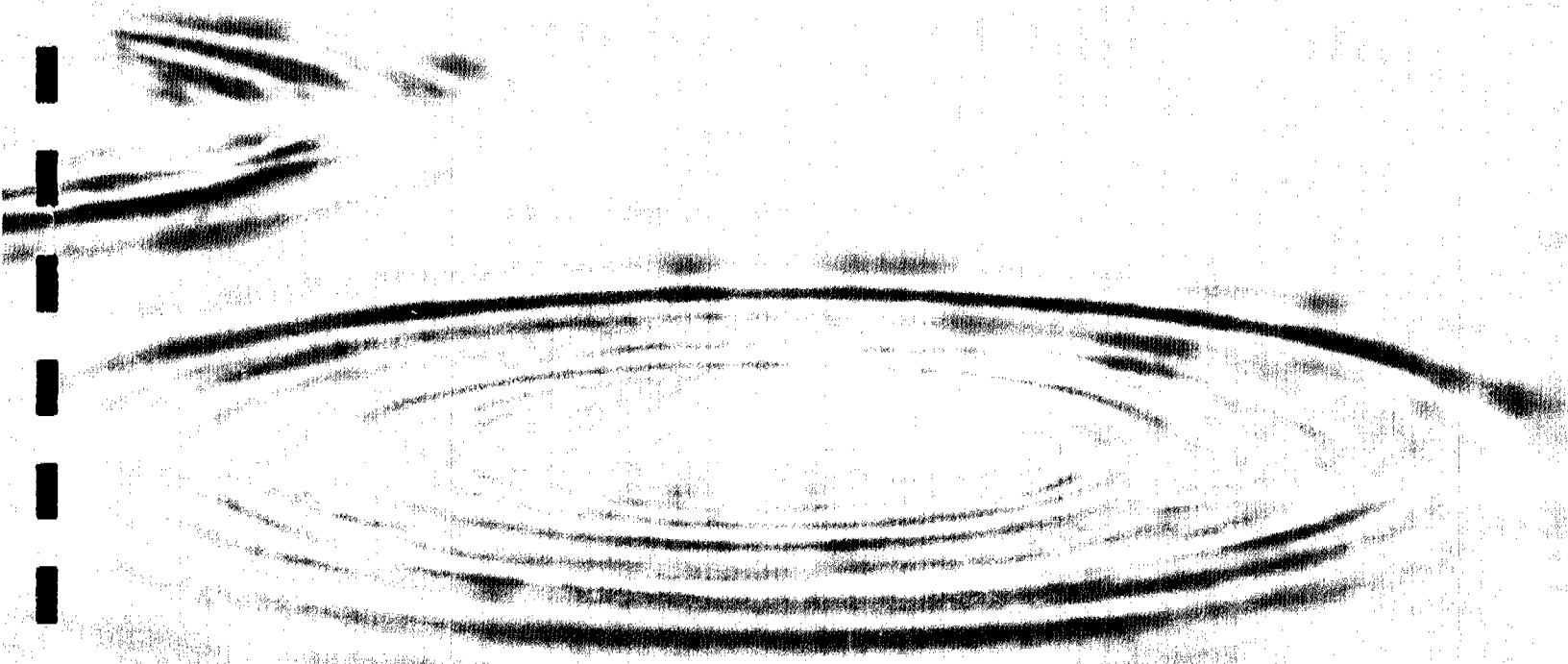
Serving Small and Medium Size Towns: What are the Key Issues That Affect Sustainability?



1999

WATER SUPPLY AND SANITATION

Financing Sustainable

Serving Small and Medium Size Towns What are the Key Issues that Affect Sustainability?

Moderator: *Robert Roche, Senior Sanitary Engineer, Africa Water & Urban Unit, The World Bank*

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Introductory Notes

Small town water supply and sanitation is becoming big business. More people live in small towns than urban centers, and they are growing faster. The small towns of today are the urban centers of tomorrow. They offer opportunities for local engineering firms and operating companies to get a start in the water business, to expand to serve larger towns, and to reach out to surrounding rural communities. As projects, they offer the benefit of not being too complicated to prepare and sufficiently large to cover supervision costs, as well as providing the opportunity to complement the World Bank's growing emphasis on capacity building.

The Small Towns session offers the opportunity for staff to get an overview of implementation strategies that are emerging, to explore opportunities for investments in small town water supply and sanitation, and to judge the risk of getting involved. In Asia the World Bank has been exploring better ways of financing small town water supply through local municipalities. In Africa, independent small town water boards supported by private sector firms offering a range of planning, design, management, and operating services are beginning to emerge. In Latin America, private companies are financing water supply and sanitation services that they own and operate.

The theme of the Water Forum is financing. In the Small Towns session two distinct implementation models will be reviewed: one based on public sector financing, and the other based on private sector financing. These fundamentally affect: (i) the roles and responsibilities of communities, government and private sector; (ii) the flow of funds and contracting arrangements for planning, construction and operations; (iii) the regulatory framework; and (iv) the legal basis for ownership and management. During the session experiences from recognized small towns programs in Asia, Africa and Latin America will be discussed and participants will develop a list of the key design principles for each model, identifying the factors that most affect cost-effective, sustainable service delivery.

The Small Towns session will be divided into three parts:

First, short overviews from East Asia, South Asia, Africa, and Latin America will be presented, so we can see trends in small town water and sanitation including their importance, financing arrangements, demand basis, and institutional arrangements, particularly opportunities for private sector participation.

Second, panel discussions of implementation models for the two main financing approaches – public and private sector – with a brief introduction by the panel facilitator highlighting the key institutional and financial issues of each. As panel members, invited project representatives will have an opportunity to highlight important features of their implementation arrangements.

Third, participants will break into discussion groups to establish design principles for each implementation model that affect delivery of cost-effective, sustainable water supplies to small towns. Each discussion group will then highlight their key findings in a plenary session.

Robert Roche
Session Leader

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Small Towns Water and Sanitation in East Asia

WHAT WE ASKED

- Are small towns "neglected?
- What conditions favor interest in small towns?
- Are small towns important for achieving overall sector objectives?
- What new approaches are there?
- Is lack of innovation a problem?

NEGLECTED?

- As a label, "Yes"
- On the ground, "Maybe"

But don't get hung-up on definitions

NEGLECTED:on the ground?

- Public investment: Probably NOT - except possibly China and Vietnam
- Private investment: Yes - every country
- Other "neglect": Policy vacuum, poor planning and execution, "peri-small town", institutional inadequacies, subsidy policy "losers" - especially Indonesia

GREATER INTEREST WHEN...

- High rate of growth
- Local politics dictate
- Economically strategic
- Social stability

...same as urban and rural?

IMPORTANT?

- "Yes"...for both poverty alleviation & economic development
- A key element in urbanization process/competitiveness - esp. Indonesia & China.
- Environmentally unsustainable - esp.China
- Difficult markets - every country

INNOVATIONS: Indonesia

- Competitive bidding for project support: WJ-JEMP (WB)
- Community sewerage initiatives: Malang, YDD
- ESA interest in supporting PDAM reform, and "small towns" regulatory environment

INNOVATIONS: Philippines

- CVWSP (AusAID) Community-level management (Yes): de-politicizing WSS services (No)
- Federations of WSS Cooperatives: CVWSP
- Facilitating PSP in ostensibly "unviable" small town WSS markets: LGU Urban (WB); affermage leases, DBL schemes
- Pressure to privatize Water Districts

INNOVATIONS: Vietnam

- WASECO builds and transfers small town WS projects: typically 500-2,000 m3/day

LAO PDR: Innovations

- Small town WSS activities in northern small towns initiated by Lao Women's Union and small-scale local entrepreneurs (WSP & EASUR to examine).
- Planned Belgium support (BADC) in south -- better understanding of rural-urban transitions

CAMBODIA: Innovations

- Emergence of small-scale entrepreneurs and NGOs providing small town "utility" services after Pol Pot regime -- by necessity

CHINA: Innovations

- Combining small towns systems to achieve economies of scale: RWSS II & III (WB)
- Small Towns/Townships initiative by MoH (stalled?)
- Relatively fertile ground for Small Area Improvement Components (SAIC), e.g. Guangxi Urban Environment Project (WB)

MONGOLIA: Innovations

- Sector reform process to convert from welfare basis to financially sustainable service providers (60% pop. urban/small towns)

LACK OF INNOVATION

- Lack of innovation IS a problem
- Private sector disinterest → little technical, financial, marketing experimentation
- Private sector presumption that small is unprofitable - certainly beyond bulk supply
- Private forays are often trade-restrictive and target the "plums" only, esp. Philippines

LACK OF INNOVATION

- Public sector protection of privileged institutional/contracting arrangements
- Administratively defined "profitable" markets —→ small towns penalized
- "We need money, not ideas"
- Ignorance.... of co-production co-financing models, intermediate technologies, DRA, etc. (yet small towns make ideal test sites)

Regional Overview: Eastern and Southern Africa

Introduction

Small towns in Eastern and Southern Africa defies definition. For practical purposes most countries in the region either fix a threshold population of between 1,500 - 5,000 or any town not covered by the rural water supply and sanitation department or the national or regional utility. Sanitation is largely left to the town council or local governments but most lack the technical and resource based to make significant improvements. There are records of towns over 15,000 people being treated as small towns in the region for want of an institutional home. This lack of clarity means that in most cases water supply and sanitation planning and provision usually fall through the cracks. This overview covers the experience of planning and managing small towns water and sanitation

Trends and Issues

Most countries in the regional have initiated small town water and sanitation project. The World Bank and other bilateral are engaged in a number of programs in the regions. A quick count puts Eritrea, Ethiopia, Kenya, Uganda, Tanzania, Malawi, Zambia and South Africa in this loop. Whilst Eritrea, Malawi are following the social fund mechanism for supporting small towns, most of the other countries have dedicated projects under their rural water and sanitation provision strategies. Most countries profess the use of demand responsive approaches but a closer look suggest that most communities are pre-selected, planing of schemes is on the basis of unsubstantiated demand forecast leading to larger that necessary investment and corresponding unsustainable operations. Issues of ownership of assets and linkages with private sector for post project support are not adequately thought through. The performance so far indicates that small towns water supply and sanitation seems to borrow the worse in both rural and urban water supply and sanitation.

The Case of Kabuku (Kenya) and Wobulenzi (Uganda)

The case of Kabuku and Wobulenzi in Kenya and Uganda respectively presented in the snapshots folder depict some of the evolving issues and lessons on implementation of small towns water supply and sanitation programs.

Attribute	Kabuku (1992)	Wobulenzi (1997)
Population	2,500	11,000
Sanitation facilities	Pit latrine	Pit latrine with few WCs
Water Supply	Protected spring source, 9 km distribution network, 200 cum storage reservoir, 305 yard connections and 3 kiosks	4 boreholes-2 developed, 13 km distribution network, booster station, 250 cum storage reservoir, 14 private connection and 31 kiosks
Ownership of Assets	Vested in Community Association (Societies Act)	No clearly defined (Local Government Act and Water Statutes)
Governance	Water Users Association (2 layers)	Water Users Association (3 layers)
O&M Arrangements	3 core staff (Account clerk/manger, technician and guard)	9 core staff (manager, accountant, pump attendant, guards) plus 31 kiosk attendants

Kabuku was developed under SIDA financing and local technical assistance whilst Wobulenzi was developed under an IDA financed project. Kabuku is managed by a 3 member staff with no cash handling - users pay to the local bank and submit payment duplicates to the office. On the other hand, Wobulenzi is managed as a mini-utility with 40 member staff out of which 31 constitute kiosk attendants. The kiosk attendants account for 45% of the fixed cost of operations. Kabuku has within the last 6 years of operation finance independently an expansion of its reservoir from internally generated funds whilst Wobulenzi is bankrupt from day one. Wobulenzi is a classical case of over-design (investment cost USD 1.2 million) and overblown management arrangement even though the community contributed on 2% of the capital cost against 25% by Kabuku. Kabuku on the other hand, had substantial technical assistance in its management development and the question is whether this can be replicated countrywide.

Key Lessons

General

Small towns water supply and sanitation programs should be designed on the basis of simplified urban water and sanitation schemes and not as upgraded rural water and sanitation systems. Designs should be based on household demand responsiveness and attempts made to separate ownership, governance and operation and management arrangements in order to allow for the most efficient and sustainable management typology.

Key Issues Involved in Implementation

Key issues relevant to the design and management of operations of small towns water supply and sanitation programs in the region could be summarised below. These are in no order of magnitude. They are all important depending on the operating policies and legal and institutional arrangements in the respective country.

- Sustainability of Water User Association (WUA) operations and management
- Political interference in choice of system and management arrangements
- Slow speed of implementation
- Land acquisition for infrastructure
- Capacity of Town Councils for management of project implementation
- Local procurement - use of local consultants and local government procurement
- Community contribution
- Inadequate attention to Sanitation component
- Demand orientation – limited choice and not enough discussion of costs
- Interface with town planning for the future
- Interface with local private sector for post project operational support
- Monitoring and regulation – technical and financial audits
- Gender considerations
- Ownership of assets

Strong policy work is advised ahead of program investment design to avoid the unsustained investments and management of operations.

Principles for Retrofitting Existing Projects

1) Look again at the type of service to be provided or currently provided
   - assess demand for connections
   - assess suitability of kiosks

- design user friendly commercial policy

2) Prepare short term but realistic water demand analysis

3) Compare short term water demand with design capacity proposed or existing
   - Identify potential savings
   - Prepare a schedule of modifications necessary

4) Prepare short term financial forecast and business plan
   - Identify "acceptable tariff to cover operations and maintenance (O&M) plus depreciation
   - Aim at (i) reducing fixed operation costs (in particular staff costs), (ii) optimize variable operating cost (e.g. pumping at night), (iii) expand customer base by promoting individual connections and yard through customer friendly financing policies and allow selling of water to neighbours
   - Reduce capital cost to meet short term demand and financial forecast
   - Prepare a five year business plan
   - Re-visit sanitation strategy

Principles for Future Projects

1) Demand Driven Approach
   - Towns and particularly households shall exercise the right to choose the level of service they want and are willing to pay for
   - Towns and household shall be given full information on the options and associated costs and responsibilities for them to make informed choices
   - Town can select a mix of options but these shall be based on a comprehensive market survey of existing or potential sources and household demands, willingness and ability to pay for services
   - To speed up process, identify potential water sources before talking in any details with the town
   - Access rules (at district or national level) should be known upfront and local procurement utilized to speed up implementation of projects
   - Community apply only when they have satisfy the minimum access conditions
   - Projects should endeavor to reduce the number of project phases
   - Mobilization shall proceed hand in hand with construction activities

2) Rules for Accessing Central Government Funding
   - Town structure and development plans
   - Advance information on equity criteria, maximum limit of cost per capita, % community contribution and % of local government support to communities
   - Community contribution shall be negotiated before hand with local governments and communicated to all potential towns
   - Demonstrated capacity and commitment of town to meet community contributions and organizational capacity

3) Local Government Leadership in Project Design
   - Local governments shall exercise leadership in program design throughout the life cycle of any project
   - Local governments shall be responsible for communicating access rules to all communities and households

- Local government should take the initiative in building the necessary capacity for planning, management and technical and financial audits of WUAs
- Program and project shall facilitate towns to built the necessary institutional capacity
- Capacity building of local consulting capacity to support local government in planning and design of schemes shall be consciously facilitated by projects
- A short list of local consultants and implementation agent shall be compiled for town to select from to assist in planning, design and community management support

4) Local Government Procurement
   - Local governments shall be at the front-line of procurement of small works and services in the first instance and all goods and services in the nearest future subject to demonstrated capacity
   - Local tender boards should be used as far as practicable
   - Local governments shall be represented on the tender board at the national level if the contract value necessitate central tender board review and approval

5) Sustainable Options for Management
   - Town should separate ownership and governance of services from day to day management of system operations
   - Town should have the liberty of selecting from a range of management options such as mini-utility with service contracts with local private sector, agency management by NWSC or joint management contract by two or more WUAs
   - Broaden base of WUAs by including identifiable user groups such landlords, etc.
   - Rules and guidelines for local government and WUA management of oversight functions and contracting of management of operations to mini-utilities or third parties shall be developed and communicated to all local governments and WUAs
   - Any management arrangement selected should meet the sustainability criteria and shall be subject to technical and financial audits
   - Town should scrutinize organizational structure, aggregate jobs/functions as far as possible and go for lean staff that reduced fixed costs. Economies of scale should also be factored into choice of mini-utilities.

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Nairobi, 31 March 1999

Regional Overview: South Asia

Introduction

1. The pace of urbanization in South Asia is rapid, for example in Nepal the urban population doubled from 6% to 13% between 1980 and 1994[1]. The average annual growth rate during 1990 – 94 was 7.4%. Similarly in Bangladesh the urban population increased from 11% to 18% and the growth rate was 5%. In India the percentage of urban population increased from 23% to 27%, with a growth rate of 3%. In Pakistan the proportion of urban population is highest in the region, which increased from 28% to 34%, with a growth rate of 4.7%. In Sri Lanka the rural to urban migration is stable and urban population is at 22% since 1980, the growth rate is 2.2%.

Urban Categories

2. The urban centers are generally categorized into five to six groups primarily based on population and administrative setup. For example in India and Bangladesh the urban centers are categorized into 6 groups as indicated in the table below.

INDIA				BANGLADESH		
Category	Population (000)	Nos.	Total Population (million)	Category	Population (000)	Nos.
Class I	100 & more	300	140	Metropolitan	500 - 1000	4
Class II	50 – 100	354	23	Municipal Class A	100 – 150	56
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

The Challenge for the Water and Sanitation Sector

3. To illustrate the challenge faced by South Asia to address the water and sanitation needs of Small Towns - in an indicative fashion - in India, considering that nearly 60% of the population of towns below 50,000 are either unserved or under-served (shaded area), the requirement for improvement of service is massive, i.e. about 3000 urban centers with a total population of about 53 million. Similarly in Bangladesh there are about 500 urban centers.

4. Most of these urban centers are managed by Municipal Authorities, Urban Local Bodies, and Urban Development Boards. The fiscal and management health of these bodies are in general very poor and are beset with political influence, inefficient and oversized administration, and traditional dependence on public sector agencies to deliver

[1] World Development Report 1996

basic infrastructures including water supply, sanitation, drainage and solid waste disposal.

5. In many cases public sector agencies are also maintaining these systems on contract from the Municipal Authorities. This has resulted in a tradition of dependency on these agencies and an almost exclusion of the possibility of involvement of localized and competitive service providers. Municipal/Town Authorities lacks any forward planning capacity, rely on government grants for capital investment, and heavily subsidizes the recurrent cost. The Unaccounted for water (UFW) is as high as 60%, and the supply is sometimes exceptionally low, as intermittent as 2 hours per week or even less in some towns. Quality of water is also questionable and people routinely boil water for drinking purpose in many towns. The economic and health implication of these systems are serious. The tariff structure is unsustainable to meet even the routine O&M, cost recovery is abysmally low, and the level of dissatisfaction is pervasive. Politicization of water is a major challenge to increase the tariff. In summary most water and sanitation systems are not sustainable.

6. In order to meet the daily water needs, however, citizens in all these towns have access to alternate service delivery mechanisms through private means. Small scale independent providers are vibrant in almost all these towns providing a number of solutions including boring individual wells, and vending water from public stand-post or water trucks. For high class citizens and business visitors mineral water bottles and water cans are also available in most towns.

Innovative Approaches

7. While the challenge for providing sustainable access to improved water supply and sanitation is tough, failing systems and diminishing government grants have created congenial opportunity for the sector partners and the consumers to think of new ways to deliver. There are very few examples of innovative partnership between the consumers, local government, public sector agency and the private sector to develop sustainable water systems. The South Asia Overview will primarily focus on such an the innovative service delivery mechanism piloted under the IDA funded Community water Supply and Sanitation Project (CWSSP) in 12 Small Towns Sri Lanka. In addition the report will also include project reports and town snapshots from Bangladesh and India, primarily highlighting the issues and business opportunities in SA for the development partners.

Project snapshot summary: COLOMBIA

BRIEF PROJECT OUTLINE

[illegible]	CONHYDRA water supply and sanitation
Method of financing	System expansion through private company and transfers from Municipal and Central Government's budget. O&M via tariffs.
Commenced	1996
[illegible]	8 towns – populations from 4,000 to 50,000. Total population 204,000
[illegible]	• Surface water & treatment, plus groundwater sources from wells • Storage capacity approx. 12,000 m^3 • Distribution network approx 190 Km
Daily supply	47,000 m^3
[illegible]	180 liters/capita (residential)
Regulation	Regulatory Commission for Water and Sanitation of Ministry of Economic Development.
[illegible]	Raise concerns and claims to the operator, on the operation of the system Administration, operation and maintenance, billing and collection, planning of system expansion and preparation and arrangement for financing plan. Owner, Regulation, Water Quality Standards monitoring

KEY ISSUES

- **CONHYDRA**, a private company organized as a private corporation for public services, was selected through competitive bidding to administer, operate and maintain various systems of water supply and sanitation to the eight towns.

- **Investment needs are voluminous and long time overdue.** Limited investment is due to the inability to attain the economic resources, because of the difficult economic conditions of the country.

  At present, there is no sewage treatment and the effluent is delivered to creeks affecting the environment; the reduction in unaccounted-for-water requires extensive repairs. Despite this, there has been significant improvement in the quality and management of service delivery.

- **Financing of system expansion depends on the municipal, departmental and central government ability to provide resources.** This makes the sector vulnerable to financial constraints and political decision of those entities.

- **Average tariffs for water and sanitation are over 50% subsidized** and thus do not give the correct signal to consumers nor provide enough income for expansion. Tariffs are based on cost of administration, O&M and the long-term average cost of investment.

- **Improved management of accounting systems,** billing and enforcement of defaulter policy has achieved efficiency gains and reduced unaccounted-for-water to 40-45%, (of which 30% is estimated due to fraud).

[Full details of project are found in Project Snapshot.]

CONHYDRA
Medellin, Colombia

Basic characteristics of the system

CONHYDRA is a Colombian private company organized as a private corporation for public services. CONHYDRA was established in 1996 with contributed capital of US$40,000. Through a public competitive bidding, the company was selected to administer, operate and maintain various systems of water supply and sanitation in the departments of Antioquia and Cundinamarca, Colombia. The communities included in this agreement were the following: Turbo, Marinilla, Sonsón Santa Fe Antioquia, Chigorodó, Mutata, Puerto Berrio and Ubate in the department of Cundinamarca. The total population of these communities is approximately of 204 thousands. The smallest is Mutatá with 4 thousands and the largest is Turbo with 50 thousands inhabitants. The number of connections amounted to 39,400 and service coverage is about 95%.

All the sources of water of these systems are of superficial water, which requires treatment plants, except the system of the city of Chigorodó whose source is underground water supply by two 200-meter wells. The total water produced is of approximately 47,000 m3 daily. The distribution network of approximately 190 Kms. The water service is of good quality and fulfilled the standards of quality established by Decree 475 of 1998 issued by the Ministry of Health of Colombia. These standards are monitored on a regular basis.

Before the present CONHYDRA took over, the integral management and operation of the systems was handled by another operator. There were some problems such as the lack of adequate of system expansion planning, lack of adequate preventive maintenance, inadequate commercial practices, lack of an adequate program of attention to the clients too heavy bureaucratic practices and inadequate accounting practices.

The role of CONHYDRA as a private operator

According to the present integral management contract, CONHYDRA is in charge of the administration, operation and maintenance, billing and collection and attention to customers, planning of the system expansion and preparation and arrangement of the financing plan. The financing of the operation and maintenance is through tariffs. The financing of the system expansion is from internal cash generation, transfers from the Municipal and Central Government's budget (20% from value added tax), transfers from oil royalties and from a levy on electricity generation, percentage of property tax and on the increase in value of the properties due to construction of specific infrastructure.

It is important to point out that the new operator has devoted considerable time to prepare blueprints of the systems, to prepare a cadastre of the network, to systematize historical

data on operation and maintenance and implement the planning process. Moreover, due to the difficult economic conditions of the country it has not been possible to obtain the economic resources for the investment of reposition and expansion of the infrastructure according with the needs. The resources internally generated have been used to carry out the most urgent needs. Nonetheless, the new operator has achieved significant progress in many areas:

- Water service is continuous 24- hours a day, except the city of Turbo (12 hours) and Chigorodó (20 hours). There are no water shortages.
- Average repair response time declined from days to between 4 to 8 hours.
- The attention to the customer has increased: every town has an office dedicated exclusively to handle complains and concerns of the customers, and to develop educational programs for the population.
- Collection has increased on average around 38% in the year and a half that the systems have been under the management of the new operator.
- Accounts receivable now represents 30 days of billings.
- The number of employees per 1000 connections is now 4.
- Unaccounted-for-water has been reduced but continues to represent about 40 to 45% of the production.

Accounting records

The accounting records have been improved and are a key element for the management tool of the operator. The accounting system of CONHYDRA includes the revenues from the water and sanitation services and the administrative, operating and maintenance expenses of the system. The CONHYDRA's accounting books record the assets built by them and financed with resources generated by tariffs. The assets and liabilities existing before the management contract was signed with CONHYDRA, are sitted in the books of ACUANTIOAQUIA S.A—the state entity that managed the water and sanitation systems before the present operator. Liabilities of the latter company are in relation to retirement and severance payments of employees. This company is now under a process of liquidation.

Tariffs

The tariffs include a fixed charge, a block for basic consumption and another one for complementary and non-essential consumption. They are designed by the operator, the owner of the systems and approved by the Regulatory Commission for Water and Sanitation of Ministry of Economic Development. The tariff level is based on cost of administration, operation and maintenance and the long-term average cost of investment. Population is classified in 6 strata, from the lowest to the highest income groups. The poorest first 3 strata receive or may receive a subsidy, which is covered with a mark-up on the tariffs of the higher income groups as well as the industrial and commercial customers. The present typical tariff for water and sanitation service for a middle income family is US$6.7 per month. It is important to point out that this tariff does not reflect the

economic cost of water and sanitation due to an estimated subsidy of over 50% on the construction program.

Metered consumption and commercialization

Billings is based on metered consumption. Practically all the connections have meters; however, the meters in good working conditions represents on average 70%; with a range of 34% for the town of Turbo and 88% for the town of Sonsón. The new operator has made effective the rule regarding suspension the service to customers with bills overdue for three months. This policy has helped to reduce the unaccounted-for-water, which is still high (40 to 45%); out of which 30% is estimated due to fraud. The other elements that have helped to improve efficiency is the program of attention to the customers and the improvement in the accounting system. Improvement in meters' reading, issuing the bills timely and good accounting records have been key factors to improve sales and collections.

Regulation and Operator's fees

The regulation is done by Regulatory Commission for Water and Sanitation of Ministry of Economic Development. The performance of the operator is assessed, among other things, by the following key efficiency and financial indicators: service coverage, quality of water, efficiency in collection, unaccounted-for-water, and customer's complains. The operator received a fee between 8% and 15% of the gross monthly collections. The supervision of these payments is done through an auditor appointed to the satisfaction of ACUANTIOQUIA the system's owner.

Community participation

The communities participate presenting their position to the operator on different issues affecting the consumers. This is done through the *comités de desarrollo y control social.* Likewise, the offices of attention to the consumers established in every town by the operator allow a close relationship with the customers in the attention of their claims and concerns, which is also a vehicle to bridge mutual understanding between the parties.

Conclusions

Preliminary assessment indicates that the integral management of these small town water and sanitation systems operated by CONHYDRA has been beneficial for these communities. It is still too early to demonstrate all the benefits derived form a real entrepreneurial effort that has taken place. Even though the resources for financing the expansion of the system have been limited due to the economic problems of Colombia, with the resources produced by the tariffs it has been possible to attain remarkable achievements. This view is generally shared by the communities, municipal governments and regulators that have noticed the improvement attained in the short-term and see the potential to do better in the near future. But some important issues remain: i) investment needs are voluminous and long time overdue. For instance, at present, there is no sewage treatment and the effluent is delivered to creeks affecting the environment; the reduction in unaccounted-for-water requires extensive repairs. ii) financing of the expansion of the systems depends on the municipal, departmental and central government

ability to provide resources. This makes the sector vulnerable to financial constraints and political decisions of those entities. iii) average tariffs for water and sanitation are over 50% subsidized and thus do not give the correct signal to consumer nor provide enough financial resources for system expansion.

Attachments:

Table 1: Population, Connections and Collections of the Systems Managed by CONHYDRA
Table 2: Basic Data of the Water Systems Managed by CONHYDRATable 3: System Design Criteria

Table 1
CONHYDRA
MEDELLIN, COLOMBIA

Population, Connections and Collections of the Systems Managed by CONHYDRA

Towns	Population	Beg.of	Connections		Collections	
		Operation	At Beg.of Operation	At present	At Beg.of Operation	At present
Turbo	50000	Jan-97	2491	3161	15863	26802
Marinilla	23000	Mar-97	5880	6337	45001	67187
Sonsón	19000	Jul-97	4452	4568	27967	31698
Santa Fe de Antioquia	15000	Sep-97	3232	3513	33212	32785
Chigorodó	36000	Oct-97	2345	4287	17257	54240
Mutatá	4000	Sep-97	624	657	5953	8421
Puerto Berrío	35000	Dec-97	6622	7206	82741	92566
Ubate	22000					
TOTAL	204000		25646	29729	227994	313699
Total variation (%)				16%		38%

Table 2
CONHYDRA
MEDELLIN, COLOMBIA

Basic Data of the Water Systems Managed by CONHYDRA

Towns	Source of Water	Water Treatment	Storage Capacity (m3)	Distribution Network (Km)	Daily Pro-diction (m3)	No. Hours Service
Turbo	Superficial	Conventional	1950	38.0	7120	12
Marinilla	Superficial	Conventional	1586	22.0	6037	24
Sonsón	Superficial	Conventional	1450	21.0	4935	24
Santa Fe de Antioquia	Superficial	Conventional	1650	12.0	3955	24
Chigorodó	Underground	Conventional	1780	33.0	6322	20
Mutatá	Superficial	Conventional	700	4.5	576	24
Puerto Berrío	Superficial	Conventional	1213	35.0	11304	24
Ubate	Superficial	Conventional	1600	21.0	6480	24
TOTAL			11929	186.5	46729	
Total variation (%)						

Table 3
CONHYDRA
Medellin, Colombia

Systems' Design Criteria

Production		
Residential per capita consumption: 180 liters/daily		
Maximum consumption factors:		
Hourly	1.4	
Daily	1.2	
Years of Life of System components		
Water source:	50	years
Treatment plant:	20	years
Storage facilities	20	years
Distribution facilities	20	years

Project snapshot summary: Malang – INDONESIA

BRIEF PROJECT OUTLINE

Project	Malang Community-based Sewerage Program
Method of financing	Households agree to pay portion of capital costs ranging between 50-100% depending on availability of grant financing. 100% O&M from communities. In some cases, national women's organization (PKK) or municipal government has provided partial subsidy for construction materials.
[illegible]	1989
Town size	Malang municipality Pop. 770,000 Pop. density 40,000/Km^2
Project [illegible]	• Pour flush toilets connected to neighborhood shallow sewer systems. • Small, locally designed treatment plants. • Each system covers 50-100 households. • Houses where septic tanks have been connected to the sewer system.
[illegible]	Responsible for program conception, planning and managing construction and O&M. Input into system design.
[illegible] DK	Promotion of program to community. Provides technical assistance for planning, design and mobilization of partial grant financing.
[illegible]	Small, local contractors and artisans employed for construction work by DK.

KEY ISSUES

- **Origins of the project:** The Malang Community-based project was initiated as an experiment in 1987, in response to a neighborhood government leader's concerns about sanitation conditions in his community. The first design involved a small bore sewer system for 60 households and a small treatment plant, using ponds that were also used for aquaculture. The government leader subsequently joined the local government and has continued to promote self-financed sewer construction and been active in creating six pilot programs that replicate the principles of the original.

- **Ownership:** The projects are initiated and at least partially financed and implemented by communities, so ownership issues do not arise. However, in the past year a number of systems have been constructed by DK with 100% grant financing and little community involvement. In these sites, there appear to be problems getting communities to assume ownership and to connect to the system.

- **Community contribution:** Each household paid Rp 70,000 for construction and Rp 500/Mo for O&M. Total capital costs were about Rp 4.2 million; operating costs include an honorarium of Rp 15,000/Mo paid to one caretaker and unquantified occasional costs for materials and equipment. All other income from sale of fish, truck emptying and dried processed sludge is kept by the caretaker as his salary.

- **Marketing strategy:** Involved initial visits to numerous communities where physical conditions are conducive to constructing sewer systems (ie housing densities are high, slopes are adequate). Discuss sanitation issues informally with community leaders and in particular women in neighborhood. DK staff explains costs and responsibilities involved in building and maintaining a sewer system and provide an estimate of the cost for building the system in each community visited, as well as a preliminary system design. If cost sharing is available they also inform the community of this. Once an interested community has collected the funds necessary to construct the treatment plant and the main pipe network, construction begins.

[Full details of project are found in Project Snapshot.]

Community-based Sewerage Program

Malang, Indonesia

Project Snapshot

(Please note: A detailed case study of this program is under preparation)

Project Description	
Name	Malang Community-based Sewerage Program
Location	Malang, East Java, Indonesia (the project is currently being implemented in about six neighborhoods within the city of Malang)
Number, sizes (population) and densities (persons per hectare) of towns	The population of Malang municipality is about 770,000 people. Population density in the areas participating in the program is in the range of 400 to 500 people per hectare.
Types of water supply facilities (source, treatment, storage, distribution/connections).	N/A
Typical system sizes (m3/day), reliability (hours/day) and operational problems.	N/A
Types of sanitation facilities.	Pour-flush toilets connected to neighborhood shallow sewer systems. The sewers flow into small, locally designed treatment plants. Each system currently covers 50 – 100 households. In some of these neighborhoods, households previously used septic tanks, and they have merely connected the septic tank effluent pipe to the sewer system.

Project Cycle – who does what and when	
Community selection (information methods, application process, conditions for participation)	Information is initially spread about the program through neighborhood visits by Program staff from the municipal Sanitation Department (Dinas Kebersihan). The program is promoted by DK staff primarily through discussions and "marketing" with mothers, who have an interest in removing black and gray water from open drains in front of their houses. Health risks to children are a major incentive. The leader of an interested community then writes to DK to request inclusion in the program. Communities must agree to pay a portion of the capital costs ranging between 50 and 100%, depending on the availability of grant financing.
Mobilization and establishment of Sewerage Board Preparation of feasibility study (facilities and management plans)	Existing neighborhood government takes responsibility for planning and managing construction and O&M. "Feasibility study" prepared by neighborhood government with assistance from DK staff.
Appraisal method for community proposals	[to be filled in after case study is complete]
Planning, design and construction supervision Construction management (contract advertisement/evaluation/award/payments, supervision)	System design is prepared with extensive community input to determine where pipes will be laid, who will connect when, where suitable land is available for the treatment plant, etc. Design work is undertaken by staff without formal engineering training. They base the designs on previous experience, learning and improving as the go along.
System management, and operations/maintenance/billing-collection	Neighborhood government manages O&M. At least one caretakers is normally employed to manage the treatment works. In at least some cases, the operator only receives a small honorarium from those connected to the system. S/he makes supplementary income from the sale of sludge composted sludge and catfish raised in the the oxidation ponds.

Institutional Arrangements	
Role of community, private sector and government (local and national level) for planning, management, construction, operations, and maintenance.	The Program was initially conceived and implemented entirely as a community initiative in one neighborhood (Tlogo Mas) without any public sector involvement whatsoever. Local artisans were employed for construction and financing for all aspects was 100% borne by the community. Subsequent sites have involved varying levels of subsidy to accelerate the pace of program implementation. The original program staff have been employed by DK and it is through this local Govt. office that they provide TA to new communities. Small local contractors and artisans are employed for pipe laying and treatment plant construction.
Description of participating private sector organizations, town water boards, and associations.	Local Govt. (Dinas Kebersihan) – Provides TA for planning, design, and mobilization of partial grant financing. Small local contractors and artisans are employed for construction work.
Process of involving communities, water boards and private sector in the project. Legal basis for ownership and management.	The projects are initiated, at least partially financed, and implemented by communities, so ownership issues do not arise. All physical assets are purchased by the community. No "extra-community" assets are involved. However, in the past year a number of systems have been constructed by DK with 100% grant financing and little community involvement. In these sites there appear to be problems getting communities to assume ownership and to connect to the system.

Financial Arrangements	
Source of funds and cost sharing arrangements for planning/design and construction of facilities, and operations and maintenance.	The households that plan to connect to the sewer system are the main source of financing for all project costs. In some cases partial subsidy for construction materials has been provided by the national women's organization (PKK), or the municipal Govt.
Current tariff structure and process of setting/revising it.	This varies from site to site. Generally contributions for capital costs are discussed and agreed within the community, based on an estimate of material and labor costs provided by DK staff. Tariffs in Tlogo Mas are as follows: Rp. 70,000 (about US$40 at the time of construction in 1989) per household for capital costs; Rp. 750 ($0.09 in 1999) per household per month maintenance fee paid to the system operator (he supplements his income through the sale of catfish and composted sludge from the oxidation ponds).
Financial viability – does revenue cover operating costs, depreciation, debt service and	All costs are met by the fees paid by the community. If major rehabilitation or expansion is required, supplementary payments are solicited from the community to cover the

expansion savings.	costs.
Investment criteria: Basis for setting initial level of capital investment.	Actual construction costs
Expansion plans and related financing arrangements.	Varies among neighborhoods.
Financial management plans, accounting/auditing system.	The neighborhood Govt. treasurer manages the accounts.
Customer management (billing and collection) system	Fees are collected by the neighborhood Govt. leader (Kepala RT)

Contracting Arrangements for Private Sector Support (main objectives/outputs and payment terms)	
Planning, design, construction supervision	Planning and design work is undertaken by DK in close collaboration with the neighborhood Govt. and those household that plan to connect to the sewer system.
Management support	Neighborhood Govt.
Construction	Local Artisans and small local contractors hired directly by the neighborhood Govt.
Operations and maintenance services	Undertaken by one or two system operators employed by the neighborhood Govt.

Annex – Malang Community-based Sewerage Program

Background (extracted from 1997 BTOR):

1. The Malang experiment was initiated by Bpk. Agus Gunarto, a kepala RT (neighbothood Govt. leader) in Kel. Tloko Mas. Tloko Mas is a lower middle income community on steeply sloping land next to the Brantas River.

2. In 1987 Agus became concerned about sanitation conditions in his RT because very few people had septic tanks and raw sewage was flushed straight into open drains along the paved gangs. With a few colleagues he designed a small bore sewer system to serve 60 housholds. Land for a treatment plant was available in a cemetery next to the river. He developed a design involving a 1M x 2M deep circular septic tank with a coarsely perforated vertical partition, and a series of 4 ponds. The system has been operational since 1989 and appears to function very well. There was no odor, and water in the last 3 ponds was clear and with low enough BOD to support ikan lele (a local species of catfish that thrives in low oxygen conditions) The septic tank acts as a filter and is cleaned about once a month. Sludge is removed and dried from the ponds about every 2 years. Aquatic plants that are harvested to feed chickens are grown in all of the ponds, and fish are raised for sale in the final pond.

3. In addition to handling all the waste water from the 60 households, there is an opening at the top of the network nest to a main road where tank trucks can empty sludge for a fee of Rp.2000 per truck. Agus claims that an average of 6 trucks per day use this service. At about 3 cubic meters each combined with the RT flow, that would mean the treatment plant is handling close to 20 cubic meters per day. Given the size of the ponds I found this hard to believe, but it needs to be investigated by an expert in this field.

4. The system was entirely financed from community contributions. Each household paid Rp.70,000 for construction and Rp.550/Mo. for O&M (this would total Rp.33,000/Mo.). Total capital cost was about Rp.4.2 million; operating costs include an honorarium of Rp.15,000/Mo. paid to one caretaker, and unquantified occasional costs for materials and equipment. All other income from the sale of fish (200 kg. were reported to be harvested every 3 months), truck emptying (about 12,000/day), and dried processed sludge (for fertilizer) is kept by the caretaker as his salary.

5. Pak Agus joined Pemda (Dinas Kebersihan) in 1989 and he continues to promote self-financed sewer construction in Malang from his position there. In 1997 DKM launched a program to replicate Agus=s program. There are now about 6 Kelurahan with pilot programs underway, with about 50 - 150 households per scheme.

6. Several of the 6 kelurahan that are proposed for pilot sewer schemes under EJUDP II are included. We also visited the scheme in Kel. Mergosono where thus far 300 households have connected to a system built in early 1997. Households paid Rp.100,000 for construction and a monthly maintenance fee of Rp.1000 per month. An

additional Rp.1.5 million for capital costs was contributed by PKK Malang. Thus, the total capital costs must have been about Rp.31.5 million. The treatment plant, covering a small 9M x 20M plot, was similar in design to the one at Tloko Mas, but the ponds and tank are all 3 meters deep. It did not seem to be functioning well yet, but this may be because the biological processes had not yet stabilized. There was mild odor, and the effluent water was a bit cloudy.

7. Pak Agus claims to have no educational background in sanitation technology and that he designs these systems entirely by himself without support from Cipta Karya or private engineers. 100mm dia. PVC pipe is used throughout the systems, and there are no manholes. He claims that clogging is not a problem because of the steep gradients in the sites where he has worked thus far, and because households are trained not to put inappropriate materials in the drains. Also, in places like Mergosono many people already had septic tanks and (for the time being at least, until these tanks fill) they merely connected the septic tank outfall to the sewer system. These tanks may act as a primary filter for clogging objects.

8. Agus explained that his overall "marketing" strategy involves initial visits to numerous communities where physical conditions are conducive to constructing sewer systems (i.e. housing densities are high, slopes are adequate, etc.). He and his staff discuss sanitation issues informally with community leaders and in particular with the women in the neighborhood. The women are often concerned about the foul condition of the drains that run in front of their houses since their children often play near them and occasionally fall in. The DK staff explain the costs and responsibilities involved in building and maintaining a sewer system, and they provide an estimate of the cost for building the system in each community visited, as well as a preliminary system design. If cost sharing is available they also inform the community of this. Once an interested community has collected the funds necessary to construct the treatment plant and the main pipe network, construction begins.

Project snapshot summary: Kabuku – KENYA

BRIEF PROJECT OUTLINE

Project	The Self Help Project: Kabuku water supply
Method of finance	25% community investment, 75% donor-funded development finances.
Commenced	1991/2
Town size	Population 2,500 Pop. Density 1,200/Km^2
Project	• Protected spring • Storage capacity 200 m^3 • Distribution network 9 Km • 305 metered yard connections and 3 metered kiosks
Daily demand	100 m^3
Water Users Association	Water Users Association (WUA) registered as a society, under the Societies Act.
Community contribution	Contribution to capital cost and labor, full responsibility for O&M, contracting private sector, tariff setting, revenue collection and penalty management.
Support	Design and supervision, community mobilization, specialized support, training, auditing, budgeting, tariff setting, pump repair and maintenance, meter servicing and repair, banking.
Government	Abstraction permits, registration of community organizations, supervision of community group operations, auditing.
Sanitation	Pit latrines, VIPs

KEY ISSUES

- **Clear accountability of the Committee and staff to the users** is a major contributor to the success of the project, and in effect the ultimate responsibility for adequate service provision lies with the users.

- **Strong relationship between community and a well qualified private company** developed at a very early stage. This provided a strong basis for post-construction management, in which the private company helped the community develop and install management systems and trained the association to manage the supply, based on a business approach. Some further development of capacity required to improve all areas of management activities, including the disbursement of surplus funds for expansion and rehabilitation.

- **Clarity needed with institutional links** between the community organization and local government departments.

- **Very slow approval process** caused by inadequate capacity within government, at preliminary appraisal stage.

- **Regular mobilization of resources for O&M is hindered** by a culture of 'payment on failure', despite good organization for fund raising for capital development. This is, in part, due to a lack of financial accountability, so those community members prefer impromptu fund raising rather than more structured ways of collecting money.

  Donor funds channeled directly to the communities to utilize and manage, had led to increased community enthusiasm to raise their own contribution, but the openness with which communities mobilize their own and external resources is not matched with similar openness in expenditure. This is an important issue.

- **Lack of legal status** for most small towns in Kenya prevents Water User Associations from owning the assets in which they have invested, which means that they are unable to: (i) enter into proper contracts with the private sector (ii) enforce their own rules (such as payments) among the users (iii) enter into beneficial relationships/arrangements with the various actors due to the lack of independence and flexibility.

  Kabuku is registered as a Society and as such selected trustees of the WUA own the assets.

[Full details of project are found in Project Snapshot.]

THE SELF HELP PROJECT:KABUKU WATER SUPPLY - KENYA

Issues arising are listed below:

1. Legal Issues related to management and ownership

In general, water user associations for small towns water supply are not registered as legal entities. As a result, they are unable to own the assets for which they invest so much money. In the management stages, they are unable to (i) enter into proper contracts with the private sector, (ii) enforce their own rules (such as payments) among the users and (iii) lack the independence and flexibility to enter into beneficial relationships/arrangements with the various actors.

2. Financing arrangements

The communities are usually well organized to mobilize funds from among their members especially for capital development, and even to source from external sources. The challenge lies in mobilizing resources for O&M. This arises due to several factors: (i) a culture of no maintenance and prompt reaction repair, until systems are incapacitated when users together and raise the required funds to put the system back into operation, (ii) lack of financial accountability, so that members prefer the impromptu fund raising rather an organized way of collecting money.

Where donor funds are channeled directly to the communities to utilize and manage, this had led to a lot of community enthusiasm to raise their own contribution. However, the openness with which communities mobilize their own and external resources is not matched with similar openness in expenditure. This is big issue.

3. The success of Kabuku lies mainly on its ability in focusing on satisfying user demand and placing the ultimate responsibility for adequate service provision on users. Users are well aware of their responsibilities as well as those of the committee and staff. Users are therefore able to hold the committee and staff firmly accountable.

4. The presence of a well qualified private company at the development stage (and for a sufficiently long period) resulted into a good and lasting relationship with the community. This provided a strong basis for post-construction management. The private company helped the community develop and install management systems and trained the association to manage the supply based on a business approach .

Cost-based tariffs, development of an effective management structure, strict enforcement of rules, ability to provide a reliable service, transparency and accountability, a credit facility enabling many members to get connections resulting into a high coverage within the supply area, and the existence of a local private sector network are all key to success.

5. Some problems facing the project include: (i) lack of clarity of the institutional links between the community organization and local government departments, (ii) management of surplus funds for expansion and rehabilitation, (iii) rapidly raising costs (notably electricity) leading to rapidly increasing prices which may in a few years start excluding the poor.

Project SnapShot

Project Description	
Name	THE SELF HELP PROJECT: KABUKU WATER SUPPLY
Location	KENYA, EAST AFRICA
When developed	1991/92
Number, sizes (population) and densities (persons per hectare) of towns	2500 PEOPLE 1200 Persons per square kilometer
Types of water supply facilities (source, treatment, storage, distribution/connections).	• protected spring: no treatment; • storage capacity of 200 cubic meters • 9km of distribution system • 305 metered yard connections and 3 metered kiosks
Typical system sizes (m3/day), reliability (hours/day) and operational problems.	• 100 cubic meters/day: • reliability almost 24hrs/day except in Jan during which electricity is sometimes rationed
Types of sanitation facilities.	• Pit latrines and VIPs, very few Wcs.

Please note:
Row descriptions have been provided as a guide only.
Add/subtract rows and expand/contract cells as required.

Project Cycle – who does what and when	
Community selection (information methods, application process, conditions for participation)	• Popularizing the project, access rules, eligibility criteria done by government, NGOs, private sector at district level and below, through open meetings • Community submits an application with technical support from an organization of its choice (NGO, consultant, etc.) • cash contribution to capital costs upfront, in addition to labour • full responsibility for O&M • legal establishment of the community organization, and a set of by-laws • a committee with a bank account • women's participation • agreed per capita ceilings • metering in the case of piped supplies • clear sanitation component
Mobilization and establishment of Water Board Preparation of feasibility study (facilities and management plans)	• The mobilization is done by (i) the Ministry of Culture and Social Services under which most community organizations are registered as Self-help groups, (ii) the Ministry of Water Resources, (iii) local administrative leaders, (iv) consultants, and (v) NGOs • Feasibility studies and management plans are prepared by communities with support from NGOs and consultants
Appraisal method for community proposals	• Preliminary appraisal is done by a technical team at the district which comprises government departments, assisted by the donor and some cases NGOs. Heavy involvement of government at this level has led to a very slow approval process due to inadequate capacity. Final approval is done by a committee at the Ministry of Water Resources Headquarters. This committee comprises the Ministry and the donor.
Planning, design and construction supervision Construction management (contract advertisement/evaluation/award/payments, supervision)	• Done mainly by the community and consultants with some technical support from the district water office. • Contract advertisement, award, and payments are handled by the communities. • The district technical team plays a quality assurance role in contract evaluation and supervision.
System management, and operations/maintenance/billing-collection	• Management systems for O&M are normally developed by consultants who also assist in implementation and training. The system are, however, operated entirely by the community • maintenance, billing, revenue collection, banking entirely by community • small consulting firms hired for auditing, budgeting, tarrif setting

Institutional Arrangements	
Role of community, private sector and government (local and national level) for planning, management, construction, operations, and maintenance.	• Community: partial financing of investment, full responsibility for O&M,employment of O&M staff, contracting private sector • private sector: design and supervision as well as community mobilization, specialized support such as development and installation of management systems, training, auditing, budgeting, tariff setting, pump repair and maintenance, meter servicing and repair, banking • government: abstraction permits, registration of community organizations, supervision of community group operations, auditing

Description of participating private sector organizations, town water boards, and associations.	• private sector organizations: (i) pump supply, maintenance and repair company, (ii) small contractors for big repair tasks on pipes, storage tank, repair and service of consumer and master meters, (iii) small consulting firms for auditing, preparation of annual income and expenditure accounts, budgeting, training, design and supervision, (iv) suppliers of materials, financial management documents, (v) commercial banks
	
	The private sector engages with the community through contracts.
	
	• The Water User Association has three major organs: members, the committee, and O&M staff
	
	  • members: (i) owners and supreme authority, (ii) elect the committee and trustees, (iii) approve hiring of staff, (iv) develop/approve/amend by-laws, (v) approve annual income and expenditure statements, (vi) approve budgets and tariffs
	  • committee: (i) over-see O&M on behalf of members, (ii) hires and supervises staff and contractors, (iii) interacts with external the environment, (iv) oversees enforcement of by-laws
	  • O&M staff: (i) day to day operations and repairs (ii) meter reading, billing, revenue collection, maintenance of accounting records, enforcing the by-laws

Legal basis for ownership and management.	• members of the user association own the assets. This particular water supply's user association is registered as a Society under the Societies Act. The Association has selected trustees in whom the assets of the association are vested. (see sample by-laws)

Financial Arrangements	
Source of funds and cost sharing arrangements for planning/design and construction of facilities, and operations and maintenance.	• Sida for development finance (75%) • Community: 25% of total investment • Community fully financing O&M • Community has recently (1998) been able to fully finance a second storage tank costing US$18,000.00 from own funds generated as surplus over O&M during the last six years
Current tariff structure and process of setting/revising it.	• meter based progressive structure • the committee, with support from consultants, develops the tariffs, based on costs and seeks the approval of members in a general meeting. The same process applies for revisions
Financial viability – does revenue cover operating costs, depreciation, debt service and expansion savings.	• revenue has been sufficient to cover O&M and expansion • community has just financed a storage tank and will continue to generate a surplus for replacing components with an economic life of 8 years or less.
Investment criteria: Basis for setting initial level of capital investment.	• community demand for a piped system with yard connections, plus three kiosks to serve the poor households • water source and location • technology • per capita consumption for the different categories of consumers (households, businesses, institutions, etc.)
Expansion plans and related financing arrangements.	• community has just built a tank and has no immediate plans for expansion
Financial management plans, accounting/auditing system.	• these were developed and staff and committee trained on operations • they are periodically modified
Customer management (billing and collection) system	This is based on metered yard connections (there are also three kiosks also metered); monthly meter reading and billing, customers collect their bills from the water supply office and pay bills directly into a bank account; non-paying connections disconnected on the 15th of every month, a reconnection fee is payable (this is strictly enforced), all financial and consumption information summarized every month

Design Criteria	
Production for household and institutional/commercial users (liters/capita/day).	• households - 100l/p/d • commercial users (small shops, butcheries..) total of 300-500 litres
Seasonal and daily peak flow factors	
Design period for source, treatment, storage and distribution.	• source designed for 20 yrs • there is no treatment • storage for 20yrs • designed for 10 yrs
Phased construction plans	

Project snapshot summary: Itauguá – PARAGUAY

BRIEF PROJECT OUTLINE

Project	Junta de Saneamiento de Itauguá (sanitary committee)
Method of financing	Capital: community (Instituto de Desarrollo Municipal -IDM) & gov. Servicio Nacional de Saneamiento (SENASA).
Commenced	1974/5
	Serves part of Itauguá and neighborhoods of Ybyraty and Guazuvira – total pop. Of 22,500.
Project components	• 5 deep wells, chlorination, storage capacity 820 m^3, distribution network 95.5 Km • 4,500 connections, all metered (from 202 in 1975)
	2,925 m^3 (design)
Daily supply	2,055 m^3, 24 hour service
Responsible for technical management	The Junta is a not-for-profit, private organization with legal status in 1974. On completion, legal system ownership was transferred to community.
Community participation	Participated in formation of Junta and influence its activities
Junta	Management, operation and maintenance of system, billing and collection.
	System design and installation, training of the Junta in accounting, management, O&M
Project components	Some construction and repairs
Sanitation	Majority of households have latrines. Few have septic tanks.

KEY ISSUES

- **Community participation:** The system is a good example of community participation. In 25 years it has evolved to become a successful not-for-profit organization. This has required a long process of formal and on the job training. Before the project, the people of the area served by Itauguá's Junta relied on shallow artesian wells and water vendors, which produced generally poor quality and costly water.

- **Junta has adopted a commercially oriented culture – a key element in its success.** The environment where the Junta has operated through the years is the private sector. In the subsequent expansion of the system it took a more active role in the planning, designing and negotiating of the financing agreements. It has made timely additions to the system to cover the demand satisfactorily; water service is of good quality and continues year round; unaccounted-for-water is small; billing and collection are adequate and the Junta is paying its debts in a timely manner.

FUTURE FINANCING PROBLEMS

- **SENASA is now concentrating on less developed Juntas** and so are leaving well established Juntas, such as Itauguá on their own. In the past the Junta has relied heavily on SENASA for technical assistance and for the construction of its system which has been given on concessional terms.

- **The need to raise tariffs:** The present tariffs cover the operation, maintenance and debt service, leaving some surplus for expansion. But if financing is not available on concessional terms as in the past, the Junta will need to raise the tariffs substantially, which is not always an easy option.

- **Less efficient practices mean lower tariffs for neighboring Juntas:** Neighboring juntas have tariffs similar to the ones of Itauguá but their collection practices are less efficient meaning that their customers end up paying lower tariffs. Itauguá dwellers have realized that on the other side of the hill their neighbors pay less for similar service.

- **Macroeconomic instability has affected the Junta's finances:** This obliges the Junta to keep on adjusting tariffs to maintain the quality of service.

[Full details of project are found in Project Snapshot.]

Junta de Saneamiento de Itauguá
Paraguay

Project Description	
Name	Junta de Saneamiento de Itauguá
Location	City of Itauguá, Departamento Central, Paraguay
Number, sizes (population) and densities (persons per hectare) of towns	Itauguá's Junta serves part of the city of Itauguá and the adjacent neighborhoods of Ybyraty and Guazuvira, with a total population of about 22,500
Type of water supply facilities (source, treatment, storage, distribution/connections)	• Connections have increased from 202 in 1975 to 4,500 in 1999 • Water is supplied by deep 5 wells which required only chlorination • Water is distributed by gravity from 4 concrete and metal elevated tanks with total capacity of 520 m3. SENASA assisted Itauguá's Junta in the design, financing and construction of the initial system, which included 202 connections. The Instituto de Desarrollo Municipal (IDM) also financed part of the project costs. • A major system's expansion was included in the first Rural Water Supply Project approved in November 1977 • Junta constructed an office building that was inaugurated in April 1996. • There are 95.5 kms of distribution lines.
Typical system sizes (m3/day), reliability (hours/day) and operational problems	• Water daily production is 2,055 m3 • The community has 24 hours service • The electric pump repairs were one of the main operational problems at the beginning of the project. Initially SENASA helped in these repairs. • The Junta has developed its capacity to undertake electric pump repairs and operate and maintain the system adequately. Some of these repairs are done by private contractors
Type of sanitation facilities	The majority of households have safe latrines. Few households have septic tanks.
Community selection (information methods, application process, condition for participation)	SENASA officials met with natural leaders and dwellers of the city of Itauguá to receive the basic preliminary information about the project, and outline the community contribution to the its water system in work, materials and cash.
Mobilization and establishment of Water Board ,Preparation of feasibility study (facilities and management plans)	After the community was informally organized and showed it willingness and ability to undertake a preliminary designed project, the Itauguá's Junta was organized 1973 and legally established and incorporated into the SENASA register on August, 1974. SENASA proceeded to the final project design, and the community, to collect the cash for

	an initial contribution of 5% of the project cost
Appraisal method of community proposals	In designing the project, SENASA took into account the community willingness and ability to pay. The community wanted to have in house water service of good quality 24 hours a day with adequate pressure. In the process of negotiation the parties agrees on the scale of the project. In the World Bank First Project the community contribution amounted to about 25% of cost (5% cash initial contribution, 5% in kind during construction and 15% in a long-term loan).
Planning, design and construction supervision. Construction management (contract advertisement/evaluation/award/payments, supervision)	• The Itauguá water system was designed by SENASA technical staff. • Wells drilled and equipment installation was done by SENASA. • Elevated tanks were built by private contractors through competitive bidding undertook by SENASA. • Distribution pipes were installed by the community with SENASA supervision • Payments of the construction expenditures were done mainly by SENASA • The Junta of Itauguá actual contribution to the initial project was 25% (see above). In latter expansions the community contribution has been over 25%
System management, and operations/maintenance/billing-collection	• The system is managed, operated and maintained adequately by 24 employees. • Accounts receivable represented 26 days of billings in 1997.
Role of community, private sector and government (local and national level) for planning, management, construction, operation, and maintenance	• SENASA technical staff did the Itauguá system design with the input from the community. • SENASA drilled and equipped the water wells . • SENASA handled the bidding process to select the firm that built the elevated tanks and did the procurement of equipment and materials. • The community, supervised by SENASA technical staff, installed of the water pipes. • The private construction firm built the water tanks. • Once the system was completed, the community operates and maintains the system. • SENASA trained the Junta in the management, accounting , operation and maintenance of the system • At present the Itauguá's Junta is self-sufficient and requires little assistance from SENASA.
Description or participating private sector organizations, town water boards, and associations	See above
Process of involving communities, water boards and private sector in the project. Legal basis for ownership and management	• The community participated in the formation of the Junta. • Normally the community is eager to build the water system because all the benefits derived

	from good quality water. Previously people were buying water of poor quality from water vendors at higher price. • The Itauguá's Junta is a non-for-profit organization, which obtained legal status on August 1974. • Once the system was completed it was transferred to the community, which is its the legal owner.
Sources of funds and cost sharing arrangements for planning/design and construction of facilities, and operation and maintenance	See above
Current tariff structure and process of setting/revising it	• Tariffs are designed by the Junta with the assistance of SENASA. • Tariffs are revised normally once a year; but can be adjusted anytime if necessary. • Present tariffs: • Residential: for consumption not greater than 10,20,22, and 30 m3/month, the tariffs are 10,000,20,000,22,000 and 30,000 guaranies, respectively. Excess at 1,200 guaranies/ m3. • Commercial: for consumption not greater than 22 and 30 m3/month, the tariffs are 40,000 and 55,000 guaranies/month. Excess at 1,500 guaranies/ m3. • Industrial: for consumption not greater than 30 m3/month, the tariff is 85,000guaranies/month. Excess at 3,000 guaranies m3. • Probably the tariffs would need to be analyzed thoroughly to seek the possibility of simplifying them, and maybe to reduced the gap between the lower residential block and the industrial one, which at present is of 1,800 guaranies per m3 (US$0.61/m3)
Financial viability —does revenue cover operating costs, depreciation, debt service and expansion savings.	Revenues cover operating costs and debt service, and also generates internal cash for expansion.
Investment criteria: Basis for setting initial level of capital investment	See below.
Expansion plans and related financing arrangements	• A major system's expansion was included in the first Rural Water Supply Project approved in November 1977. • The Junta constructed its own office building that was inaugurated in April 1996. • The system's expansions were done also with the technical assistance (SENASA), and partly financed by SENASA, other government institutions and the community. It is also worth mentioning that in the subsequent expansion of the system, the Junta had taken a more active role in the planning, designing and negotiating the financing agreements of these expansions.
Financial management plans, accounting/auditing	• SENASA initially helped the Junta to establish

system	its accounting system. • At present the Junta employs the services a professional accountant. • Auditing is done annually by external independent private auditors
Customer management (billing and collections) system	• Itauguá's Junta had 26 days of billing in 1997; which means that the Junta is collecting the bills on a timely manner. The Junta has accomplished this by installing meters in 100% of the connections, making collections through the banking system, developing educational campaigns, and disconnecting the water service to delinquent customers.
Designed criteria of the initial project:	• Communities with population between 400 and 4000 inhabitants. • Per capita construction cost of US$50 at 1977 price level. • Water consumption: 130 liters/inhabitant/day • Initial population 2,975 • Future population: 5,210 • Number of households: 608 • Daily peak factor: 1.2 • Season peak factor: 1.5

Junta de Saneamiento de Itauguá
Paraguay

Basic Characteristics of the Junta de Saneamiento de Itauguá

The Junta de Saneamiento de Itauguá (Itauguá's Sanitary Committee) was established at the end of 1973 and is in charge of the management of the water system of the town of Itauguá, located in the Departamento Central, Paraguay. The construction of the Itauguá's first water system, with 202 connections, was initiated at the end of 1974. It was financed by the community, the Instituto de Desarrollo Municipal (IDM) and the Servicio Nacional de Saneamiento Ambiental (SENASA), which is the government entity in charge of the rural water supply and sanitation. The design and construction of major components of the system were undertaken by (SENASA); and the community, with the advice of SENASA, installed the distribution pipes. The initial water system was completed in 1975 at a cost of 6 million of guaranies approximately (equivalent to about US$50 thousand). A major system's expansion was included in the first Rural Water Supply Project approved in November 1977. Likewise, in 1992 was added the service for the neighborhoods of Ybyraty and Guazuvira to the system. The growth of the Junta fixed assets has continued by acquiring vehicles, electric pumps, and by constructing an office building that was inaugurated in April 1996. Itauguá's Junta serves the city of Itauguá and the adjacent neighborhoods of Ybyraty and Guazuvira with a total population of about 22,500. The total numbers of connections have increased from 202 in 1975 to 4,500 in 1999 and service coverage is about 90%. (There are areas of the city served by other juntas, which have less coverage than Itauguá's Junta). Water is supplied by 5 deep wells, which require only chlorination. Water is distributed by gravity from 4 concrete and metal elevated tanks with a total capacity of 520 m3. There is also a 300 m3 superficial storage tank and approximately 95.5 kms of distribution lines. Water daily production is approximately 2,055 m3, water is of good quality and the service is continuos around the year. For waste disposal, the majority of households have safe latrines, and a few households have septic tanks.

Community participation

Itauguá's system is a good example of community participation. In 25 years of existence, it has evolved to become a successful not-for-profit organization. But, this has required a long process of formal and on the job training. Strong community support is indispensable for the success of this type of project. The project's cycle was initiated back in 1973 with informal visits of SENASA officials to leaders of the community. Either SENASA or the members of the community promoted these initial meetings. In those meetings SENASA's technical staff explained the basic ideas regarding the construction of their water system and informed of the preliminary estimates of system cost according to pre-established designed parameters. For the community this was an important step forward for improving the quality of life. Before the project, people of the

area served by Itauguá's Junta, relied on shallow artesian wells and water vendors, which was generally of poor quality and more costly. The Junta participated actively in the planning phase and their inputs were incorporated in the design.

Once the people expressed their willingness to undertake the project, the Itauguá's Junta was formally established. The act of incorporation was filed in the SENASA's register on August, 1974. The Junta proceeded to organized different activities to collect cash to pay the initial contribution of 5% of the system's cost. Toward this goal, each household also contributed with a connection fee and work to install the distribution pipes. The overall community initial and during construction contribution amounted to about 10% of the project costs. Upon completion, based on the actual project cost, the community contributed with another 15% of the system's costs by signing a 20-year loan agreement with SENASA, at a rate interest of 6% per annum. This was a concessional loan taking into account that the rate of inflation had been in the order of 15% to 20% per annum during the period of the loan repayment period.

Operation and maintenance

When the system started operating back in 1975, the management, operation and maintenance of the system were handled by two or three people. Generally, one of them as a plumber, and the other, the administrative assistant who managed the office work. With the expansion of the system, personnel gradually increased reaching 24 in 1999, which represent a ratio of 5 per one thousand connections. The rotation of personnel is low. The current general manager, for example, has been in that position for over 10 years. Members of the Junta and of the community perform voluntary work on regular basis. Belonging to the junta gives people pride, prestige and satisfaction of doing something important for the community. Members of the Junta are changed every two years (2 each time). Also, it has to be considered that, that in general, those who work for the Junta did not have any experience in this type of business and were trained by SENASA and learnt on the job. The Junta's policies have had to be adapted to solve particular emerging issues. For instance, when it appeared that people were consuming too much water, the Junta decided to install meters. The initial project did not contemplate this feature. At the present, 100% of the connections have meters installed. Regarding maintenance, the electric pump repairs were one the main operational problems at the beginning of the project. At that time, SENASA assisted the Junta in undertaking this task. At present, Itauguá's Junta has developed its own capacity to operate and maintain the system adequately. Likewise, private contractors do some of these repairs.

The Role of the Private Sector

The Junta is a non-for-profit private organization, which does not have major controls from public sector entities. In this sense, it has the freedom to adopt promptly policies and measures for the good of the enterprise. Regulations are minimum and are carried out by SENASA and the Ministry of Health. Thus, the environment where the Junta has operated through the years is the private sector. The first time it dealt with the private sector was during the construction of some parts of the water and sanitation systems, for

example, the construction of elevated tanks, and the purchase of pipes, electric pumps, and materials. This involvement continued in the phase of operation through the employment of contractors for system repairs and installation of equipment. It is also worth mentioning that in the subsequent expansion of the system, the Junta had taken a more active role in the planning, designing and negotiating of the financing agreements of these expansions. Thus, the Junta has gradually adopted a commercially-oriented culture; which is a key element in its success.

Finances

The present tariff allows the Itauguá's Junta to cover its operating costs, pay the debt service and leave some surplus for the expansion program. Tariffs are prepared and designed by the Junta with the assistance of SENASA, who also approves them. At present, the Junta has three categories of tariff: residential, commercial and industrial. The tariff ranges from 1,000 guaranies per m3 for the less expensive block of the residential category to 2,833 guaranies per m3 for the industrial one. There is also a surcharge on the excess monthly consumption of 1,200, 1,500 and 3,000 guaranies per m3, for the residential, commercial and industrial tariffs, respectively. Accounts receivable in 1997 represented 26 days of billing, which means that the Junta is collecting the bills in a timely manner. This is achieved by educational campaigns, attention to the client, good accounting records, collections through the banking systems, metering and service cut to delinquent customers. It has to be pointed out that the guarani has had substantial devaluation recently, this situation put a heavy burden on the Juntas like Itauguá, which probably would need to adjust the tariffs in the near future to be able to keep its finances healthy.

Conclusion

Itauguá's Junta is a non-for-profits organization, but it has developed a commercially oriented culture that has been a key element in managing the water system efficiently. The operation and maintenance of the system has been done adequately. It has, for instance, made timely additions to the system to cover the demand satisfactorily; water service is of good quality and continuos year around; the unaccounted-for-water is small; billing and collection are adequate; liquidity is good and the Junta is paying its debts in a timely manner. This is a remarkable achievement for a rural area water supply system. At present, then, Itauguá's Junta does not seem to be facing major problems; however, to keep pace with demand and to replace wear down equipment, the trend of investment needs to continue steadily in water supply. The Junta will also need to tackle the problem of the sanitary system in the short term. The financing of the future expansion program probably would be more difficult than in the past, for the following reasons:

a) In the last 25 years the Junta of Itauguá has relied heavily on SENASA for technical assistance and for the construction of its system, which has been given on concessional terms. This situation has changed, as SENASA at present is concern with less developed juntas, and has left on their own the juntas that, like Itauguá, have reached a level of graduation

b) The present tariffs cover the operation, maintenance, and debt service leaving some surplus for expansion. But if financing is not available on concessional terms as in the past, the Junta will need to raise the tariffs substantially, which is always not an easy option.
c) In regards to tariffs, the other problem that the Junta faces is that the neighboring juntas and even CORPOSANA systems have tariffs similar to the ones of Itauguá's Junta; but their collections practices are less efficient, which means that the customers end up paying lower tariffs. This is another constraint because Itauguá dwellers have realized that on the other side of the hill their neighbors pay less for similar services.
d) The junta finances have been affected by macroeconomics instability. This obliges the junta to keep on adjusting tariffs to maintain the quality of service.

Project snapshot summary: Sicuani – PERU

BRIEF PROJECT OUTLINE

Project	Water Supply and Sanitation services in the town of Sicuani,
[illegible]	Revenue collection by operator EMPSSAPAL S.A Specific initiatives funded by government and external parties, eg capacity building, expansion feasibility study
Commenced	Early 1990s
Town	Population 31,170 Pop. density 5,195/Km^2
Project type	• 2 spring sources to reservoirs, (total capacity 1,978 m^3),distribution network 65.2 Km • Gravity sewage system – 82% coverage)
Daily [illegible]	10,429 m^3 (50/50 raw/potable)
Daily supply	95% of demand achieved
[illegible]	Govt. owns the assets. Entities for the Supply of Sanitation Services (EPS) are registered by govt., regulatory body SUNASS
[illegible]	Consumers – influence the operator via lobbying through a representative agency
[illegible]	Supplies goods and services to the operator
[illegible]	Assesses all EPS applications and owns this operator, who can function under certain private sector regulations and manage all areas of the water and sanitation concession
• Central [illegible]	Regulates and registers EPS. Provides financial and managerial support

KEY ISSUES

- **Regulatory policy has a negative impact on the enterprise management and economy.** Sanitation services in small towns in Peru are managed by concessionaire enterprises, referred to as entities for the supply of sanitation services (EPS), which can be of a public, private or mixed character. The concessions are granted by provincial municipalities.

- **The EPSs cannot operate without the regulator's authority** (SUNASS) who classify EPSs based on numbers of water connections. This causes smaller municipalities to join activities around a single EPS to meet the requirements, although actual technical and economic advantages may not be feasible. This results in some towns subsiding others to prevent losing the enterprise recognition granted by SUNASS.

- **Initiative and enterprise development of public enterprise EPS are negatively affected by their subjection to complicated regulations**, which impact on budgets, operational plans, salaries, acquisitions, and tariff rates and enforcement.

- **Negative impact on financial management of EPSs,** caused by well intentioned, but poorly planned, technical assistance/contributions, eg cars where no allowance is made for depreciation and operation and maintenance costs, and so the EPS is forced to find other ways to meet this additional liability, eg through the tariff structure.

- **Provincial municipality subsidizes operational costs for installations of sewage services** without significant problems to date, as the EPS tries to recover its investment through bill collection and drinking water connections.

- **EPS requires technical assistance for the development of its managerial capacity**, especially in planning, marketing and revenue collection. The hiring of qualified professionals to help achieve this is also impeded by the strong regulatory measures.

- **Project experience has lead to the development of a best practice model**, incorporating policies of Response to Demand; Reduction in tariffs to encourage installation of water meters and improved consumption control; Collection efficiency through policy costs and payments follow up; and Cooperation Agreements.

BASIC SANITATION IN SMALL TOWNS IN PERU

SANITATION SERVICES IN THE TOWN OF SICUANI

CUSCO-PERU

Information for this study was gathered from documents provided by EMPSSAPAL S.A. on March 7 and 11, 1999, such as the Management Report 1996-1998, Financial Statements up to December 1998, Operational Plan and Budget for 1999, Staffing table, legal documents related to the establishment of the enterprise, Organization and Operation Manual, etc.

The study also includes the information received from the Managers and Office Chiefs of EMPSSAPAL S.A., who kindly provided their support for this study.

In addition to the above, information was also obtained from the Office for Governmental Institutions and Organizations in the Ministry of Economy and Finance OIOE-MEF y SUNASS.

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Consultant

Ate, 18-03-99

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BASIC SANITATION IN SMALL TOWNS IN PERU

SANITATION SERVICES IN THE TOWN OF SICUANI

CUSCO-PERU

A. BASIC ASPECTS / OPTIONS AFFECTING EFFICIENCY WITH REGARD TO COST AND SUSTAINABILITY

1. Issues related to property and management

- **Property**

Sanitation services in small towns in Peru are managed by concessionaire enterprises. The provincial municipalities are responsible for granting exploitation rights to the concessionaires, commonly referred as entities for the supply of sanitation services (EPS), which can be of a public, private or mixed character. The provincial municipalities own EPS.

EPS are classified as a large or small size enterprise. A large EPS manages more than 10,000 drinking water connections, while a small EPS is the one that manages between 1,000 to 10,000 drinking water connections. SUNASS is the institution in charge of regulation in Peru, that determines the classification and grants the official authorization for the establishment of an EPS. The latter should not be working without SUNASS official permission, however there are spare cases when this happens, as in the case of the town of Huancayo.

There are some difficulties for small EPS to be recognized by SUNASS. Therefore, in order to obtain SUNASS authorization, many municipalities tend to become associated with other peers in order to reach the required level of 10,000 connections even though actual technical and economic advantages may not be feasible. Such is the case of EMPSSAPAL S.A,.originally responsible only for the sanitation services in the town of Sicuani, but in order to become an autonomous enterprise it had to extend its association and property to other districts in the province of Canchis, Canas y Chumbivilcas, just to demonstrate to SUNASS a theoretical management capacity of 10,000 drinking water connections.

Currently, the above enterprise has not been implemented due to the change of attitude on the part of the city mayors involved. Consolidation was possible only with the Municipality of Chumbivilcas, which through the incorporation of the town of Santo Tomas has also joined its capital to EMPSSAPAL S.A. While this association is technical and economically unprofitable because the town of Sicuani must subsidize the town of

Santo Tomas, nevertheless it must be maintained to prevent losing the enterprise recognition granted by SUNASS. The enterprise may even have to expand the association to recover the 10,000 drinking water connections even at the risk of suffering economic hardship.

The demands on the part of SUNASS have a negative impact on the enterprise management and economy.

- **Management**

As a public enterprise, EMPSSAPAL S.A. is subject to complicated regulations affecting initiative and enterprise development. Its budget and operational plan, salaries and acquisitions related to expenditures as well as the enforcement of tariffs related to income are regulated and controlled by central government institutions, unrelated among them, SUNASS and the Office for Governmental Institutions and Organizations in the Ministry of Economy and Finance.

2. FINANCIAL ARRANGEMENTS

EMPSSAPAL S.A. has 2 technical and financial cooperation agreements that contribute to its development as an enterprise.

The most important of these agreements is the one signed with the Programa Nacional de Agua Potable (National Program for Drinking Water and Sewage)-PRONAP, which has provided support for rehabilitation works, and for studies on the expansion of sanitation services as well as for technical and administrative equipment.

The difficulty in this type of contributions refers to the impact that the donations of equipment have on the financial statements of the enterprise, when the impact on financial statements and billing has not been previously studied.

3. RESPONSE TO DEMAND

The participation of the Provincial Municipality with equipment and materials for the installation of household connections for sewage services is subsidizing the operational costs for these installations. However, up to this date this does not seem to be a significant problem, because the enterprise is trying to recover its investment through bill collection and drinking water connections.

It can be stated that there is no problem in meeting the current demand, as it is evident that almost 100 % of the population have access to drinking water services for an average of 24 hours per day.

4. MANAGEMENT CAPABILITY

Expenditure control, such as salaries and wages, limits not only the enterprise staff keeping capacity but also the hiring of qualified professionals required to improve management capability. Likewise, revenue control needs SUNASS authorization for tariff enforcement and this has a negative impact on enterprise management.

5. TECHNICAL ASSISTANCE

The enterprise is in need of technical assistance for the development of its managerial capability, in particular with regard to planning and marketing, until at least 95% of efficiency in bill collecting activity is achieved.

B. ANNEX QUESTIONNAIRES

1. PROJECT DESCRIPTION

1.1. Name

Sanitation Services in the town of Sicuani

1.2. Location

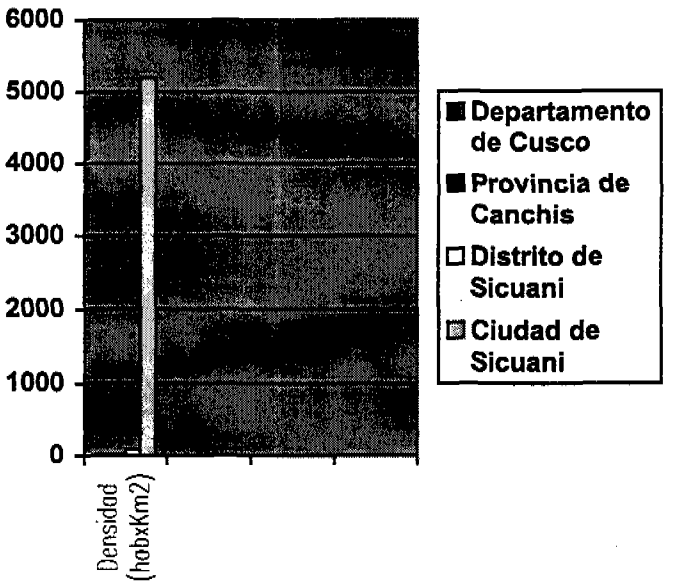
District of Sicuani, Province of Canchis, Departament of Cusco, Peru

1.3. Number, sizes (population) and densities (persons per hectare) of towns

Location	Population Inhabitants in 1995 (*)	Territorial Extension(Km2)	Density (persons Per Km2)
Department of Cusco	1'093692	71.891.97	15.21
Province of Canchis	99,904	3,999.27	24.98
District of Sicuani (Canchis)	53,741	645.88	83.20
Town of Sicuani (urban population, 48% of the total population)	31,170	6.0(**)	5,195.0

(*) Source: Peru, Estimated and Projected Population as of 30.06, by departments, provinces and districts 1995- INEI

(**) Approximate



1.4. Typology of the water supply facilities, source, treatment, storage, distribution/connections)

WATER SUPPLY TYPOLOGY IN THE TOWN OF SICUANI (1)

TYPOLOGY	SICUANI
Source	There are 5 supply sources: Water catchments in Qochapampa, Hercca, Langui, Molino Punka y Puka Chupa of which only two of them located in the ravine of the Hercca river are being used: ◆ Water catchment in Qochapampa, located 6.0 Kms. from the town of Sicuani. It catches water from the water springs through a catchment structure of the filtering gallery type, with one Q= 35 L/s. ◆ Water catchment in Hercca, located 4.5 Kms. from the town of Sicuani. It catches water from the water springs through a box of the lateral gallery type, with one Q=40 L/s. Water from these sources are gathered in a meeting chamber from which they are drawn to the reservoirs. The distances from these intakes are:

	♦ Qochapampa to the junction chamber around 2,000 ml. Hercca to the meeting chamber, around 900 ml. From these sources practically 90% of the town's demand is covered. There are a few isolated cases of towns located within the city where water supply is managed by the population such as in the community of Trapiche, that has an independent water system and 200 users and the community of Chumo with 300 users.
Treatment	It is done in the reservoirs through a combined system of injection with chlorine gas and hipochloriners. 95% of the supply is drinking water, under EMPSSAPAL S.A managment and is available in the reservoirs in Pichasani and Puerto Arturo. 5% is produced in the reservoirs located in Suttoc and Tiacollo, managed also by EMPSSAPAL S.A
Storage	The main system in the town of Sicuani has two reservoirs: ♦ Reservoir in Pichasani, with a capacity of 1,054 M3, and a production of 30.16 litros per second. Water reaches this reservoir from the meeting chamber through a pipeline of approximately 3,115 lineal meters. ♦ Reservoir in Puerto Arturo, with a capacity of 924 M3, and a orduction of 24.83 liters per second. Water reaches the reservopir from the junction chamber through a pipeline of approximately lineal meters. Each one of these reservoirs has 2 macromeasurers. In addition, there are two reservoirs to supply water to the following communities, under EMPSSAPAL S.A. administration and representing 5% of the service provided by the enterprise. ♦ Suttoc, with a capacity of 40 M3, with a Q= 0.76 L/sec.. ♦ Tiaccollo, with a capacity of 100 M3 with a Q=de 1.5 L/sec.
Distribution	Pipeline of 8.Kms length., distribution network of 65.2 Kms.

Connections	♦ 6,307 drinking water connections covering practically 100% of the town of Sicuani. Of these connections 5186 have a micromeasurer.

(1) Data source: MEMORIA DE GESTION DE EMPSSAPAL S.A. 1996-1998 (EMPSSAPAL Management Report) and technical information provided by the operational area of the enterprise. Please find attached the drinking water scheme annex.

1.5. Typical Sizes of the systems (M3 per day), reliability (hours/day) and operational problems

TYPICAL SIZES OF THE SYSTEMS (1)

1998 AVERAGE

Typical sizes of the Systems	Sicuani
Raw water production (M3 per day)	5,611.00
Drinking water production (M3 per day)	4,818.00
Continuity (Service/day average in in 1998)	24
Operational problems	**Related to human resources** a. Minimum staffing b. Low salaries c. Workers shared by both the commercial and the technical areas. d. Lack of training for the technical staff in performance development. e. Excessive responsibilities assigned to only one organizational division in the technical area, creating disorder in task fulfillment.

	Related to the supply of services a. Low coverage level in sewage systems b. Elimination of untreated waste liquids, thus contaminating the Vilcanota river water. c. Lack of control in water loss, represents 45% of the water processed into drinking water. d. Lack of equipment for bacteriological tests, depending on third party services in Cusco or the medical post. e. Shortening of the life period of the sanitation infrastructure, mostly now over 40 years old. f. Improvement of drinking water storage and distribution systems

(1) Data gathered from the Memoria de Gestión de EMPSSAPAL S.A. (EMPSSAPAL S>A Management Report) and a meeting with the Assistant Technical Manager, Engineer, Isaac Quispe.

1.6. Typology of Sanitation Facilities

The sewage system works by gravity and includes two primary main carriers (one for each edge of the Vilcanota River) and 4 secondary carriers. Of these, 3 have been derived to the main carriers, discharging into a secondary carrier in the urban area. Attached is a scheme of the sewage system.

There is not a system for the treatment of waste waters and they have around 5.100 sewerage connections, covering approximately 82% of the population of Sicuani. The length of the drainage network is 62 kms.

2. PROJECT CYCLE – WHO DOES WHAT AND WHEN

2.1. Community selection (information methods, application process, conditions for participation)

Sanitation services in the town of Sicuani, capital of the Province of Canchis, are under the responsibility of the Empresa Municipal Prestadora de Servicios de Saneamiento de las Provincias Alto Andinas S.A. Municipal Enterprise for the Supply of Sanitation Service to the High Andean Provinces S.A,) or EMPSSAPAL S.A., is a concessionary enterprise owned by the Provincial Municipalities of Canchis and Chumbivilcas and the Municipality of the districts of Sicuani and Santo Tomás, respectively.

Service expansion is the user's initiative, whether individually or in-group (generally resident household associations) and/or by promotion initiated by the enterprise. Budget preparation is managed by

EMPSSAPAL's technical area. The commercial department handles the dissemination of information related to costs and financing, directly with the users. This department is also in charge of collecting the service bills. The budget is prepared at a cost of S/. 10.00 ($ 2.91). The cost for individual requests for connection is S/ 225.00 ($65.41), for drinking water and S/. 95.00 ($27.62) for drainage system. When a group applies for a drinking water connection the cost is S/. 160.00 ($ 46.51) and for drainage S/. 65.00 ($18.90). In both cases , it is the user who must provide unqualified workmanship and materials. There are also instances when the user pays for the total cost of drinking water connections, around S/. 500.00 ($ 14.53). The associations or the users, according to the type of request can pay household connections. It is more convenient to have the request made by an association, as EMPSSAPAL S.A. offers them financing programs.

Under this scheme, EMPSSAPAL S.A. has made more than 1,500 water connections during the last three years (1995-1998).

The traditional procedure for accessing the service is to have users, individually or in group, submit a budget for the installation of the connection,. This is followed by the application process that includes the required documentation such as the technical study and ownership title on the land, and municipal recognition. In the case of groups evidence should be submitted of their recognition and registration in the office of Public Registry, and evidence of living in the project place.

2.2. Mobilization and establishment of Water Board

In the small towns in Peru, management of sanitation facilities can be done by a public, private or joint enterprise. Drinking water public enterprises owned by the municipalities exist only in Peru.

The users maintain a strictly commercial relationship with the enterprise. There are not users association for sanitation services. There may be other social and political groups such as the Frente Unico de Defensa de los Intereses de Canchis (United Front for the Defense of Canchis' Interests). In the case of the town of Sicuani, it is a social political force, which keeps a close watch on the municipal management, including EMPSSAPAL S.A., as one of the municipality's enterprise.

When a municipal enterprise for drinking water and sewage is to be established, it is the municipality that takes the lead in the venture. In this case, it was the Municipality of Canchis who took over the job of establishing first EMPSSSI S.A. as the responsible entity for the drinking water and sewage service for the

town. Currently, the name of the enterprise has been changed to EMPSSAPAL S.A. and the society includes a new partner, the town of Santo Tomas of the Province of Chumbivilca.

EMPSSAPAL S.A. Managerial Organization

The Board of Shareholders, the Board of Directors and the General Manager manages the enterprise.

According to the enterprise by-laws, the Board of Shareholders has been established with the two shareholders of the enterprise: The Mayor of the Provincial Municipality of Canchis, as owner of 86% of the shares and the Mayor of the Provincial Municipality of Chumbivilcas as owner of 14% of the shares.

The Board of Shareholders designates the Board of Directors responsible for the enterprise. This Board includes three members, two are designated by the majority of the shareholders and the third one by the minority of the shareholders. Currently the Board of Directors is headed by the Mayor of the Province of Canchis, Eng. Washington Coello, who is responsible for the sanitation services in the towns of Sicuani and Santo Tomas.

The Board of Directors designates the General Manager, who becomes the legal representative and senior officer of the enterprise.

There are also two centralized in-line officers: the Technical Assistant Manager (called also operational manager) and the Commercial Assistant Manager. They are responsible for service supply and bill collection, respectively. There is also a decentralized office: the Special Agency of Santo Tomas, responsible for the management of the sanitation services in the town of Santo Tomas.

The enterprise management is supported directly by the Administrative-Financial Assistant Manager, as responsible for human resources, logistics, financing and accounting. Also, this office handles an information system network and the manager's secretary, responsible for all the enterprise incoming and outgoing information.

The advisory bodies are the legal adviser through externally contracted professional services and the planning office responsible for the short-term program (one-year). Although in the organizational chart there is a slot for internal auditing the enterprise has not yet set up this office. Attached, as an annex is the enterprise organizational chart.

- **Human Resources**

EMPSSAPAL S.A. has a staff of 33 persons, of whom 4 are stationed in Santo Tomas. Most of the staff is assigned to the technical management office (13) and 7 work in the commercial management office.

All the executive staff members are professionals. They are distributed as follows: 7 officers (21%), 2 professionals (6%), 9 technicians (27%) and 15 (46%) manual workers. The enterprise staff includes engineers, economists, administrators, and accounting and information staff.

The staff is hired through regular or fixed-term contracts. Salaries are established by the Office for Governmental Institutions and Organizations in the Ministry of Economy and Finance. Since 1996, salaries have not been increased, and the average monthly salary is S/ 734.38 ($213.48 per month). In November 1998, only those workers belonging to the union, around 12, received a salary increase equivalent to 6% of their monthly salary.

Some of the staff were transferred to the enterprise from SEDAQOSQO thus their period of service is longer than the actual operation time of the enterprise, but all their benefits and rights have been validated.

- **Administrative and Technical Equipment**

The Provincial Municipality owns the enterprise institutional premises. The enterprise has office furniture and computer equipment of 14 computers and 10 printers working in the enterprise network. There are 63 enterprise models and manuals prepared by well known companies as well as software for accounting-financial, commercial, operational, administrative and planning activities.

For the technical work the enterprise has a machine with buckets, revolving drag and flexible rods with accessories for cleaning and unclogging of sewage systems, portable equipment for water escape detector in water networks, tester for water measurers, laboratory equipment for water analysis, motor car, motor truck, 1 Nissan and 1 Toyota pick-up double cabin station wagon All these donations have been made by the Programa Nacional de Agua Potable y Alcantarillado (National Program for Drinking Water and Sewage)-PRONAP, under the responsibility of the Ministry of the Presidency.

2.3. Preparation of the feasibility study (facilities and management plans, evaluation method for community proposals)

For the establishment of a water and sanitation enterprise, the provincial municipalities involved should prepare studies to demonstrate the technical, economic and institutional feasibility of the enterprise, together with other elements specified in the regulations for the recognition of entities for the supply of sanitation services,, N° 046-95/PRES/VMI/SSS, dated 23-05-95, as established by SUNASS.

- **Facilities**

The infrastructure used by the enterprise that manages the sanitation services in the town of Sicuani is more than 30 years old. Some of the installations are even 50 years old. With the enterprise own resources and the support of the Programa Nacional de Agua Potable y Alcantarillado (National Program for Drinking Water and Sewage)- PRONAP, the infrastructure has been gradually rehabilitated during the last 3 years .It is estimated that it will working for an additional five-year period, before it starts to have problems.

- **Planning**

Within institutional limitations, the enterprise makes only operational planning. The planning department of the enterprise is responsible for enterprise planning. It was implemented recently (December 1998) with a professional officer who is organizing the planning information according to the requirements of the central government for government enterprises, (Office for Government Institutions and Organizations in the Ministry of Economy and Finance, OIOE and SUNASS).

With PRONAP's technical support a feasibility study is carried out for the improvement of the drinking water and sewage systems in the town of Sicuani. This service will be guaranteed for the next 25 years. Figureido Ferraz is the firm hired by PRONAP to carry out the study.

- **Appraisal methods for community proposals**

Community proposals are generally to have access to the service. The proposal appraisal is carried out by the technical department (called also operational department) Service feasibility is evaluated in the first place together with the evidence that the requesting population is living in the project area.

2.2. Planning, design and construction supervision

The enterprise designs, implements and supervises the construction of the household connections. The technical paper, based on the enterprise instructions, is prepared by the private sector at the users' request.

The planning, design and rehabilitation works are done by the enterprise. Currently, for the work done in pilot areas, the enterprise is supported by the Programa Nacional de Agua Potable y Alcantarillado,(National Program for Drinking Water and Sewage)-PRONAP, that is also supporting planning and expansion design. The enterprise contributes with information and logistics support and report appraisal.

The design of the current construction is basically oriented to systems rehabilitation, and the expansion of network and household connections, which are carried out by the enterprise.

Construction is carried out directly by the enterprise, except for those projects that are implemented through PRONAP, and for which the enterprise has not determined the design, implementation or supervision work. The enterprise role is to evaluate the proposal made by PRONAP's technicians and consulting firms. The construction of the household connections is commonly carried out with the participation of the project users.

2.3. Construction management (contract advertisement/evaluation/award/payments, supervision)

The management of all construction works for sanitation services in the town of Sicuani is currently done directly by EMPSSAPAL S.A, with the exception of PRONAP's investments.

2.3.1. System management, and operations/ maintenance/billing-collection

- **System management**

The system management for the sanitation services in the town of Sicuani is under EMPSSAPAL S.A. responsibility according to private activity regulations. Therefore, they must pay taxes such as the Value Added Tax., VAT, and income tax (entrepreneurial activity) and they must use the traditional private enterprise accounting system.

The enterprise activity is regulated by the Ministry of the Presidency, the lead agency for sanitation service in Peru. Institutional management follows the regulations set up for governmental enterprises, mainly in connection with budget preparation and evaluation, salary scales and service tariffs. The enterprise reports to SUNASS for its entrepreneurial activity and the supply of sanitation services; for the financial and accounting management it reports to the office of the General Comptroller, and for enterprise expenditures it reports to the OIOE in the Ministry of Economy and Finance. Internally, the enterprise is managed according to specific guidelines such as budget, operational plan, procurement procedures, financial and accounting guidelines, staff internal regulations.

- **Operation and Maintenance**

Service operation and maintenance of sanitation services are handled by the enterprise technical department The department has one Manager and a 12-people staff and is technically equipped with computers. The relevant pipe layer usually carries out operational work. This person is permanently in charge of controlling water quality and service distribution. The chemical bacteriological test is done every three months through third party contracts. Likewise, maintenance of the water catchment sources and reservoirs and valve tuning up takes place also every three months.

- **Billing and Collection**

The commercial department of the enterprise is in charge of billing and collection. Billing is made through a computerized system. The software used is H20, but soon they will be using SICI, the integrated commercial system designed by PRONAP which is being tested now.

Billing is made according to the approved tariff structure and the amount for water consumption meter read or assigned. Billing reflects past month consumption on the billing date. Enterprise workers, including those in the technical department make the meter reading during the earlier days of the month. The reading is revised before billing between the 12th or 13th day of the month during a three-day process. Enterprise workers distribute the bills among the users, who have a 3 week term to pay the bill The paying term expires on the first week of each month.

Collection of bills is centralized in the commercial department of the enterprise that is responsible for the registration and bank deposit of all income revenues. During the month, collection in the office windows is stopped for two days in order to issue the bills.

All claims are handled by the commercial department. Claims are at a minimum level, mainly for bill verification. Claims must follow SUNASS regulations adapted by the enterprise in specific guidelines.

- **Collection efficiency**

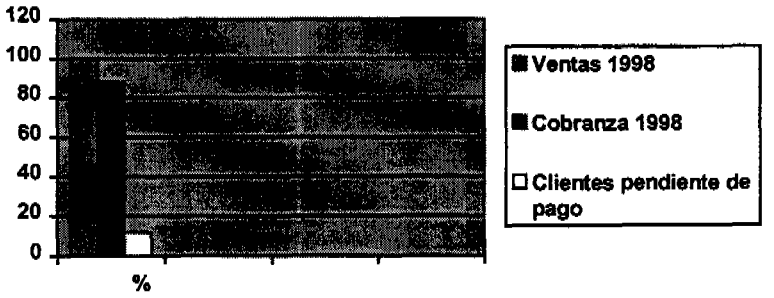
According to the information reported in EMPSSAPAL S.A.'s General Balance Sheet and the 1998 Profit and Loss Statement, the collection efficiency for the service in the town of Sicuani can be measured by the value billed for services registered in the Profit and Loss Statement and the Collectable Balance of the clients' account in the General Balance Sheet is as follows:

Item	Value in Soles	Value in dollars

		T.C $ 1.00=2.95*
A. Client accounts billed in 1998	963,381.28	326,570.00
B. Client accounts Balance Sheet 1998	116,262.67	39,411.07
Collection efficiency [100- (A/B x 100)]	87.93%	87.93%

Source: Balance Sheet and Profit and Loss Statement for the town of Sicuani 1998. Annex attachment

*Annual average of dollar at banks at the end of the month



- **Contribution to SUNASS**

EMPSSAPAL S.A. must pay SUNASS 2% of the collected operational revenue.

- **Legal Clearance of Property Rights**

During 1998 EMPSSAPAL S.A. cleared the legal status of its properties that were not registered in the Public Registry office. Currently, property rights for 90% of the enterprise property has been legally cleared.

3. Institutional Arrangements

3.1. Role of the community, private sector and government (local and national level) for planning, management, construction, operations and maintenance.)

Community	Are the actual, feasible and potential users of the sanitation services in the town of Sicuani that represent the demand. For these services. Their basic role is to be interested in having access to the service, pay the service tariffs, control consumption and use the service in an adequate way. Through FUDIC, the agency that defends the interests of the province of Canchis and the local media, the user controls EMPSSAPAL's management, in particular in what increase of tariffs and service supply are concerned.
Private Sector	Provides inputs, goods and services required by the enterprise for its work. Generally, the private sector concerned is located within the provinces of Canchis, Cusco, Arequipa and in a small proportion in Lima..
Social Private Sector	International cooperation agencies that provide technical assistance to management.
Local Government	Is legally responsible for sanitation services in the town of Sicuani. It owns EMPSSAPAL S.A., the enterprise that manages the service, and participates in the establishment, organization, direction and management of the enterprise.
Central Government	It sets up the regulations for the enterprise activity, watch closely its work and provides financial and managerial support. It is the main provider of technical and economic resources whether as cooperation or loan for the development of sanitation services.

3.2. Description of participating private sector organizations, town water boards, and associations.

INSTITUTION	DESCRIPTION
1. Private Sector	EMPSSAPAL S.A., procure inputs, goods and services from the private sector. The most frequent procurement of goods is for inputs, construction materials, installation of household connections or repairs and office supplies ♦ Inputs such as, Calcium Hypochlorite at 33% and 66% and DPD, are purchased in the city of Lima from private enterprises selling these inputs such as Química Andina, Química Goicochea and Helga S.A. The purchases are generally made every six months, except in special cases such as a change in administration when the schedule for purchases is modified until the new administration is stabilized. ♦ Construction or repair materials are bought from local providers (Sicuani): Corimaya Ferretería, Constructora Sears and Concretos Raqchi. The advantages that are offered by these providers are the payment terms. In general, acquisitions are made up to a monthly average of S/. 5,000.00 (US$ 1,453.50). ♦ Office supplies are also purchased locally or in Arequipa or Cusco. The average monthly expenses for these items is S/ 2,300.00 (US$ 668.60) ♦ Main services are electricity and telephone, for which the enterprise has minimum disbursements. Management services are in general obtained by hiring consultants in Cusco and very seldom in Lima. Maintenance services for computers, equipment (vehicles and moto taxi) , and motor pumps are obtained locally. ♦ There are special acquisitions, mainly derived from PRONAP activity such as accessories for PRONAP projects or micro-measurers, which must be done in Lima. The micro measurers are Inca S.A. Frequent acquisitions are for an average amount between 7 to 15 thousand new soles (US$ 2,034.90 to US$ 4,360.50). The advantage for purchasing locally is to have soft payment terms..
2. Water Boards	There are two small towns inside the city that are managed independently by

	EMPSSAPAL S.A through a town water board, and the enterprise is interested in bringing them, under its management. On of these two communities is Trapiche where 200 users pay monthly S/ 3.00 ($ 0.87), for the service provided by a 10-year old water catchment system operated by gravity having as a source a water spring. The other community is Chumo, with a 3-year-old water pump system.
3. Associations	Are basically Housing Associations organized through a committee for drinking water and drainage to request sanitation services from EMPSSAPAL S.A These associations have drinking water facilities since the start of the enterprise. They keep a strictly commercial relation with it. by just paying for the water and sewage system provided..

3.3. Process of involving communities, water boards and private sector in the project.

INSTITUTION	PROCESS
1. Private Sector	EMPSSAPAL S.A., purchases from the private sector goods and services through contracts or purchase orders, included in the enterprise budget and commonly channeled through the logistics department These purchases are requested by the various institutional offices. For the procurement of goods and services, EMPSSAPAL S.A as a public enterprise is subjected to the Law for Contracts and Procurement, Law 26850 and the Management and Budget Guidelines approved by Ministry Resolution R,M. N° 292-98-ef/15, published on 01-01-99. The enterprise depends from the Office for Government Institutions and Agencies - OIOE in the Ministry of Economy and Finance. The latter sets up the enterprise category according to OIOE criteria, by which EMPSSAAPAL S.A, category is as follows: ❑ Category A, for contracting of works with a ceiling amount for direct procurement up to S/. 900,000 ($261,628). For a higher amount Public Bidding is required. ❑ Category B, for contracting services and consultants with a ceiling amount for direct procurement up to S/ 200,000.00 ($58,139.50). For a higher amount Public competitive context is required. ❑ For contracting acquisitions and supplies, category C, with a ceiling for direct acquisition up to S/. 350,000.00 ($101,744.00). For a higher amount Public Bidding is required. Procurement procedures must follow the guidelines derived from the above mentioned law 26850, as well as enterprise Procurement Rules Besides, the providers should be registered in the enterprise Providers Registry to qualify for any selection.
2. Water boards	The technical department in EMPSSAPAL S.A, is generally promoting the involvement of the water boards located in the city that are managing their service independently from EMPSSAPAL S.A. Currently there are two included in the process: Trapiche and

	the Community of Chumo. Usually, the technical department of the enterprise meets with the users in the water boards and provides advice on the quality of the service provided by EMPSSAPAL S.A, in an effort to bring them, under the enterpise management.

INSTITUTION	PROCESS
3. Associations	The housing associations request the water and/or sewage service to EMPSSAPAL S.A. through its water and sewage committee. In order to have access to the service they must submit the following documents: a. Municipal recognition resolution b. Evidence of Registration in the Public Registration office c. Technical report d. Peri metric location map e. Property papers/Sworn statement f. Letter of application addressed to the General Manager ❑ The application is evaluated by the technical department. Once the technical feasibility and the living evidence are verified, EMPSSAPAL S.A. requests that the user complete community work before signing the contract. The works begin when the economic contribution is paid according to the agreement terms and the user has contributed with unqualified workmanship. ❑ The associations pay for the household connections. Payments can be made cash or part payments during three months with a down payment of 25% of the total cost. Financing is interest free and in the case of drinking water connection the Association and EMPSSAPAL S.A sign an agreement. If it is a sewage connection the agreement must be signed by the Association, the Provincial Municipality and EMPSSAPAL S.A. If the user cannot pay for the sewage service the Provincial Municipality will pay for him. The agreement outlines the duties and rights of the parties involved, with the Association paying for the service and contributing with unqualified workmanship.

3.4. Legal basis for ownership and management

- **Legal basis for ownership**

Sanitation services in Sicuani belong to the government represented by the Provincial Municipality of Canchisthe, with Sicuani as Capital City. The property is determined by Decrees 574 y 601 dated back in 1990. By virtue of these decrees the shares of SENAPA were transferred free of charge to the Provincial Municipalities that provided these services, including among others the Province of Canchis.. SENAPA , out of service now, was the main enterprise for sanitation services owned by the central government. The General Law for Sanitation Service, law 26338, consolidated the above transfer of shares.

The entities for the supply of sanitation services are concessionaire entities, responsible for service exploitation. The system is not their property. In Peru the public service infrastructure is awarded as concession for service exploitation.

The main regulations for the establishment, expansion or concession of a public, private or joint enterprise are the General Law for Sanitation Services and SUNASS directive for the recognition of service entities. Any change in property on the part of the concessionaire or private sector summon must follow the regulations for concession to the private sector of public works and infrastructure or services contained in D.S. No.059-96 and its rules D.S. No.060-96 PCM.5.

- **Legal Basis for Management**

Management is the responsibility of the concessionaire. The legal basis include the following:

a. Law N° 24948, Law for Government Enterprise Activity and its rules and regulations
b. Law N° 23853, Municipal Organic Law and its modifications
c. Law 26338, General Law for Sanitation Services and its rules and regulations
d. Law N° 26887, General Law for Societies and its modifications
e. Law 26850, Law for Contracts and Procurement
f. Other rules derived from the above legal frame.

These are the management rules by which the guidelines contracting of staff, setting up of salary scales, procurement and contracting of services, establishment of tariffs, approval of operational and entrepreneurial etc are carried out.

4. Financial Arrangements

4.1. Agreement for source of funds and cost participation for planning/design and facilities establishment, its operation and maintenance.

Currently, EMPSSAPAL S.A., is the enterprise responsible for sanitation services in Sicuani. However, it has not signed or agreed financial arrangement for the supply of funds for investment. The funds available are result from service sale, and small collateral services

This is why EMPSSAPAL S.A. makes small investments mainly for service rehabilitation, service improvement and household connections.

Its source of funds is based upon operational revenue and contingent reserve.

4.2. Tariffs

The traditional procedure for tariff approval for water and sewage services in Sicuani and Santo Tomas starts with a tariff study to be made by EPS in accordance with the prevailing legal regulations, together with an immediate action plan approved by SUNASS . Th tariffs must also be approved by the Board of Directors of EMPSSAPAL before submission to SUNASS for approval. Tariffs cannot be increased without this authorization. During the last four years, EMPSSAPAL did not have any tariff increase after the one approved in 1995.

In 1998, EMPSSAPAL S.A. prepared a tariff study for a 30% increase that was approved by SUNASS in August that same year. However, for political reasons (municipal elections) the tariff increase could not become effective. In May 1999 the enterprise must comply with SUNASS directive for Tariff review in entities providing sanitation services, as approved by the SUNASS Resolution N° 920-98-SUNASS dated November 1998.by which a 20% reduction should be made for minimum consumption and assigned tariffs for users that have a water measurer. This means a reduction in the billing totals that will seriously affect its economy.

CURRENT TARIFF STRUCTURE

FEBRUARY 1999 (1)

Code-Type	Category	Minimum or Assigned Consump-tion M3 per month(2)	Minimum Tariff per M3		Per M3 Excess		Montly [payment for minimum or assigned consumption without excess, including VAT (4)	
			S/M3	$/M3 (3)	S/M3	$/M3 (3)	S/mes	$/mes (3)
9-2	Sewage only		-.-	-.-	-.-	-.-	1.50	0.44
10-1	Social with operating water measurer	18.00	0.7000	0.2035	0.7000	0.2035	14.87	4.32
10-2 ó 10-3	Social without water measurer or measurer out of order	29.56	0.7000	0.2035			24.41	7.96
11-1	Domestic with operating water measurer	15.00	0.4833	0.1404	0.7000	0.2035	8.56	2.49
11-2 ó 11-3	Domestic without water measurer or measurer out of order	22.18	0.4833	0.1404			12.65	3.77
12-1	Commercial with operating water measurer	24.00	0.7000	0.2035	1.0000	0.2907	19.82	5.76
12-2 ó 12-3	Commercial without water measurer or measurer out of order.	46.47	0.7000	0.2035			38.39	11.16

13-1	Industrial with operating water measurer	60.00	1.0000	0.2907	1.8000	0.5233	70.80	20.58
13-2 ó 13-3	Industrial without water measurer or measurer out of order	95.46	1.0000	0.2907			112.64	32.74
14-1	State-owned with water measurer	20.00	0.7000	0.2035	1.0000	0.2907	16.52	4.80
14-2 ó 14-3	State-owned without water measurer or measurer out of order.	25.77	0.7000	0.2035			21.29	6.19

Notes:

(1) Tariff Structure in force since 1995

(2) Minimum consumption is established for users who have a water measurer or an assigned consumption when measurer is not available or is out of order.

(3) Average exchange rate for February 1999, 1 US$ = 3. 44 (bank dollar)

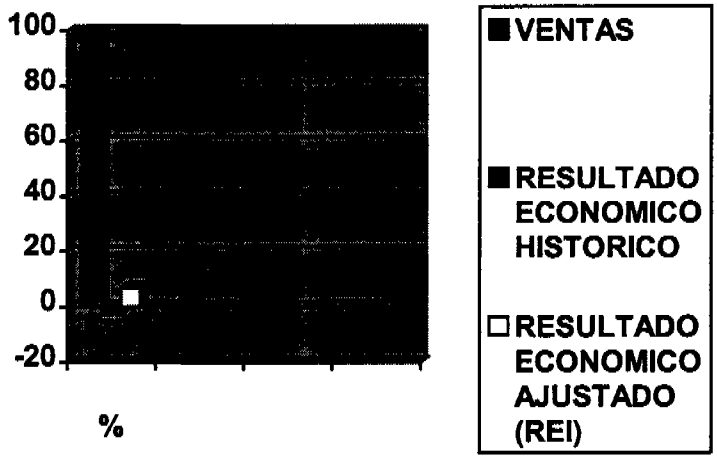
(4) VAT, Added Value Tax, at the rate of 18% on total amount for water consumption.

4.3. Financial Viability

- **Economic returns in 1998**

During 1998. the town of Sicuani had a positive economic return, after the adjustment for inflation (REI)was made in the Balance Sheet and the Profit and Loss Statement. The positive balance is S/ 64,056.20 ($ 21,714.00, at the average exchange rate in the banks at the end of 1998). According to historical terms (not including REI) the economic return is negative by S/. 24,602.29 ($ 8,339.76). Attached, as Annex are the 1998 Financial Statements for the city of Sicuani.

The final results are impacted by tariff freezing and reserve increase, mainly for depreciation, derived from fixed assets increase.



Coverage of Costs

The enterprise revenue covers operational costs and reserves, all of it resulting in a gross exploitation surplus of S/. 4,560.35 ($1,546.00) during 1998.

The imbalance between sales and expenditures is produced by exceptional charges assumed during the year as a result of inventory updating.

- **Coverage for depreciation**

Reserves in 1998 totaled S/. 250,754.62 ($ 85,001.56, at the average exchange rate for the year $1 = S/. 2.95). From this amount approximately S/. 170,000.00 refer to Fixed Asset depreciation ($ 57,627.12). According to

the historical economic results the enterprise is covering approximately 86% of annual depreciation. It should be born in mind that in the 1998 Balance Sheet results, PRONAP donations have been included and the property value updated. The Fixed Assets value is S/ 5'656,579.13, four times more than the fixed assets owned by Sicuani before the establishment of the enterprise. This adjustment has had an impact on the annual depreciation cost.

Therefore, the economic returns are standing a significant increase in reserves, mainly for annual depreciation and tariff freezing during the last three years.

- **Debt service**

The enterprise has no debt for expansion or administrative expenses. The most important ones are related the division into fractions of taxes, that are paid timely.

In general the enterprise does not have debt service.

- **.Savings for expansion**

Not applicable. The enterprise has not a saving program for investments.

5. Investment criteria

5.1. Basis for setting initial level for capital investment

The enterprise does not prepare directly its long or medium term enterprise plans. Therefore, it has not established the initial level for investments. The most significant planning available is the operational plan.

5.2. Expansion plans and related financial arrangements

The enterprise expansion plans take place on the basis of the support received from PRONAP. That is how the study for expansion of the services in Sicuani, was prepared by the firm HALCROW, at PRONAP's request.

5.3. Financial management plans, accounting/auditing system

Financial management plans have not been considered . It is estimated that management planning will still be under the Provincial Municipality of Canchis and its minority partner. Accounting and auditing have been already mentioned before.

5.4. Customer service system

It is a direct service already mentioned before.

6. Contracting arrangements for Private Sector Support (main objctives, outputs and payment terms)

The enterprise does not have contracts signed with the private sector for important investments that could mean a short, medium or long- term debt. Small debts are contracted with input a small supply providers.

6.1 Management support

EMPSSAPAL S.A. has signed two important agreements for sanitation services in Sicuani and Santo Tomas.

Participatory Agreement for Financial and Technical Assistance

This agreement has been signed by EMPSSAPAL S.A. and the Programa Nacional de Agua Potable y Alcantarillado (National Program for Drinking Water and Sewage)-PRONAP. The objective is to provide technical and institutional support to EMPSSAPAL S.A for enterprise consolidation..

Through this agreement, the enterprise has significantly improved its administrative and technical activities. It has received feasibility studies for the improvement of sanitation services and rehabilitation of the existing ones, thus been able to improve the quality of its services. Also, the technical capability of its workers have been upgraded in all the institutional departments of the enterprise.

This agreement started on 1996 and will in force until mid year in 1997. No exact figures for investment are available, and the estimate is for S/ 1'500,000.00 ($ 436,046.00).

- **Inter-Institutional Agreement between EMPSSAPAL S.A. and SUM Canada**

The objective of this agreement between SUM Canada and EMPSSAPAL S.A., is to improve the sanitation services through the participation of a Canadian expert.

According to the agreement SUM Canada will pay the expert's fee and all the transportation expenses for transfer to work in Sicuani, except lodging and subsistence that will be paid by EMPSSAPAL S.A. at an estimated monthly cost of US$250. The agreement was signed in February 1998, and currently it is in the process of being renewed.

With the participation of the Canadian expert, EMPSSAPALS S.A. has been able to improve the sanitation system, which is now a totally computerized system. This technical upgrading permits the quick location of areas affected by clogging with water carried materials thus preventing the problem during the rainy season. The work has permitted a reduction of clogging problems that were most common before.

With the help of the Canadian engineer, EMPSSAPAL S.A. has carried out a census of the networks in the whole town, with the household connections census still to be done.

7. Design criteria

7.1. Design criteria

a. Demand/production per family and institutional/commercial users (liters per person, per day).

The actual demand per person is estimated to be 80-90 liters per day per person in the city and 4-60 liters per day per person in the peri-urban areas, Technically a supply of 120 to 140 litters per day per person is being considered in the feasibility projects.

It is also estimated that in the marginal settlements the demand is 5-10 M3 per month and in the city 15 M3 per month. Commercial consumption is estimated to be 30 M3 while for industrial consumption the estimate is 100 M3 per month. (Data provided by the commercial department).

b. Seasonal and daily peak flow factors

The peak factor of 1.1 has been taken into account by the consulting firm that is preparing the study for the improvement of sanitation services in Sicuani

c.-.Design period for source, treatment, storage and distribution

DESIGN	DESIGN PERIOD
1. Source	**20 - 25 years**
2. Treatment	**20 - 25 years**
3. Storage	**20 - 25 years**
4. Distribution	**20 - 25 years**

7.2. Phased construction plans

a. Programming

b. Procurement of financial sources

c. Implementation

C. PROPOSAL FOR THE BEST PRACTICE MODELS AS A RESULT FROM PROJECT EXPERIENCE

1. RESPONSE TO DEMAND

Through short-term payment terms, support to technical management, and the users' involvement in the construction of household connection, the enterprise is in the process of achieving for the population a 100% level of access to sanitation services.

2. REDUCTION IN TARIFFS ENCOURAGE INSTALLATION OF WATER MEASURERS AND CONSUMPTION CONTROL

The setting of differentiated tariffs that reduces the service cost , has encouraged the installation of water measurers. The enterprise is able now to have 82% of measured services, as well as consumption control and adequate use of the service.

3. COLLECTION EFFICIENCY THROUGH POLICY COSTS AND PAYMENTS FOLLOW UP

The cost policy applied to adequate tariffs to local economy and the constant follow up, almost on a personal basis, made to collections have improved collection efficiency by 87%.

4. COOPERATION AGREEMENTS

Cooperation agreements allow an upgrading of the enterprise technical capability and development,. in particular if the cooperation agreement includes active training components.

Project snapshot summary: PHILIPPINES

BRIEF PROJECT OUTLINE

	Local Government Unit Urban Water and Sanitation Project (LGU-UWSP)
	Planning/design and construction of facilities and O&M: World Bank loan through DBP; Tariffs to cover capital costs, O&M and reserves.
	Approximately 250 LGUs with population in urban centers ranging from 5,000-20,000.
	• Spring, groundwater, chlorination • Reservoir with min capacity of 16 hours • On-site sanitation (septic tank improvement), micro drainage
	120 liters per capita per day. 24 hours service
	LGU-Operator long term leasing arrangement.
	Decides proposed tariff. Feasibility study, design, construction and supervision. System management under a long-term lease contract, and O&M services. Construction management jointly undertaken by LGU and DBP with help of construction supervision consultant. LGU borrows for investment and administers contract.

PROJECT FEATURES

- **Selection process:** Project open to interested LGUs regardless of income class; with or without water systems; with or without water districts. Project promotes self-selection. Priority for project preparation is given to provinces with clusters of interested LGUs that have complied with project requirements.
- **Size of investment:** Based on LGU's borrowing capacity and priority attached to water and sanitation by the LGU. Also based on consumer demand and willingness to pay of target consumers.
- **Financing arrangement:** Loan portion – between 75-90%. Equity portion – between 10-25%; LGU equity may be provided in-kind (ie land materials) and/or in cash. No subsidy is given from national government. Subsidy from LGU is possible if partial cost recovery scheme is selected.
- **Cost recovery options:** Full cost recovery being promoted over a 15-year period. Partial cost recovery allowed by tariff should at least cover costs of O&M; in this case LGU pays for the other costs. User fees subject to automatic adjustments based on CPI movements and to extraordinary adjustments to cover other costs that may be incurred.
- **Management options:** Management by private sector through a long-term lease agreement. Only as a last resort, management by a registered public enterprise.
- **Contracting options:** Three stage contracting option – project preparation, civil works, O&M. Two stage contracting option – project preparation, design-build lease. Separate package – supervision consultant.
- **Technical assistance arrangements/options:** For LGUs, provided in financial planning, investment programming. LGUs under private management – provided on contract administration and regulation. LGUs under public management – provided on account management, O&M, customer management.
- **Main features of the lease:** • Automatic rate adjustment based on CPI movements. • Extraordinary rate adjustment for other costs. • Lease fee cover LGU debt service and recovery of LGU equity. • Supervision fee for contract administration. • Dispute resolution provision. • System of performance reporting. • Asset management report.

[Full details of project are found in Project Snapshot.]

Small Towns Water Supply And Sanitation

Philippines

Project Snapshot

Project Description	
Name	*Philippines: Local Government* Unit Urban Water and Sanitation Project (LGU-UWSP)
Location	nationwide
Number, sizes (population) and densities (persons per hectare) of towns	Approximately 250 LGUs with population in urban centers ranging from 5,000 to 20,000
Types of water supply facilities (source, treatment, storage, distribution/connections).	Source : spring, groundwater Treatment : chlorination Storage : reservoir with minimum capacity of 16 hours operation Distribution: by municipality
Typical system sizes (m3/day), reliability (hours/day) and operational problems.	120 lpcd 24 hours service
Types of sanitation facilities.	on-site sanitation (septic tank improvement) micro drainage

Please note:
Row descriptions have been provided as a guide only.
Add/subtract rows and expand/contract cells as required.

Project Cycle – who does what and when	
Community selection (information methods, application process, conditions for participation)	LGU self-selection process through submission of application supported by Municipal Council Resolution and required technical and financial data
Mobilization and establishment of Water Board Preparation of feasibility study (facilities and management plans)	Not applicable
Appraisal method for community proposals	Not applicable
Planning, design and construction supervision Construction management (contract advertisement/evaluation/award/payments, supervision)	Feasibility Study, Design, Construction and Construction supervision done by private sector. Construction management jointly undertaken by LGU and DBP with the help of the construction supervision consultant
System management, and operations/maintenance/billing-collection	System management is undertaken by the private operator under a long term lease contract

Institutional Arrangements	
Role of community, private sector and government (local and national level) for planning, management, construction, operations, and maintenance.	Community decides on the proposed tariff Private sector prepares feasibility study and detailed design, constructs and operates LGU borrows for investment and administers contract
Description of participating private sector organizations, town water boards, and associations.	Local and international consulting firms and water utility operators
Process of involving communities, water boards and private sector in the project. Legal basis for ownership and management.	Community consultation on willingness to pay and connect based on the suggested tariff LGU-Operator long term leasing arrangement

Financial Arrangements	
Source of funds and cost sharing arrangements for planning/design and construction of facilities, and operations and maintenance.	World Bank loan through DBP Loan : between 75% - 90% Equity: between 10% - 25%
Current tariff structure and process of setting/revising it.	Covers capital cost, operation and maintenance and reserves Tariff revision based on CPI movements and extra ordinary rate adjustments
Financial viability – does revenue cover operating costs, depreciation, debt service and expansion savings.	Yes
Investment criteria: Basis for setting initial level of capital investment.	Borrowing capacity of LGUs and consumer demand
Expansion plans and related financing arrangements.	None yet
Financial management plans, accounting/auditing system.	Part of operator's responsibility under the lease agreement
Customer management (billing and collection) system	Part of operator's responsibility under the lease agreement

Contracting Arrangements for Private Sector Support (main objectives/outputs and payment terms)	
Planning, design, construction supervision	Prepare FS and Detailed Engineering Designs Supervision of Construction Payment terms based on outputs
Management support	LGU creates Project Management Unit DBP and DILG create PMOs
Construction	by contract
Operations and maintenance services	by private operator through long term lease contract

Design Criteria	
Production for household and institutional/commercial users (liters/capita/day).	120 lpcd applied to all types of users
Seasonal and daily peak flow factors	
Design period for source, treatment, storage and distribution.	10 years
Phased construction plans	none

Philippines: Local Government Unit – Urban Water And Sanitation Project

Key Issues/Options Affecting Cost-Effectiveness and Sustainability of Investments:

1. Selection Process

- Project open to interested LGUs regardless of income class; with or without water systems; with or without water districts
- Project promotes self-selection according to the following steps:

  Step 1: LGU (i.e., Mayor and SB) applies to DILG with knowledge of project rules
  Step 2: LGU decides on investment envelope for project based on information of its borrowing capacity
  Step 3: LGU decides on development option, cost recovery scheme and management option based on recommendations made by an engineering consultant
  Step 4: Consumers agree on user fee following consultations/dialogue between LGU and consumers; a requirement of at least 60% willingness-to-connect of the community included in the proposed service area is needed to have a project

  STEP 5: LGU ENDORSES FINAL PROJECT CONFIGURATION/DESIGN

- Priority for project preparation is given to provinces with cluster of interested LGUs which have complied with project requirements

2. Size of Investment

- Based on LGU's borrowing capacity and priority attached to water and sanitation by the LGU
- Based on consumer demand and willingness to pay of target consumers for the costs

3. Financing Arrangement

- Loan portion – between 75% to 90%
- Equity portion – between 10% to 25%; LGU equity may be provided in-kind (e.g. land, materials) and/or in cash
- No subsidy from National Government
- Subsidy from LGU is possible if partial cost recovery scheme is selected

4. Cost Recovery Options

- Full cost recovery being promoted over a 15-year period

- Partial cost recovery allowed but tariff should at least cover costs of operation and maintenance; in this case, LGU pays for the other costs
- User fees subject to automatic adjustments based on CPI movements and to extraordinary adjustments to cover other costs which may be incurred

5. Management Options

- Management by private sector through a long-term lease agreement
- Only as a last resort, management by a public enterprise duly registered with the SEC

6. Contracting Options

- Three-stage contracting option: Contracting for project preparation (i.e., feasibility study and design), civil works, operation and management
- Two-stage contracting option: Contracting for project preparation (i.e., feasibility study only), design-build-lease
- Separate package: Supervision consultant

7. Technical Assistance Arrangements/Options

- For all participating LGUs, TA to be provided in financial planning, investment programming, etc.
- LGUs under private management – TA on contract administration and regulation
- LGUs under public management – TA on account management, O&M, customer management, etc.
- TA for DILG and DBP PMOs – long-term financial planning model for LGUs, etc.

8. Main Features of the Lease

- Automatic rate adjustment based on CPI movements
- Extraordinary rate adjustment for other costs incurred
- Lease fee to cover LGU debt service and recovery of LGU equity
- Supervision fee for contract administration
- Dispute resolution provision
- System of performance reporting
- Asset management report

Project snapshot summary: SRI LANKA

BRIEF PROJECT OUTLINE

Project	Community Water Supply and Sanitation Project (small towns component) 12 towns
Amount of financing	Capital: 80% Govt Grant (65% IDA); 20% consumer contribution in cash/kind
Population size	Pop. from 3,000-6,000.
Technology	• Sedimentation, filtration and chlorination • Gravity schemes for 24 hour supply • Pumping systems for intermittent supply and sanitation • Pour flush toilets, septic tanks, over 60% coverage
Daily demand	300-500m^3
Role of CA	Involved at every stage from feasibility to O&M management.
Design	Mobilization, advice and facilitate choice of options, assist functioning of CA. Construction. Project Management.
Capacity building	Preparatory, registration & legalization of CA.
Key principles	5 key principles: Consumers choose level of service based on willingness to pay. Consumers contribute to capital and O&M costs. Efforts shared by consumers, public and private sector. A range of options. Considerations throughout project development.

Project Snapshot Summary

KEY ISSUES

- **Demand Based Approach (DBA):** The financial policy needs to be sharpened to improve clarity for all users. There needs to be better communication of the DBA principles to consumers and to ensure that the DBA has a provision for an exit criteria when involved with unsustainable projects.

- **Up front cost sharing and financial sustainability:** There is potential to further refine cost sharing rules to provide incentive for consumers to choose appropriate service level based on willingness to pay.

  Further sophistication of the tariff structure and management to capture depreciation cost recovery, capital amortization, regular tariff revision and recovery processes, including punitive actions for defaulters and illegal connections, could reduce the burden of high one-time, up-front contributions. This would require a review and suitable restructuring of institutional mechanisms. The project demonstrated that adherence to a Demand Based Approach facilitates setting and recovering actual and scheme-specific O&M costs.

- **Partnership** between the CA and the partner organizations (PO) has resulted in an increased range of technological options, service levels and costs, culminating in a more customer-responsive design and implementation program. PO's facilitated negotiations between the project team (NWSDB) and the CAs may play an effective role in facilitating the O&M agents in revenue collection, to enforce punitive actions against the defaulters and to revise tariff.

- **Management:** Project design offers CAs a choice of three management options. A major issue has been determining the ownership of the sunken investment, and how to negotiate with current management authorities to divest responsibilities to the new structures. Interim agreements have increased the abilities of the CAs to set and collect tariffs and generate additional funds for major repairs, given their limited legal status. But evidence suggests that they still face difficulties in revenue collection from influential defaulters and are unable to stop Local Authorities from extending connections through political influence. Unclear legal status may challenge the sustainability of CAs and the project is reviewing the feasibility of a pilot private company to manage the system on a lease basis.

- **Consumers action planning:** proved to be extremely useful in reaching consensus on tariff structure even though in most cases the tariff is higher than what the consumers used to pay. *[Full details of project are found in Project Snapshot.]*

Small Towns Water Supply And Sanitation
Sri Lanka

PROJECT SNAPSHOT

Name	Sri Lanka - Community Water Supply and Sanitation Project (Small Towns Component)
Location	Districts of Matara, Badulla and Ratnapura (12 Towns)
Characteristics	Population: 3000 – 6000 per town; Density:
Components of the Water Supply System	Source: Surface (river/stream), underground, spring, rain water; Treatment: Sedimentation, filtration, chlorination; Storage: Ground and elevated reservoirs Distribution: GI and PVC piped networks with house connections (yard taps).
Typical System Size	300 – 500 m^3/day; 24 hours supply (gravity schemes); Intermittent (pumping systems)
Sanitation Type	Pour Flush toilets; Septic Tanks
Sanitation Coverage	Over 60%
Preparatory Phase (6 months) Pre-feasibility, Source investigation, Assessment of Local Govt. capacity Assessment of Partner Organization Orientation of LGs and POs	National Water Supply and Drainage Board (NWSDB) with support of the Pradeshiya Sabhas (PSs)/Local Governments (LGs)

Development & Feasibility Phase (6/8 months)	NWSDB and POs with CAs
Consumer mobilization,	
Survey,	POs
Participatory planning,	POs
Formation of Consumer Association,	POs
Registration of CA	POs
Consumer Action Planning	NWSDB/Govt.
	CAs and POs
Implementation Phase (18 months)	
System design,	NWSDB, CAs, POs, Service Agencies, PSs
Bid Documents,	NWSDB
Procedures and guidelines for CAs:	NWSDB
Construction, contribution,	NWSDB, POs
O&M procedures,	CAs and POs
Legalization of CAs,	CAs and POs
O&M agreements,	NWSDB/Govt. and CAs
Construction :	NWSDB, CAs and O&M Agency
Bidding, contract award,	
Quality testing,	NWSDB
Construction,	NWSDB
Supervision/monitoring,	Contractors
Setting tariff,	NWSDB, POs, CAs
O&M guidelines and systems,	NWSDB, POs, CAs
O&M training,	NWSDB, POs, CAs
Commissioning:	NWSDB, POs,
Awarding of O&M assignment	
	NWSDB, POs, CAs
Operation & Maintenance Phase	
Guidelines for billing and collection,	
Disconnection/reconnection,	NWSDB, POs, CAs
Preventive Maintenance,	O&M Contractor/Company
Conflict resolution,	O&M Contractor/Company
New connections,	CAs
Financial arrangements,	O&M Contractor/Company
	O&M Contractor, CAs
Surveillance and Augmentation Phase	
	NWSDB, CAs, Contractors

The arrangements for planning, design, implementation and management of the Small Towns Water Supply and Sanitation is through a partnership between the consumers Associations(CAs), an intermediary Support Organization (SO) to mobilize consumer interest and preference and provide advisory services, assist in the formation and functioning of a CA, a number of Civil Contractors, and the NWSDB. The project has a number of options for the O&M arrangements. Consumers were given the opportunity to select the O&M agent of their choice including the CA, Local Authority (PS) and NWSDB.

Out of 12 Towns, CAs are responsible for the O&M of 7 Towns, PS for 4 Towns and NWSDB for 1 Town. The above selection is done by the consumers themselves. Observations indicates that consumers prefer efficient O&M agent and public sector agency is the last option. Choice of NWSDB is influenced by the fact that the system extracts raw water from an existing NWSDB managed system.

Funding and cost sharing arrangements for: Capital cost	80% as grant from Government (65% IDA) 20% cash/kind from consumers
O&M	100% from consumers
Current tariff structure and process of setting/revising	Tariffs are set based on scheme specific operating cost with a profit margin. The process is straight forward, cost of production, management of scheme including caretakers, routine maintenance charges and in some cases for major repairs are included in calculating the unit cost of operation based on consumers designed and or connected. Units Rates (Kuruwita ST) m^3 Rs. 0 – 10 = 2.50 11 – 20 = 3.00 > 20 = 7.00 Commercial = 26.00 Tariff review and revision is the responsibility of the CAs along with the PSs. NWSDB provides a facilitating role through solicited technical advise in determining the cost due to breakdowns, expansion and escalation . The agreement states that tariff revision will be undertaken as and when necessary.

Financial Viability	The tariff covers actual total operating cost plus a small profit. As the capital cost is shared by the consumers on a 20/80 basis with government, at the implementation phase, the project does not have any capital amortization, this approach has been introduced in the context of an extremely poor cost recovery record in the past. The issue of depreciation cost recovery is being discussed with the CAs and different options are being explored including charging a franchise fee to the O&M agent to be deposited in a suitable account managed by the CAs with the PSs
Investment criteria	The level of capital grant is Rs. 10,000/- per HH. This is based on the ERR and caters for a basic level of service (see design criteria).
Expansion Plans and Financing	Not yet clearly defined and articulated. As the project design period is 15/20 years.
Financing management plans, accounting/auditing systems	To be undertaken by the Divisional Secretariat. The project recommended to appoint private audit.
Customer management (Billing and Collection system)	Scheme specific billing cycles including monthly and quarterly billing. Payments deposited in bank. Billing system is manual. Most connections are metered.
Contracting Arrangements for Private Sector	
Preparatory Phase Development & feasibility Phase Implementation Phase Design and Bid Documents Construction Supervision/monitoring Operation & Maintenance Phase Surveillance and Augmentation	NWSDB and Local Governments (no PS) Partly contracted to POs (Partial PS) NWSDB (no PS) Private Contractors and CAs (full PS) NWSDB, CAs and PSs (slightly PS) O&M Agents (60% PS) i.e. O&M Agents other than the NWSDB and or PS NWSDB, CAs, PSs (Slight PS)

Water Demand	House Connections 140 liters/person (5/House) Stand Posts 45 l/p Shops 50 l/p Hotels, Hospitals 200l/p Institutions 200l/p Schools 15l/p
Peak factor	2.0 for distribution
Design Period	15 years
Wastage/UFW	30%
Population Projection	$P_o(1+r)^n$ N = 15 R = 1.7%

ISSUES AND OPTIONS

The Approach

1. The approach of the Small Towns Water Supply and Sanitation Component is to ensure a cost-effective and sustainable access to improved water and sanitation services for the small town consumers through a delivery mechanism which adopts the following five principles:

A. Demand Based Approach: The initiative for improved services is generated by the consumers through a Demand Based Approach, where the consumers collectively chooses the level of service based on their willingness to pay. The approach recognizes that water is a finite resource and should be treated as an economic good.

B. Up-front Cost Sharing and Financial Sustainability: The approach requires the consumers to agree to share 20% of the capital cost and full financing of the O&M. The cost sharing rule is applicable up-front as evidence of consumer demand for improvement and requires a mechanism for collection and deposit of fund in a bank account prior to the commencement of work. To ensure adequate revenue to sustain operation and maintenance of the system and to have an effective mechanism for tariff review and revision.

C. Partnership: The efforts for improved services is shared by three key partners – the consumers, the public sector agency, and the private sector providers. A fourth actor is the government machinery at the local and divisional level which primarily acts as facilitators. The thrust of the approach is to introduce competition in service delivery, enable greater involvement of the private sector and minimize public sector inputs.

D. Management Options: Provide choice for the management of systems including contracting to private company, assigning to the Pradeshiya Shavas (PS), contracting to the NWSDB, or management by the Consumers Association (CAs). The choice of specific management structure is made at the beginning of the system design and appropriate capacity building needs to be identified and addressed during implementation.

E. Environmentally Sound and Economically Viable: The system integrates environmental considerations during design, implementation and management, including watershed management, source protection, and waste water disposal. The system should be economically viable and demonstrate a positive rate of return.

Lessons

2. Lessons from implementation and the key issues addressed and identified for further actions are summarized under the five principles discussed above.

Demand Based Approach

3. The project design, specifically the financial rules are not adequate to test/apply the full range of a DBA. However, encouraging responses were noted on willingness to pay based on a credible improvement of service level. For example the project already pre selected 17 Towns, and funding for all the Towns were ensured under the project. However, consumers had to make a choice for improved service level against the available service provided by the government and managed by public sector agency or PSs. The choice is based on willingness to pay higher amounts and higher tariff to meet the O&M. Finally 12 Towns were able to meet all the criteria and went for implementation. Five Towns opted out.

4. In a conventional approach all 17 Towns would have been implemented resulting in unlikely sustainability for the 5 schemes where consumers demand were lacking. The challenge to the project implementation unit (NWSDB) is that in the absence of specific project procedures for an exit criteria it is hard to justify dropping any project after a fair advance in the preparation process. A Demand Based Approach must have provisions for an exit criteria.

5. A crucial element of DBA is the willingness to pay. The project design sets financial rules to determine consumer demand. The financial rules of the project design should be clearly spelled out with adequate justification, and procedure for communicating and interpretation of the financial rules should be simple and easy for any consumer to understand and get clarification if and when solicited. The project requires to sharpen its financial policy and to develop procedures for better communication of the DBA principles to consumers.

Up-front Cost Sharing and Financial Sustainability

6. Contributions from the consumers at the rate of 20% of capital cost up-front, and scheme specific O&M is a departure from the prevailing design norms. Analysis of consumers contribution shows a very encouraging response, and an early symptom of the viability of direct cost sharing (in an environment where capital amortization is poor), for example consumers on an average contributed about Rs. 2.2 million (US $ 33,761) per scheme. The average community contribution is 17%, slightly below the agreed amount of 20%. On a household basis the up-front contribution on an average is Rs. 215 (US $ 3.2), which is within the affordable range. Lessons indicate that there is a potential to further refine the cost sharing rules to provide better incentive for consumers to choose appropriate service level based on willingness to pay. For example the rules could be revised to enable prioritization of scheme implementation based on higher contribution or full capital cost recovery. The project also suggested to revisit capital amortization and

depreciation cost recovery through the tariff. However, to frame a realistic tariff structure, time to time revise tariff, and to recover tariff including taking punitive actions for defaulters and or illegal connections the institutional mechanism requires a careful review and suitable restructuring.

7. Collection of up-front contribution was a challenge in Towns where part of the scheme is in operation and consumers are largely defaulters. Among a number of reasons why one should not pay, the key one is the inadequacy and unreliability of service. Such a situation called for revising downwards the up-front contribution for the households already connected to a system. As most of the Small Towns have some sort of water system serving part of the Town, the project lessons indicates that the cost sharing formula should consider this aspect.

8. The financial/cost recovery policy of the project falls short of adequately safeguarding the long term financial sustainability of the system. The Small Towns project has for the first time established scheme specific tariff structure against the prevailing practice of a National Tariff, which highly cross-subsidizes the rural and small towns by the industrial/commercial tariffs for Colombo city. The National Tariff is therefore much lower than actual cost of operation, and furthermore its recovery is abysmally poor. The project on the contrary demonstrated that adherence to a DBA facilitates setting and recovering actual and scheme specific O&M costs. Table below provides an example of the variations of estimated bill value for different consumption figures, based on which the scheme specific tariff structures are set.

Schemes	Domestic (US$)		Commercial (US$)	
	25 m^3	40 m^3	25 m^3	40 m^3
Denipitiya	1.2	4.6	10.1	16.1
Kalawana	1.5	3.0	3.0	4.5
Kuruwita	1.5	3.1	10.5	16.8
Passara	1.3	3.3	7.3	11.6
Kirinda/Puhulwella	2.7	7.6	4.5	10.3
Pallebedda	3.2	8.3	9.0	14.5
Haliela	2.3	5.2	6.5	10.3

9. The Consumers Action Planning exercise during the preparatory and development phases have been extremely useful in reaching consensus on the tariff structure even though in most cases the tariff is higher then what the consumers used to pay.

10. As a first step towards a sustainable financial health, the project has demonstrated the feasibility of departing from a subsidized National Tariff towards scheme specific tariff. However, it is yet early to conclude that the mechanism will continue to remain dynamic and be able to revise tariff as and when required. Furthermore, the project suggests that tariff should also include recovery of depreciation cost and capital amortization to reduce the burden of high one time up-front contribution specially for expensive schemes. This also will require further rethinking of the institutional arrangements.

Partnership

11. The key factor which has contributed to the successful mobilization of consumer preferences and build consumer consensus, is the formation of Consumers Association (CAs) through intermediation of Partner Organizations (POs). The project therefore introduced two new stakeholders and formalized their roles. This partnership bound the NWSDB to revisit the planning and design norms and to include flexibility, choice of - technological options, service levels, and cost. This has resulted in a more customer responsive design and implementation program with complimentary roles and responsibilities. Once organized, the partners facilitated a balanced negotiation between the NWSDB and the consumers to arrive at the best option.

12. As the approach is new, identification of POs and assessment of PO capacity is a constraint, the quality of PO inputs varied between different Towns. Future replication will require a careful assessment of the PO capacity and a strategy to build the capacity. The role and status of the CAs also requires to be reviewed. Since it is too early to assess the efficiency of the management arrangements, it is however strongly felt that CAs will play an effective role in facilitating the O&M agents in revenue collection, to enforce punitive actions against the defaulters, and to revise tariff.

Management Options

13. The Project initially offered the following three management options:

- Management by the Consumers Association (CA);
- Management by the Local Authority Pradeshiya Sabhas (PSs); and
- Management by NWSDB.

14. Management is entrusted to CAs in 7 Towns, PSs in 4 Towns and NWSDB in 1 Town. An innovative feature of the project is the provision of management choice in the project design, and the choice of consumers to assign CAs against the existing practice of management by PSs and or NWSDB for over 50% Towns. Most Towns had existing system in place either managed by the NWSDB or PSs. The project invested in major augmentation of systems, in some cases a complete new system is built. However, the project consumers encountered an issue - who owns the sunken investment ? and how to negotiate with the current management authority to divest the responsibility from existing structures to new ones ? Lessons indicate that a majority of consumers preferred an autonomous agent in view of the history of poor credibility of PSs and NWSDB. Even when consumers realized that a departure from national tariff to scheme specific tariff might imply escalation of water rates, yet consumers expressed desire to participate for improvements, as a demand for better service.

15 Uncertainity over the ownership of the system (sunken asset and the new asset) had beset consumers with problems during the application of capital cost sharing formula, and for the option to divest PSs and NWSDB from management responsibility.

The project design did not clearly spell out how to address this issue at the out set, otherwise the percentage of CAs for management would have been higher.

16. Present management agreements are loosely bound and the legal status of CAs are insufficient, however, a Tri Partite Agreement between the CAs, Government (PSs) and NWSDB enables the CAs to – set and collect tariff, generate additional funds for major repairs and augmentation. The agreement also enables CAs to take punitive actions including disconnection of defaulters and illegal connections. Lessons indicates that CAs often face obstacles in collecting revenue from influential defaulters, are unable to stop the Local Authority (PSs) to extend connections through political influence.

17. Although the trend is encouraging, lack of proper regulation and unclear legal status may in the long run challenge the sustainability of CAs. Project partners are reviewing the feasibility of establishing a private company in one Town as a pilot to setup a mechanism to lease out the management of the system to the company.

Project snapshot summary: Wobulenzi – UGANDA

BRIEF PROJECT OUTLINE

[illegible]	Wobulenzi – one of 11 towns in the 'Small Towns Water and Sanitation Project'.
[illegible]	Government, IDA, Communities. Cost-sharing arrangement Govt/IDA funding and community contribution to capital investment.
[illegible]	1994
[illegible]	Population 11,853 Pop. density 4,200/Km^2
[illegible]	• Pumps,boreholes, reservoirs, dist. network 12.8 Km • 30 standpost connections • 10 metered household connections
[illegible]	Design 550 m^3
[illegible]	Actual production 100 m^3
[illegible]	Local Govt Act, Water Statute, WUA Constitution
[illegible]	Planning, design, construction, management and monitoring
[illegible]	Design, supervision, spare parts, repairs, development, installation, training, financial management.
[illegible]	Planning, design, monitoring, supervising private sector, policy and guidelines, support for O&M, advisor to WUA.
[illegible]	Entry point into community, monitoring and evaluation.
[illegible]	On-site excreta disposal, refuse collection, limited stormdrainage

KEY ISSUES

- **Appropriate management for Wobulenzi needed,** as it appears too big and complicated for direct management by users. Other options could include private operator management of Wobulenzi and a few nearby towns.
- **Organizational structure within the WUA needs to be rationalized.** Inefficiency to be addressed by reducing unnecessarily high staff costs, introducing accountability through clear responsibilities, operational guidelines and performance targets, and identification of potential private sector involvement.
- **Roles and relationships of all stakeholders need to be clearly defined,** particularly central and local government.
- **Production of regular financial records essential,** collected and presented in a transparent way to enable monitoring, and foster environment of accountability. Equally important is the capacity of management team to use such information, to enhance the effectiveness of the financial management plans that are already partially developed and installed.
- **Community contribution needs guidelines** for setting the rate, currently 1.5-% of capital cost.
- **Tariffs need restructuring** to accommodate O&M, replacement and expansion replacement costs.
- **Demand Responsive Approach needs to be adopted more widely** to give greater community involvement as a firm basis for community management. The Government and World Bank selected the 11 project towns with no community involvement. Subsequently, some rural communities benefited from involvement in selecting technology and service levels, contrary to the urban experience.
- **A connection policy is required** to capture an estimated market of 400 households – currently there are 10 metered household connections.
- **Enforcement policy is required for revenue collection** and must include penalties for non-compliance, within the rules of the enforcing organization.
- **Ownership needs to be clarified,** since government is reluctant to transfer ownership of assets. Other options to explore include concession contracts with communities.

[Full details of project are found in Project Snapshot.]

WOBULENZI, Part of the Small Towns Water and Sanitation project, Uganda

Key Issues Affecting Cost Effectiveness and Sustainability of Small Towns WSS

Introduction

Wobulenzi is one of the 11 towns in Uganda's Small Towns WS Project. Being the only one that is currently operational, it is selected to provide an example and a model for the remaining 10. Since it has been operational for a short time, some of the information given in the tables, e.g., roles of the various actors such as auditing of the WUAs by urban authorities, have not been experienced. The issues are summarized below.

1. Definition of a small town: There is need to clarify the definition of small town in terms of physical area, population, and system complexity. Wobulenzi seems too big and complicated for direct management by users. Other options, for example private operator managing Wobulenzi and a few other nearby towns could be examined.

2. Demand Responsive Approach: Wobulenzi along with the other 10 towns were selected by the Government and the Bank with no community involvement. Subsequently, rural communities were involved in selecting technology and service levels while there was little involvement of the urban community. Subsequent towns should have more community involvement as a firm basis for community management.

There are also no guidelines for managing the community contribution (currently set at about 1.5% of capital cost). As a result what had been collected from the communities later reverted to them.

3. The organizational structure: There is need to define a structure with clearly stipulated roles, relationships, operational guidelines, performance targets, and accountability of the different components of the organization. The separation between ownership, governance and operations is important. The current structure at Wobulenzi is inefficient, with too many staff and very high costs (about 70% of the total O&M costs, excluding honorariums paid to the WUA members).

It is also necessary to soon identify what activities can be contracted out to the private sector.

4. Tariff structure: should be structured to cover O&M as well as expansion and replacement costs.

5. Connection policy: The system has only 10 connections out of an estimated 400. A connection policy should be developed to enable the rising number of applicants get connections.

6. Enforcement: It is important at an early stage, to define measures to enforce payments for services as well as other penalties for non-compliance with the rules set by the organization.

7. Production of financial records: production of financial on a regular basis is a useful tool for accountability as well as monitoring a scheme's financial position. Such records include monthly income and expenditure statements, balance sheets, water audits, etc. open for scrutiny by users if they choose. The project should have the capacity to use such information to improve management.

8. Ownership: There is need to clarify this. Since governments seem reluctant to transfer ownership of assets, it may be useful to explore other options such as concession contracts with communities.

9. Clear definition of the roles, relationship and obligations/expectations of the different actors who relate with the project, notably, central government, and local government

Project Snapshot

Project Description	
Name	Small Towns Water and Sanitation Project Comprises 11 towns
Location	Uganda
When started	• 1994
Number, sizes (population) and densities (persons per hectare) of towns	• 1998 population; and population density respectively (persons per hectare) • Busia: 34,213 and 37 • Kalisizo 9,614 and 7 • Kyotera 8,029 and 14 • Lugazi 33,056 and 19 • Luwero 18,855 and 9 • Lyantonde 5,831 and 12 • Malaba 8,695 and 27 • Ntungamo 9,812 and 2 • Rakai 4,953 and 11 • Rukungiri 12,477 and 10 • Wobulenzi 11,853 and 42 Wobulenzi town is used as the example for this Project. The rest of the information in the questionnaire is, therefore, on Wobulenzi.
Types of water supply facilities (source, treatment, storage, distribution/connections).	• sources: 4 No. powered boreholes • treatment: chlorination • storage reservoir: 250 cubic meters, reinforced concrete • distribution network: 12.8km • 30 standpost connections and 10 household connections (all metered) • bulk meters
Typical system sizes (m3/day), reliability (hours/day) and operational problems.	• daily demand: (design 550 cubic meters; actual production = 100cubic meters/day) • reliability - very good • operational problems: transport, electricity rationing, high operational costs
Types of sanitation facilities.	• on-site excreta disposal • refuse collection, transportation and disposal systems • limited storm drainage network

Project Cycle – who does what and when	
Community selection (information methods, application process, conditions for participation)	• the towns were selected by the Govt. and the Bank, on the basis of their size, WSS situation, existing community initiatives, and with no community involvement • after selection of the town, the basis for proceeding was the community willingness to participate, based on Policies and Guidelines developed for the project
Mobilization and establishment of Water Board	• Water User Associations (WUA), elected by users of piped systems. The WUA in turn elects an executive committee to oversee day to day running of the system • Water and Sanitation Committees (WCS), elected by users of point sources, springs, boreholes
Preparation of feasibility study (facilities and management plans)	• feasibility studies by consultants, Directorate of Water Development (DWD), and communities • management plans by consultants, (DWD), communities and Urban authorities
Appraisal method for community proposals	• There were no community applications as the town was selected by the Govt. and the Bank
Planning, design and construction supervision Construction management (contract advertisement/evaluation/award/payments, supervision)	• DWD, consultants, communities (for point sources), urban authorities • DWD prepared the various technological options, their cost and management implications and the communities selected the technology and service levels • Bank supervision in implementation
System management, and operations/maintenance/billing-collection	• WUA • DWD monitors and provides back-up support and water quality monitoring

Institutional Arrangements	
Role of community, private sector and government (local and national level) for planning, management, construction, operations, and maintenance.	• community: planning and design, construction (point sources), system management and monitoring • private sector: design and supervision, construction, spare parts supply, repairs, development and installation of management systems, community training, financial management (banking and auditing), developing monitoring instruments • central government: planning and design, monitoring, supervising private sector activities, policy and guidelines, back-up support for O&M, advisor to WUA • local government: entry point into community, community mobilization, collection of community contributions, point source construction supervision, auditing the WUA, monitoring and evaluation, supervising private sector activities
Description of participating private sector organizations, town water boards, and associations.	• private sector organizations: (i) engineering firms for design, construction and supervision, (ii) management consultants and trainers, (iii) pump supply/installation/maintenance, (iv) commercial banks (v) small suppliers and contractors • WUA: elected for piped systems and are responsible for enforcing the by-laws
Process of involving communities, water boards and private sector in the project	• WUA meetings, workshops, mobilization campaigns, contracts
Legal basis for ownership and management.	• Local Government Act, Water Statute, WUA constitution

Financial Arrangements	
Source of funds and cost sharing arrangements for planning/design and construction of facilities, and operations and maintenance.	• sources of funds: Government of Uganda, IDA and communities • cost-sharing arrangements: Govt./IDA funding and community contribution to capital investment; full cost of O&M by communities
Current tariff structure and process of setting/revising it.	• meter-based; payable monthly • set through a consultative process between consultants, DWD, communities and urban authorities
Financial viability – does revenue cover operating costs, depreciation, debt service and expansion savings.	• revenues insufficient to cover O&M costs
Investment criteria: Basis for setting initial level of capital investment.	• estimated per capita consumption, population, design horizon, choice of technology and service levels selection by communities
Expansion plans and related financing arrangements.	• project will soon be considering options for generating funds for expansion and replacement as well as options for managing arrangements
Financial management plans, accounting/auditing system.	• partially developed and installed
Customer management (billing and collection) system	• meters for household connections read and billed monthly, 5 days allowed to settle bill • standpost meters read weekly but billed monthly; 5 days allowed to settle bill • bills delivered to customers; revenues collected at the water supply office • no enforcement mechanisms have been defined

Contracting Arrangements for Private Sector Support **(main objectives/outputs and payment terms)**	
Planning, design, construction supervision	• Govt. and consultants and contractors, based on clear Terms of Reference, payment terms as agreed with IDA and the Central Tender Board • Memorandum of Understanding between Govt. and community
Management support	• contract between the WUA and the private sector, but witnessed by the urban authority • tripartite contracts between private provider, WUA, and the govt. in case of complicated services such as pump overhaul • DWD and consultant for training and development of management systems • DWD also to prepare performance contracts to ensure satisfactory service provision (quality and quantity)
Construction	• DWD and contractors/consultants • urban councils and contractors (on sanitation improvements) • WUA and the private sector for point sources

Design Criteria	
Production for household and institutional/commercial users (liters/capita/day).	• to serve households primarily; institutions such as schools, churches, govt. institutions; commercial premises such as hotels, butcheries, shops, petrol stations ⇒ domestic demand - 488 m3/day ⇒ institutional demand - 63 m3/day ⇒ losses - 138m3/day ⇒ average daily demand - 688m3/day ⇒ maximum day demand - 826m3/day • standard per capita demand estimates used ⇒ piped household connections - 100lhd ⇒ yard taps - 40lhd ⇒ standposts/point sources - 20lhd ⇒ standposts: maximum walking distance = 250 to 500m; 200 to 300 persons per outlet • basic design level for domestic sanitation; an improved household latrine preferably with the use of concrete slabs
Seasonal and daily peak flow factors	• peak hour demand - 19.12 l/s
Design period for source, treatment, storage and distribution.	• source - 15yrs • treatment - 10yrs • storage - 10 years • distribution - 5 years