Summary Report on the

Small Towns Water and Sanitation Electronic Conference

31st January to 10th March 2000

PREFACE

Some 350 participants took part in the Small Towns Water and Sanitation Electronic Conference, which was hosted on the One World web site. Darren Saywell at WEDC managed the flow of information and linked us to colleagues in Latin America, and Ines Restrepo Tarquino at CINARA in Colombia coordinated the parallel Spanish/Portuguse conference and translated material to enable cross fertilization of ideas. David Jones and Nick Pilgrim helped with the weekly summaries and drafted the annotated bibliography.

Many contributed to the definition of a small town water supply. Jeremy Parr [19] suggested using core properties and secondary characteristics; Reid Harvey [21] [43] warned that the definition should not exclude communities in our zeal to develop a precise definition since the idea is to provide water to people; Robert Brotherton [9] [20] [33] [54] [74] [93] raised the importance of formal recognition of a town and a legal basis for ownership and management and shared so much about local government and small town water supply in the USA; Joseph Eyatu [4] and Mark Brussel [5] emphasized the importance of more professional management; David Satterthwaite [30] suggested that villages be differentiated from towns on the basis of the economies of scale offered by piped systems; Teun Bastemeyer [47] highlighted the need to meet the water demands of rapidly growing centers, and Cyrus Njiru [13] [61] nicely refined the draft definition. My friends and colleagues from Ethiopia, Sahle Sisay [15] [29] [70] [84] [92] and Amha Metaferia [34] [68] [105] provided interesting insight into small town water supply in Ethiopia and brought attention to the importance of the informal sector in the provision of sustainable water supply services.

When it came to a classification system for management models, IRC [77] offered an excellent proposal that formed the basis for discussion. Gonzalo Ordonez's [99] also presented an interesting table which sets out the various management options.

There were lots of examples of small town water supply, interestingly, all from Africa. Ngah Rudolf Foncha [75] prepared an excellent one on the Kumbo Water Authority in Cameroon. Collectively the case examples provided a rich set of experiences from which lessons can be drawn. The conference is indebted to our case contributors: Madeleen Wegelin-Schuringa [76] for the East Kilimanjaru Water Company in Tanzania, Susan Sandoz [80] for water point committees in Niger, Brunp Valfrey [85] on the importance of remittances from migrants on water supply in the Keyes Region of Mali, Cedric Estienne [96] on progress in the establishment of small town water boards in Senegal, Jo Smet [108] on the experience of water supply companies in Morogoro, Tanzania, and Martin Mbonu [100] on the small towns water supply and sanitation program in Nigeria.

We must also recognize the group contributions that were made by the folks at WEDC [35] [71] [104] (Darren Saywell, Cyrus Njiru, Joseph Oriono-Eyatu, Mike Smith, Jessica Budds, Mansoor Ali, and Andrew Cotton) and at IRC (Dick de Jong, Teun Bastemeyer, Madeleen Wegelin-Schuringa, and Jo Smet). They did much to keep the discussion alive and substantive.

Bob Roche, Conference facilitator.

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The *Summary Report, Annotated Bibliography, Case Studies* and compiled *Postings* are in Microsoft Word. Posting reference numbers are indicated by blue, square brackets. Clicking on a reference number accesses the Postings contents page, and clicking on a page number in the contents page accesses the individual postings. The four files should be stored on the same floppy disk or in the same directory.

INTRODUCTION

1. SMALL TOWN WATER AND SANITATION

Water supply and sanitation in both rural villages and urban centers has received much attention during the last two decades. Given the fact that more people live in small towns than in villages or urban centers and the relatively poor level of service in them, there has been 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*.

Between 31st January and 10th March 2000 a global electronic conference was organized by WEDC and the World Bank, and hosted on the One World web site. A parallel, Spanish/Portuguese conference was run by CINARA in Colombia for participants in Latin America. Postings were summarized and translated to enable cross fertilization of ideas. The conference provided an opportunity to draw attention to small town water supply and sanitation, to share experience and to collectively build the foundation for improved small town water supply services. Some key issues were addressed: *What is a small town ? What are the management models for small towns ? What are the "ingredients for success" in the provision of good quality, affordable services that are sustainable and able to expand, and what are the barriers ?*

To add reality to the electronic conference discussion, individual case studies were presented under the framework given in the following table. Some of these case studies are presented in the boxes which follow. Taken together, institutional arrangements and ingredients for success set out basic principles and best practices.

General/Technical Information	**Institutional Arrangements**	**Ingredients for Success (Barriers to success)**
Name of town Name of project Implementing organization Financing organization Household incomes Number and sizes of towns in the area Water sources Types of system Types of connections	Roles of communities, private sector and local government: Who owns and manages the facilities? Who plans, designs and supervises construction of the facilities? Who operates, maintains, collects revenues, and keeps accounts? Who audits performance of town water authorities and operators? Who audits accounts?	Political support Legal basis for ownership and management Management stability Organizational arrangements Financial viability and incentives Financial autonomy Tariff regulation Flexibility Technical and private sector support Cost effective design and works Cost effective operation Coverage Water quality regulation Accountability to users Demand responsive Willingness/ability to pay Belief in service delivery

2. WHAT IS A SMALL TOWN ?

At the start of the electronic conference a number of criteria were proposed upon which to initiate a discussion over the definition of a small town. These criteria included size, technology, water source, management type, operations and maintenance requirements and local infrastructure. Following discussion and feedback, the criteria were refined to a set of primary characteristics that were felt to be fundamental to the purpose of establishing a useful definition, and a set of secondary characteristics that may or may not be significant to the water supply and sanitation services provided in a given settlement. Regional differences and problems of exclusion may arise in the use of secondary characteristics.

These characteristics are tabulated below together with some of the specific issues raised.

Primary Characteristics	**Secondary Characteristics**
Population e.g. number of inhabitants, housing/population density, growth rate, economic activities **Administration** e.g. the settlement's administrative capacity (in the case of municipal models) or the legal basis for ownership and management of facilities, the regulatory framework **Technology** e.g. economies of scale, water production, type of source, type of system **Management** e.g. type of management model, roles of communities, private sector and local government	**Society** e.g. demand responsive approach, capacity building, social fabric, social cohesion **Infrastructure** e.g. the scope and quality of the settlement's existing infrastructure **Economy** e.g. the size, nature and diversity of the settlement's economy

In general it was felt that an absolute definition of "small town" would remain elusive because the context is variable. In particular, one of the main concerns expressed during the conference was that the small town definition should not exclude settlements that can not be better served by rural, community-managed or urban, utility-managed systems. This led to a definition that distinguishes towns from villages on the basis of the economies of scale offered by piped systems, and distinguishes urban centers from towns on the basis of the financial viability for conventional urban utilities to manage them. It was felt that the definition should be sufficiently broad to encompass regional differences in size.

> **Small towns are settlements that are sufficiently large and dense to benefit from the economies of scale offered by piped systems, but too small and dispersed to be efficiently managed by a conventional urban water utility. They require formal management arrangements, a legal basis for ownership and management, and the ability to expand to meet the growing demand for water. Small towns usually have populations between 5,000 and 50,000 but can be larger or smaller.**

It was suggested that multi-village systems were similar to small towns in many ways, but that water supply in peri-urban areas be treated separately.

3. CLASSIFICATION OF MANAGEMENT MODELS

The small town definition proposed during the electronic conference defines a niche for small town water and sanitation services vis-a-vis rural and urban services. The conference moved forward to explore the theme of proven or promising small town management models.

Several participants came forward with suggestions regarding a framework of management models, including Bastemeyer [77], Rosenweig [82], Ordonez [99] and Metaferia [105]. Collignon [124] suggested that, in the context of small towns, the main issue is not to choose between public or private forms of management but to focus on scale (local, regional or national). During the course of discussion it became apparent that delegated management and private sector participation in other management models were synonymous.

A general classification of management models emerged as follows:

Local Management

Direct Municipal Management

The Works or Water Department concerned with operations is integrated into the administration of the municipality with revenues mixed with the overall municipal budget. Revenue collection and accounting may be under the Works or Water Department or under a separate finance department. Water quality regulation, if any, is usually provided by a higher level of government (e.g. a health ministry). Price regulation is usually provided by a water ministry or public utility commission.

Autonomous Municipal Management

Although the municipality or local government owns the facilities, an independent and financially autonomous municipal water company with an elected or appointed board oversees planning and operations. Water quality regulation, if any, is usually provided by a higher level of government (e.g. a health ministry). Price regulation is usually provided by a water ministry or public utility commission.

Co-operative Management Association

Ownership may be with local government or with the co-operative (community) which manages and operates the services. Co-operatives normally are made up of members of the community who meet annually in a general assembly, an executive board that meets periodically to make management decisions, and an operating group. The co-operative is financially autonomous, but not always formally recognized as an independent legal entity by government. Water quality regulation, if any, is usually provided by a higher level of government (e.g. a health ministry). Price regulation is usually done by the community itself but may be provided by a water ministry or public utility commission.

Regional or National Management

Regional or National Utility (State Owned or Private)

A government or private utility owns the facilities and is charged with planning, construction and operations. Oversight is provided by a board usually appointed by the water ministry. The utility is financially autonomous but the revenue from more than one town may be pooled, with individual towns operating on a budget controlled by central management. This model generated less discussion during the conference, and is not included in the annotated bibliography.

Private Sector Participation and Professional Support

Private Sector Participation (Delegated Management)

Private sector participation (delegated management) may be employed under local, regional or national management. Operations are wholly or partially contracted out to a private company. Contract options include management contracts (the company is paid a set fee or a fee plus a share of profits, 2-5 year contract); lease contracts (the company finances operations and maintenance from its own revenue at its own risk, 7-15 year contract); and concessions (the company finances investments, operations and maintenance from its own revenue at its own risk, 20-30 year contract).

Professional Support to Community Operators

Municipal Water Departments, Water Boards and Water User Associations typically employ members of the community to operate their water supply system. In order to get the professional support needed to resolve technical problems, plan and supervise system expansion and provide sound financial management, technical assistance is required. Solutions proposed during the conference revolved around pooling resources to hire engineers and financial advisors, private sector participation, and professional support from a higher level organization.

- Several municipalities or co-operatives group together to hire professional services
- Operating contract or franchise arrangement with private sector
- Professional support from higher level organization
  - A regional or national utility
  - A regional or national NGO

4. OVERVIEW OF MANAGEMENT MODELS

Various advantages and disadvantages of the different management models were noted in participant contributions, particularly in the case studies and reactions to them. In organizing the various contributions, a number of themes emerged related to financial viability and the quality of services. In this section we have tried to summarize the ideas that emerged, broadly comparing the different management models. The comparison is not complete but hopefully contributes to a better understanding of the different models. In the discussion Municipal Water Departments and Direct Municipal Management, Water Boards and Autonomous Municipal Management, and Water User Associations and Cooperative Management are each used interchangably.

Factors that directly affect the **financial viability** of a town water supply include financial autonomy and financing so that with revenues can be reinvested and loans can be obtained to renew and expand the system, regulation that allows tariffs to be raised while protecting the consumer, cost effective design and cost effective operations so that water is affordable. Factors that **service level** include political support for the management organization, management stability underpinned by clear legal basis for ownership and management , flexibility to innovate and procure goods/services, technical support to professionally manage the system, accountability to users, and expanding coverage.

Financial Viability

Autonomy

The financial autonomy of WBs and WUAs better assures financial viability since, with their single mandate and autonomy, they can retain their own revenues and make their own operational and management decisions (Murthy [73], Rosenweig [82], Ordonez [83]). With these management models, revenues generated by water sales tend to be re-invested in the water supply system (Sandoz [90]). Autonomy also provides more incentive for the WB or WUA to be financially viable. Conversely, lack of autonomy of MWDs often allows revenues from water services to be diverted for other purposes, jeopardizing sustainability and expansion (Rosenweig [82], Murthy [73]). While less likely, a WUA may also succumb to pressures by the community to use savings, originally set aside for system repairs or extension, for other purposes (Woodfield [97]).

Financing

Financing for new facilities and major rehabilitation or expansion of existing facilities is the biggest limiting factor to improving town water supplies (Murthy [73], Bastemeyer [47], Velasquez [52]). A government grant is likely to be a once in a lifetime opportunity, and insufficient to keep up with growth. While the government may be able to provide introductory financing to help a town provide basic water services, it will be a long wait for most communities. Ultimately replacement and expansion must come from water revenues (Rosenweig [82]). Access to private financing depends primarily on the risk to the financier. Municipalities that are credit worthy and have access to financial markets can attract financing for their water supply facilities, but this is rare. To establish credit worthiness and secure financing, independent WBs and WUAs need a record of cash flow and savings. Lack of assured permanence of a cooperative may limit access to private financing.

Private operators usually cover all of their operations and maintenance costs via tariff collection (Sisay [84]). At least some private investment in the system places the operator at financial risk and motivates action to reduce unaccounted for water and to improve efficiency. It also provides an initial framework under which private sector investment can be expanded, involving them in increasing capital investment and assumption of risk (Sisay [84]). In Mauratania private operators at first financed only operations and maintenance, then replacement, and finally expansion. Private operators can establish their own credit worthiness.

Regulation

For DMM and even AMM political considerations often take precedence over financial viability when tariff increases are approved (Ordonez [83]). Cooperatives are likely to have more latitude in setting tariff levels that match their desired service level and willingness-to-pay than municipal management models (Mbonu [100], WEDC [104]). Private sector operators need assurance of reasonable tariff increases but must also be regulated to avoid charging excessive tariffs or transferring inefficiencies to the users (Alfaro [92]).

Cost Effective Design/Works

Expensive, oversized systems are common, typically based on "textbook" technical design criteria rather than willingness to pay considerations (Amaral [79], Oriono [4]). Both DMM and AMM tend to have oversized facilities that are more expensive than necessary. CM facilities are more likely to be scaled to actual needs of the community, particularly if users are required to contribute part of the capital cost (Sandoz [80]). In fact CMM may have an inherent advantage when it comes to accommodating different service levels (WEDC [104]). Participatory planning encourages service levels, investments and tariffs to fit community willingness to pay, and for revenue collection to be enhanced and financial viability better assured (Mbonu [100]). If the private sector is made responsible for expansion, it will attempt to implement this in a financially sustainable manner. If their contracts are not secure, private operators will invest only what can immediately be recovered.

Cost Effective Operation

No matter what management system is employed, technical operations are almost always given higher priority than financial management, in other words water supply is rarely treated as business (Estienne [96], Smet [108]). Municipal water departments tend to have little incentive to be financially viable, particularly if water revenues are mixed with the overall municipal budget and operators are protected by civil service regulations (Rosenweig [82]). High unaccounted-for-water from leaks and commercial losses is common (Rojas [98]). CM tends to have lower operations and maintenance costs, but management may be less formal than AMM (Bakir [94]). Cooperative management models (through an increased sense of 'ownership') may imply a better regard for maintenance (and hence sustainability) than other models (Mbonu [100]). Private operators that have a financial risk or can gain financially by better performance will seek to cut costs, improve rate recovery, and reduce unaccounted for water.

Service Level

Political Support/Conflict

Political involvement is a two edged sword. It is very important to the stability of the management arrangements and to enforcement of regulations, but very often politically motivated priorities can take precedence over technical/financial decisions (Ordonez [83]). The autonomy of WBs and WUAs helps insultate against political interference. Nonetheless, politicians can disrupt and interfere in decision making, particularly if not everyone is represented (Wegelin-Schuringa [76]). Support of traditional leadership and influential community members can be an important counterbalance. Without political support, it is difficult to shift from central to decentralized management. In fact, in some countries it is prohibited by law (Rosenweig [37], Bastemeyer [47]).

Management Stability

If the legal basis of ownership and management is not clear, sustainability is not assured since authority can be taken away rather easily. If a municipality is recognized as a legal entity and ownership is vested in the municipality, long term ownership is well defined. However, if a cooperative owns the facilities and the system stops functioning, to whom does ownership default? AMM is more insulated than DMM from changes in municipal administration. Nonetheless instability in town government often results in changes in water management (Brotherton [9] [74]). Different factions within a town may have conflicts or service may not be provided to all. Management needs to represent the whole community and needs formal mechanism for selection of board members and operations staff (WEDC [104]). The more formalized position of municipal management helps insulate them from petty community disagreements that may occur under cooperative management. Municipal management arrangements may be easier to introduce than cooperative management in that they are likely to conform better with the existing legal framework and the local political balance.

Organizational Arrangements

Most management models can provide sustainable services if there is a sound legal basis and if the management system provides clear lines of responsibility and accountability to the community (WEDC [104]). Operations must be organized, and cannot be treated informally. With DMM service is dependant on municipal management capacity - if management is weak, water supply services will be poor. DMM operations may be in a different department than revenue collection and accounting, so coordination may be lacking (Murthy [73]). AMM and CM are not directly dependant on municipal management capacity so water supply services can be good even if municipal management is weak. An autonomous municipal water company is more likely to be organized according to functional responsibilities and to integrate financial and operational management. Clear lines of responsibility and accountability are often absent with CM (Wegelin-Schuringa [76], Smet [108]). Private sector provision involves a clean division of roles which may lead to better performance and efficiency.

Flexibility

DMM is bound by the procurement and hiring practices and the decision processes that govern the municipality. Flexibility to act quickly and to innovate is therefore limited. AMM and CM are progressively better at overcoming hurdles posed by the institutional or legal framework. Co-operative management models (akin to the informal sector) can thrive in spite of a poor institutional framework. However, they tend to become more formal over time and lose some of their initial advantages (Estienne [96]). Private operators can bring the flexibility needed to efficiently operate a water supply system.

Technical and Private Sector Support

The tendency is for MWDs, WBs and WUAs to recruit staff from within the community and to manage them rather informally. Local personnel usually carry out routine assignments effectively, but lack the training and experience needed to address technical problems that arise, to plan/supervise facilities expansion and to improve financial management (Smet [108]). Water Boards are more likely to hire consultant services to supplement their in-house technical capabilities (Murthy [73]). Several WUAs may join together to obtain needed specialists and thereby benefit from economies of scale (Tarquino [86], Giraldo [98]).

Accountability

Decentralization brings greater accountability (Foncha [75]). In fact ownership and management by the community may be fundamental to accountability and in turn to sustainability (Estienne [96]). Dedicated WBs and WUAs help ensure accountability to users and better oversight of planning and operations. The system of accountability is generally perceived to be more direct in the co-operative management model (WEDC [104]). For example, different stakeholder groups within the association act as checks and balances, serving an internal regulatory function (Foncha [75]), and the community can put pressure to change a person who is not performing (Sandoz [80]).

Coverage

The management option with the broadest governance base, greatest accountability, and best ability to raise revenue for expansion is likely to provide the greatest coverage. Efficient WBs and broad based WUAs, especially ones that have contracted operations to a private company are likely to provide the greatest coverage.

CASE STUDIES

THE DOMESTIC WATER SUPPLY PROGRAMME IN TANZANIA[1]

General and Technical Information
Under the Domestic Water Supply Programme in Morogoro Region of Tanzania, 22 piped water supply schemes have been constructed or rehabilitated since 1993. The program is supported by the Dutch and Tanzanian governments, together with DHV Consultants. 14 of the schemes have more than 5,000 users, with the largest serving 28,000. The majority of people use public standposts, but in larger centers there are a substantial number of house and business connections.

Institutional Arrangements and Ingredients for Success (Barriers to Success)
Each scheme is managed by a Water Supply Company (WSC). The WSC is made up of four groups: users; a Water User Group Committee (WUGC); Members of the Company; and a Board of Directors. Roles and responsibilities for each group and election procedures are set out in the Articles of Association. Every year the users elect the WUGC, the WUGC elects up to 30 Members, and the Members elect the Board. The Board appoints a Chairperson, a Secretary and a Treasurer, and is responsible for managing the company. Larger WSCs may have full or part-time personnel (e.g. a manager, an accountant, technical support). Only the larger WSCs have their accounts audited by an external body. Tariffs are set by the Board and collected by the WUGC. In general, users appreciate the improved service and there is a willingness to pay. However, financial performance of nearly all WSCs is poor. Collection rates are less that 50% for public standposts, and average 69% for house connections and 87% for business connections.

The WSC is registered as a legal entity, with the Members of the company taking over from the District as owners of the assets. However, very few schemes have been officially handed over. In the long run, the success of WSCs will probably depend on establishing autonomous community ownership and responsibility, with traditional authorities at village and district level accepting a new role in conflict solving and counselling. This approach is supported by the latest draft of the new Rural Water Policy (July 1999) which also advocates full cost recovery in operations and maintenance, replacement and system expansion. At present the policy is over ambitious, since most Boards lack capacity and experience to manage their company successfully as a business. As a result of poor collection rates, WSC reserves are typically less than 1% of the total asset value and only cover operations and basic maintenance. Lack of confidence may result in authoritarian rule, and poor communication with users results in a lack of accountability and transparency. The situation is not helped by the short terms of office.

At present, district authorities lack the capacity and resources to provide support to WSCs, and the private sector is weak. It is suggested that a Federation of WSCs be established to provide needed management and technical support. The Federation could also act to facilitate the involvement of the private sector, while regulating the quality of service and the cost to the user.

[1] Jo Smet, IRC [108].

THE WATER MANAGEMENT SUPPORT PROGRAM (PAGE) IN SENEGAL[2]

General and Technical Information

PAGE[3] has been carried out by ISF[4] and AFVP[5] since 1996, in the Matam Department of North-East Senegal. The program is funded by French Cooperation, French Regional Water Distribution Operator, private funds and (if accepted) the EEC. The program currently reaches 47 small towns with between 2,000 and 15,000 inhabitants. The typical distribution network has a borehole with motorized pump, and a piped network with between 5 and 20 standposts and one or two cattle troughs. For larger settlements the number of private connections becomes significant (e.g. up to 200 connections in towns of 10,000).

In towns of 5,000 or more, uncontrolled expansion of the original network causes water pressure imbalances and physical leakage. Since users normally pay a fixed price for water, taps are often left open to fill basins and barrels. Others have to wait until these connections are closed before the network can deliver water to their area and they may have to find alternative sources. In general, users take advantage of the fixed price and daily production can reach 70 liters a day per capita with a lot of waste. However, in smaller settlements with fewer house connections people use public standposts, and a different type of user behavior is apparent. The service is regarded as a collective good, and production stays at around 30 liters a day per capita with little waste.

Institutional Arrangements and Ingredients for Success (Barriers to Success)

At present facilities are owned by the State, which delegates day to day management (e.g. operation and maintenance, collecting revenues and keeping accounts) to the users who are represented by a voluntary water board. Only the borehole and water tower are maintained by the State. The board is usually selected by the heads of families and this lack of independence from the community makes it difficult to have contractual arrangements, audits of performance and to enforce unpopular decisions (e.g. refusing to authorize a new connection). Under current reforms the State intends to stop financing the water sector, boards will have access only to their collected revenues, and it is hoped that day to day management will be delegated to the private sector. However, community fears of price rises and loss of management control are barriers to reform.

The waste of potable water is encouraged by the fixed price system (in which households with private connections pay more than those who use public standposts). Selling water by volume, such as by bucket at standposts or by installing meters on house connections, seems to be the best solution. For example, in one village of 400 to 500 users (in which water was sold by basin at about $\$0.30/m^3$), the dry season consumption was limited to 7 liters a day per capita but rose to 25 liters when a local shop keeper offered to pay for everyone !

If the water supply service is to be made financially viable water boards must manage their facility in a professional manner, establish the confidence of users and implement rational and acceptable water rates. Investment may also be required to improve sections of the network currently in disrepair and from which no revenues are being collected. These have been the objectives of the PAGE management support program, which legitimizes the role and authority of the water boards. The mechanism of this progression is now known, and the Water Directorate of Senegal has extended the program to two neighboring departments increasing the number of boards under the program to 100 during 2000-2002.

[2] Cedric Estienne, Hydroconseil [96].
[3] Programme d'Appui a la Gestion de L'Eau - Water management support program.
[4] Ingenieurs Sans Frontieres - Engineers without frontiers.
[5] French association of the volunteers for progress.

KUMBU WATER AUTHORITY (KWA) IN CAMEROON[6]

General and Technical Information

The Kumbu Water Authority (KWA) is a community-owned, non-profit water supply scheme serving the town of Kumbu in Cameroon. The current population of the town is 40,000 and rapidly expanding. The scheme was first established in 1974 under a Public Works Department, through financial and technical assistance from CIDA[7]. In 1984 management was transferred to the Cameroon National Water Corporation (SNEC). The system includes three intakes, three slow sand filters and a storage reservoir. Distribution to public tap stands (PTS) and private connections is by piped network under gravity and pumping. Currently KWA has about 1,500 private connections and 68 functioning PTSs.

Institutional Arrangements and Ingredients for Success (Barriers to Success)

Public dissatisfaction with SNEC led to the creation of KWA in 1991. KWA is now the legal owner of both the facilities and the watershed. A General Assembly (GA) is elected by the community and is made up of about 70 members. The GA Standing Committee is elected every two years and has legal authority to resolve problems referred to it by the KWA Manager. A Governing Council (GC) is responsible for actual management and answers to the GA. It is made up of about 25 members. The GA elects two professional auditors who are independent of the GC to audit accounts. The GC also has an internal auditor. The KWA budget is prepared by the Manager and the Financial Secretary. The Manager executes the budget under supervision of the General Secretary.

The community role includes: elect the GA; elect PTS officials; monitor the attitude of KWA personnel; report on leaks and illegal connections; assist at will in protecting exposed pipes and in enforcing traditional injunction order against farming in the watershed area. The role of the GA includes: approve policies proposed by the GC; approve regulations and (volumetric) water rates; approve pipeline extensions; approve the budget; amend statutes of the KWA. The private sector role includes: provide specialist technical services; provide short term credit. The local government role includes: participate in KWA meetings; repair damage to the pipeline caused during road grading.

The Manager is recruited by the GC to run day to day management and head the six main departments: the Production Center (responsible for management of the 2008 hectare watershed, intakes, slow sand filters, chlorination and minding the storage tank); the Network Maintenance Department (repairs and extension of the pipeline network); the Commercial Service Department (client service, taking water meter readings, distribution of water bills, and installation of new meters); the Accounting Department (oversees all accounting operations); the Treasury (controlled by the Cashier, whose responsibilities include all cash paid into or out of the KWA account) and the Stores Department (stocks of spare parts and materials, chemicals and tools). Specialist technical services are hired when the need arises.

Each PTS has three officials, a president, a secretary and a treasurer, elected from the users. The user group draws up its own rules and regulations and submits a copy to the Manager, who helps to resolve any disputes. Use of the PTS is charged at $\$0.17/m^3$. Private connections are charged at $\$0.29/m^3$ plus a maintenance (meter) rate of $\$0.33/m^3$. Average consumption at PTSs is 27 liters a day per capita, and about 50 liters at other connections.

KWA has a formal and professional management, it is insulated from local politics, and it is financially autonomous (with some assistance for small projects e.g. from HELVETAS[8]). The system is demand driven, cost effective, and able to meet expansion needs until 2020.

[6] Ngah Rudolf Foncha, Kumbu Water Authority [75]. See also *Case Studies*.
[7] Canadian International Development Agency
[8] Swiss Association for Technical Assistance.

ONA W POINT OMMITTEE IN N [9]

Kona is a settlement of 7,000 inhabitants which used to rely on open wells for water. In 1996 UNICEF

a 30 m^3 aluminum storage tank and a piped distribution network with six public tapstands. There are no liters a day per capita at a cost of about \$1.00 /m^3
wells are still used for other needs, such as livestock and washing clothes. The initial capital costs for installation (about \$50,000, not including the well) were paid by UNICEF, and in theory the facilities Kona contributed about \$600 together with their labor

community identifies the system as their own. The project took two years from conception to completion. There are 200 to 300 similar schemes operational in Niger today. Hundreds of similar settlements still

The service is managed and operated by a Water Point Committee and six tapstand operators. They were

the town. The Water Point Committee is made up of seven members elected every two years by the whole community. The committee includes a President (who supervises and is responsible for finances), a chlorination), a Treasurer (book keeping and
collecting fees from the
Treasurer), and three Hygiene Assistants (hygiene education). The President and Treasurer are usually women. Most of the Committee members are voluntary, but the Technician and
on some similar schemes the Treasurer) receive a monthly wage. These wages amount to about 30% of the monthly revenue. The rest of the funds are kept to pay for ongoing costs, such as maintenance and subsidize a free service to the school and the medical center.

[9] Susana Sandoz

THE FINANCIAL ROLE OF MIGRANTS ASSOCIATIONS IN MALI[10]

The Kayes region of South-East Mali has two characteristics significant to its water supply and sanitation services. Firstly, the unusual number of settlements with more than 5,000 inhabitants. Secondly, the remittance income from a large migrant population (10% of inhabitants, mostly young men, live outside their villages). This income is used for both family expenses and for community schemes including water and sanitation, schools and primary health. A survey carried out by PS-Eau[11] in 1998-99 found that 36 out of a sample of 42 migrant associations based in France actively support water supply projects. In the past two decades, migrant associations have supported almost 150 projects, representing an investment of about $3 million (1% of the total remittance over the last two decades from migrants based in France to the Keyes region).

In the Yelimane Circle (administrative division) of the Kayes region, 13 out of the 16 existing water schemes are funded by migrant associations. A study carried out by Hydroconseil in 1996-98 in 15 small towns (from 2,000 to 12,000 inhabitants) in the Yelimane Circle showed that in all the towns, equipment renewal (pump and power generation), network extensions and private connections are paid for directly by migrant associations. In a few cases the migrant associations also pay for up to 80% of the operational costs (e.g. diesel, spare parts, staff salaries). The technical choices made by the migrant associations are demand driven since they are acting on behalf of their own families. Some sustainability issues arise, since the revenue from users does not meet even operations and maintenance costs.

[10] Bruno Valfrey, Hydroconseil [85].
[11] Water Solidarity Network