation strategy.
 - Methodologies to assess demand (willingness to pay/connect) that are appropriate to towns.
 - Financial modelling.
 - Simple tariff structure, and options for connection policy.
 - 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.

Conclusions and recommendations

- Monitoring and evaluating performance, including benchmarking and 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 in how towns are to implement regulatory functions delegated to them. Activities to be carried out by towns include:

Draft policies compatible with national policies and regulations and provide guidance that:

- 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

Establish a town Regulatory Oversight Body, with authority/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 successfully implemented.
- Examine financial operations of the operator, in particular the justification for tariff modifications, and approve, or recommend approval to town council, of necessary tariff modifications.
- Operational deficiencies observed should be brought to town council's attention for remedial action.
- Establish good communications and customer relations. The business plan can be used to initiate the dialog with consumers that is essential to keep the public up to date on activities and progress and, when necessary, explain performance problems.
- Establish independent review/auditing of technical and financial performance, including benchmarking activities.

Address institutional reform - Determine capacity of current service providers and explore alternative and improved management model and professional support options:

Where a town Water Board / Association is created:

- Ensure that the Water Board / Association has a sound legal framework (bye-laws, Cooperative Law, articles of association), and is accountable to consumers.
- Secure training for members of the Corporate Oversight Body, and specify their tasks and compensation.
- Assist in the provision of training for the service provider (operator), system manager / staff .

Towns should contract an operator, or at least provide performance based contracts for utility employees, and secure specialist support for the regulatory oversight body and the operator. One of the key tasks for the town will be to review and approve business plans. The business plans should:

- Present an investment plan for both the short and long term matching design with demand.
- Present a financing plan that ensures financial sustainability.

Conclusions and recommendations

- Provide performance targets to be met by the operator.

Explore options to share regulatory and / or 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:

Step 1: Technical Assistance to establish Town Water Boards 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 Water Board created and Board members appointed.
- Stakeholder consultations held regarding program requirements, estimated costs, tariffs and contribution required.
- Key utility 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.
- Water Board meeting as scheduled and involved in planning.
- Stakeholder consultations held.
- Immediate service improvements completed.
- Revenue covers current O&M 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.

Conclusions and recommendations

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 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 technical assistance.
- Board meeting as scheduled and involved in planning.

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Annexes

Annex A: Preliminary data on the proportion of people living in towns³⁶

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.

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	'Mega-cities' 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.

³⁶ Source: Satterthwaite: *Towns; their under-appreciated demographic, economic and social importance.*

Table A.3: The number of urban centers in different size-classes; selected nations

Nation and date of census	Number of urban centers in different population-size classes						
	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)	n.a.	37	19	6	2	0	1
South Africa (1996)	n.a.	24*	29	5	3	2	1
Costa Rica (2000)	16	26	3	1			
Thailand (2000)	n.a.	51**	41	4	0	0	1
Bangladesh (1991)	360	118	35	5	2	1	1
Sri Lanka (2001)	9	25	9	1	1		
Ghana (2000)	n.a.	318***	21	5	1	1	
Uganda (2002)	43	21	9		1		

n.a. Not available

* urban centres with 25,000-49,999

** urban centres with 30,000-49,999

*** small towns/urban centres 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 bye-laws covering procedure, meetings, shares, directors...

Bye-Laws. (i) The means through which an authority [e.g. town] establishes the legal status and independence of an organization [e.g. Water Board], and invests it with ownership and oversight responsibilities. (ii) Bye-laws also govern specific internal affairs and actions of the organization (linked to some operational activity or regulatory requirement). Such bye-laws 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: hold general meetings at least once a year, appoint auditors and keep proper books of account.

Cooperative Law. The means of establishing a cooperative [e.g. Water 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 pre-determined 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" [e.g. community]. Trusts are not for profit, and actively seek partnership between the community, voluntary, private and public sectors.

Annex C: Modular approaches to design

The following table divides the components of water and sewer systems into 3 categories, depending on the recommended amount of excess capacity: > 5 years, about 5 years, and less than 5 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 should they 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 US 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, i.e. 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.

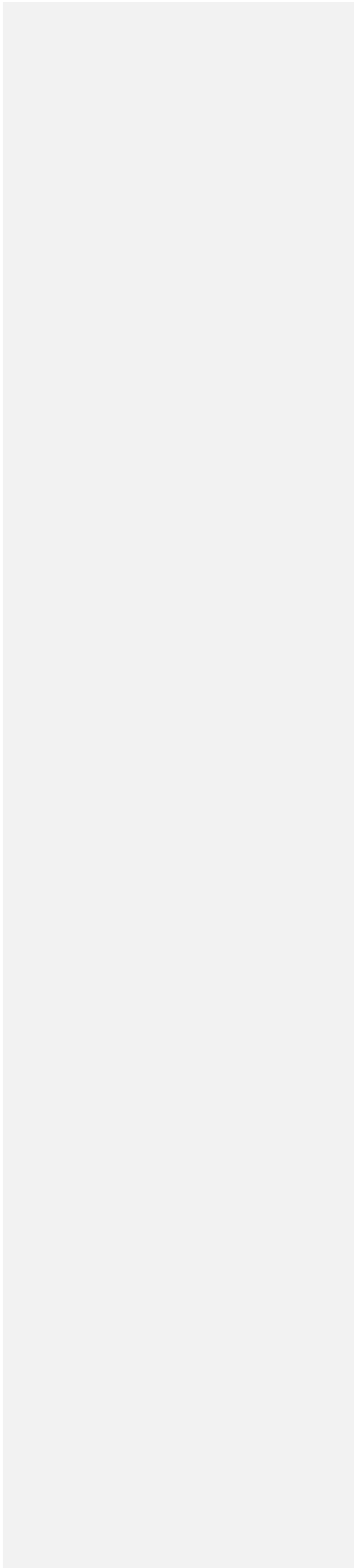
Network Diameters Water pipes laid underground have fairly high economies of scale with respect to their flow capacity. Trench excavation, backfilling, traffic control, and paving typically make the marginal cost of increasing diameter to provide excess flow capacity modest. Furthermore, the flows in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

Pump Stations & 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



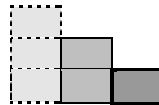
	Current Situation in Small Town Water Supply and Sanitation	Policy and Strategy Options	Target
Financing from Government budget	Often politically directed; not performance based	- Establish performance-based access criteria for investment financing and tie support (subsidies) to implementation of policy objectives and reforms	Clear criteria for accessing funds; tied to implementation of reforms and performance of utility
	Interrupted flow of funds – single year budget commitments not able to accommodate multi-year investments	- Consider utilizing special funds that work independently of the regular budget cycle	Once project is approved, funding is committed and available for multi-year 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/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 non-politicized 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 (e.g., pension funds providing funding through a well functioning bond market) on terms that match assets life and reflect relative low risk of water business;
Project planning	Over-designed 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 pre-condition for accessing funds from government or donors - Provide support for project preparation	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
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; 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 pre-condition 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
Regulation	Utilities lack autonomy in decision making – e.g., employment and contracting decisions subject to political interference	<ul style="list-style-type: none"> - Require management autonomy as pre-condition to obtaining funds for accessing government or donor financing (e.g., 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
	Low level of efficiency and lack of accountability; limited private sector involvement	<ul style="list-style-type: none"> - 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 	Utilities operated under arms length transactions with performance targets and increased accountability
	Lack of professional support – unavailable at the local level and/or unaffordable	Require contract for Professional support as pre-condition for accessing investment financing (to be outlined in business plan)	Contract for professional support
	Non-existent or not independent and politicized	Establish regulatory system that includes mechanisms designed to de-politicize tariff setting process, increase transparency and stakeholder consultation	Well functioning independent regulator
Tariffs	Under-financed 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
	<p>Not sufficient to cover operating and maintenance expenses</p> <p>OR</p> <p>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 re-connecting when cut off</p>	Adopt national policy on cost recovery, defining full cost recovery tariffs to mean tariffs that generate sufficient cash to cover O&M expenses, renewal & 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
Connection Fees	Tariffs unaffordable to poorer customers	Make specific provision for cross-subsidy in tariff policy e.g.: (i) tariffs designed with life-line rate so that the poor can afford a minimum amount of water each month; (ii) cross subsidized by customers who use more water	Poorer customers able to afford monthly water bill
	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 e.g.: (i) household connection fee set below cost (e.g., equal to 3-6 months average monthly bill), financed by small surcharge on the tariff which goes to reserve fund); (ii) direct subsidies for access (e.g., OBA scheme to finance connection fees in poorer neighborhoods); (iii) assistance provided directly to poorer households (e.g., micro-finance 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 due to 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 inordinately heavy burden on industrial/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

Key:
Local, simple operation
Intermediate business
Full service operator



Water and wastewater supply, distribution, collection, treatment		Customer services Commercial Customer relations		Personnel (HR)	Financial	Capital works
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
Simple filtration and dosing works	Maintenance	Pursuit of bad debts and illegal connections	Liaison with other stakeholders, e.g. NGOs, Community Associations, etc.	Use of contract labour	Corporate accounts	System upgrade planning
Simple distribution systems	Mechanical and electrical equipment routine maintenance	Management of service contracts	Public relations	Design of remuneration and benefits structures	Capital accounts	Demand forecasting
Public supply points	Burst mains repair	Customer contracts	Education programmes	Appraisal systems	External finance	Design solutions
New customer connections	Equipment servicing and parts replacement	Customer database	Research on willingness and ability to pay	Incentive systems		Assessment of new technology
Buildings, vehicles and plant	Leakage detection and reduction	Applications for permits and wayleaves	Research on acceptable service standards	Training administration		Procurement methods
Water and waste quality monitoring	Civil and building works maintenance	Capital and supply contract design				Capital works supervision
Treatment works, storage works and trunk mains	Vehicles and plant maintenance	Financing agreements				Programme management
Network distribution systems, reservoirs and pumping plants	Workshop activities	Adherence to Sector, commercial, consumer and employment law				
Wastewater collection systems	Long-term maintenance planning					

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 non-viable 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 etc.

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, e.g. depreciation under-reported due to 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, television etc. 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 non-water 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.