



Water and Sanitation Program

An international partnership to help the poor gain sustained access to improved water supply and sanitation services

Study tour on water supply management in the small towns of Mauritania

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Africa Region

Introduction

Water supply and sanitation of small towns remains an area where little investment has been made during the last few years, as development projects were more focused on the rural and urban water situation. The World Bank thematic group on Water Supply and Sanitation in rural areas, in collaboration with the Water and Sanitation Program, launched a global initiative in 1999, to develop a work program and to continue research on the theme - Management Models of Simplified Water Supply Systems in Small Towns. Electronic conferences, case studies from around the world, workshops and study tours, such as the one in Mauritania in May 2000, form the components of this global initiative on Water Supply and Sanitation (WSS) in small towns.



OBJECTIVES OF THE STUDY TOUR

Mauritania has developed since 1994 a unique policy of delegating water supply management in small towns to private providers (commonly called concessionaires/concession contractors). Today, these providers offer services in 190 of the 270 small towns equipped with Water Supply and Sanitation (WSS) networks.

The study tour's aim was to enable the twenty participants from six west African countries and Madagascar, plus various practitioners in WSS in Small Towns to compare notes on their experiences with different management models.

Organization of the Tour

The tour was organized in three stages:

1. One day in Nouakchott where presentations were made on the experiences in water supply management in the small towns of Mauritania and in the various countries represented (Benin, Burkina Faso, Cape Verde, Madagascar, Mali and Senegal).

2. A four-day field visit to seven small towns equipped with water distribution networks (two with thermal pumping stations, four with solar pumping stations and one solar/source mixed system). The participants gathered into three groups to discuss the following themes:

- i) Dialogue modalities between actors concerned with water supply in small towns;
- ii) Network and pumping station maintenance; and,
- iii) Financial viability of water supply services as seen by users, providers, decentralized government services and local groups.

3. A two-day workshop where a synthesis of the field visit was undertaken by a working group. Conclusions were presented to a panel of Mauritanian stakeholders (NGO's, research organizations, companies, mayors' associations), and other groups involved in the sector. Points for further discussion were highlighted as the basis of a case study within the framework of the Global Study on Water Management in Small Towns. The workshop also discussed the lessons learned from the study tour as



Water committee of Leikiteit

well as the possibility of creating an exchange network between the seven countries around the theme 'WSS for small towns'.

Mauritania Policy for Water Supply Management in Small Towns



For 20 years, Mauritania has experienced a marked increase in population.

The total population of the country today is 2,550,000. The country has an increasingly sedentary population (following the drought) and a very rapid urbanization (50% of Mauritanians live in cities compared to 23% twenty years ago).

Two entities under the authority of Ministry of Hydraulics and Energy (MHE) are responsible for water supply in Mauritania:

- Sonelec, a public utility, supplies water to an estimated 1.3 million users in the 12 largest cities of the country (including Nouakchott).
- The Department of Hydraulics (DH), supplies water to the rest of the country, 1.2 million people, 25% of whom live in small towns.

For two decades the number of systems under the responsibility of the DH has risen from 200 in 1980 to more than 2,500 in 2000. This includes about 270 distribution networks in small towns.

The MHE is responsible for defining the water policy, prospecting for and drawing water and preserving resources. The DH has a partly devolved structure in different regions of the country: seven bases which ensure the maintenance of motorized stations and 10 brigades of well/pit works which employ 40% of the 330 DH agents.

Water Management Models in the Small Towns of Representative Countries



The management models of representative countries are mainly community based (Water User Associations – WUA), with only a few examples of delegation to an agent. WUAs are often unstable because they lack a legal status. With decentralization the role played by communes tends to become more important.

Country	Principal management system (outside the purview of national, public and private enterprise)	Areas of private sector involvement (formal or informal)	Developments (pilot projects, policy(ies) in the process of being designed or implemented)
Benin	Community	Very few	<ul style="list-style-type: none"> • 'Small town' policies in the process of being defined • Decentralization underway (Law of 1996) which will delegate certain management decisions to the communes • Some isolated experiences in management delegation to the private sector
Burkina Faso	Community	Few	<ul style="list-style-type: none"> • Policy authorizing management delegation to the private sector in the process of being implemented • First leasing experience (failed) of pumping stations • The communes should have a role to play but decentralization is slow (about 40 existing communes)
Cape Verde	The municipalities are the designated authorities for small towns. Until recently, the management was directly under the central government.	Very active small scale private operators (sanitation and water supply to isolated centers)	<ul style="list-style-type: none"> • The older municipal services are gradually acquiring autonomy (particularly in accountancy) • A multi sector regulatory agency (water, energy and sanitation) was established in early 2000 • This agency will work on harmonizing water prices
Madagascar	Community and Municipal	Still very few	<ul style="list-style-type: none"> • New Water Code approved in 1998 • Payment for water very recently introduced • Gradual management transfer to communes under obligation to delegate to a provider (towns with a population of <10,000)
Mali	User's association and communes	Few (very little experience in delegation)	<ul style="list-style-type: none"> • The ongoing decentralization has shaken the existing processes. The communes are in place but have no right to directly manage the water services • In most cases it is the WUA which positions itself to manage the systems • Recourse to a private provider is theoretically possible but there have been few attempts in this regard • The WUA are supported by the CCAEP (advisory cell of the AEP), which operate in part by levying F20 CFA per cubic metre (m³) pumped
Senegal	Management committees (entities) look after operations. A well-established system since 1984	Still very few. The State (DEM) is still dominant in the business of pumping station maintenance	<ul style="list-style-type: none"> • Reforms underway for a number of years. Tests on 200 small villages (Regefor project) • Promotion of delegated operations and management • Compulsory signing of maintenance contracts with private operators • Users have access to credit • Eventuality of retrocession (during a study) of some small towns considered to be "viable" to the 'SONES' (a public heritage national level company) which would give their management to the SDE (a private company which manages water for the capital and other large cities)

Generally speaking, in the region, the attempts at water supply delegation in small towns to private operators are not very adventurous. It is therefore valuable for the

representatives from the six countries to discover Mauritania's experience which without basing itself on a very ambitious 'policy' (the most recent document about 'national policy'

with regard to water issues dates back to 1998) has, nevertheless been able to develop innovative practices in management delegation.

The Legal Framework for Drinking Water Distribution Network Management, Mauritania

THE 1993 DECREE AND ROLE DISTRIBUTION

Dept. of Hydraulics (DH)	Commune	Provider
<ul style="list-style-type: none"> Establishes roles and responsibilities 	<ul style="list-style-type: none"> Oversees the implementation of roles and responsibilities 	<ul style="list-style-type: none"> Definition of a concession contractor: a group, a management committee, a natural person or entity, corporation
<ul style="list-style-type: none"> Ensures technical and financial control 	<ul style="list-style-type: none"> Oversees service quality (distribution timings, water price/tariff) 	<ul style="list-style-type: none"> Paid for selling water
<ul style="list-style-type: none"> Fixes the price of water and monitors its implementation 	<ul style="list-style-type: none"> Reports to DH 	<ul style="list-style-type: none"> Paid from water revenue
<ul style="list-style-type: none"> The administration owns the facilities and ensures the administrative, financial and technical follow-up 		

THE PRICE OF WATER

It must cover:

- Operational and maintenance costs
- Staff expenses
- Provider's salary
- Various management expenses
- Renewing fees for pumping facilities
- Provision for network extension
- Taxes (communal, heavy maintenance and renewals)

ROLES AND RESPONSIBILITIES (Highlights of the 1994 Law)

Provider:

- To ensure satisfactory service to the users
- To possess the requisite staff (the minimum is mentioned)
- To maintain an on-the-spot minimum stock of hardware (consumables, spares) for operation (minimum mentioned)
- To ensure preventive and current maintenance
- To be responsible for maintenance (heavy and light) of pumping equipment
- To be responsible for the networks' technical, maintenance and upkeep management
- To regularly register the water supply network operational data
- To be responsible for financial management (billing from meters, subscriptions, payment collection)
- To establish a provisional exploitation account to be submitted to the administration
- To pay a caution amount of 100,000 MU (US\$ 500) upon signing the contract

Other highlights:

- Interruption in drinking water cannot exceed 24 hours
- A contract may cover one or more water supply systems
- Heavy maintenance work may be subcontracted to a technical specialist
- The provider pays a percentage of the price of water intended for equipment renewal into a savings account with the Post and Telecommunication Office (OPT)

Transitory Stipulation

The DH will ensure maintenance where competence and means are lacking with the providers or the private sector.

Small Drinking Water Distribution Network Management



The system of delegation to private operators is considerably developed. In 1999, out of the 266 accounted motorized stations, individual contractors or entities managed,

190 and 160 express contracts were signed between the Department of Hydraulics and the providers. Sixty-one of these are solar stations.

Contracts between the DH and the provider are for a year. It is renewable by tacit agreement. This short period does not provide much security, nor does it encourage private operators to invest in response to growing demands, especially with regard to private connections.

The price of water is set by the DH and may be renegotiated each year (although in practice this rarely takes place). The 1993 decree states that revenue from the sale of water must include a provision for network renewal and extensions. However, the network development, when it is technically possible, is financed by the communities on the basis of contributions, or by an outside agency (NGO).

The price of water, inclusive of all charges, profits and risks borne by the provider is relative to each network. An initial price based on an estimate is established with the DH and the community. This price must be updated by means of an operational account. The price of water is inclusive of all operational costs and a part of the renewal costs. The cost distribution amongst the users and the state is defined in the decree.

The provider must deposit a portion of the dues (related to the quantity of water sold) in an OPT savings account which has the provider and the Director of Hydraulics as joint signatories. This sum is earmarked for heavy maintenance and renewal of installation facilities. However, the raising of this sum remains a lengthy process. The DH has been carrying out the maintenance but is looking to reduce this activity and is beginning to contract it to the private sector.

Regarding solar, wind and manual pumping systems, Mauritania has adopted a clear policy of government disengagement. A majority of pumping stations set up by the Regional Solar Program (PRS) possess a full guarantee maintenance contract with a private Mauritanian company, Bureau Technique d'Intervention (BTI).

The state seeks similar arrangements for thermal pumping stations. The DH maintenance set-up still plays a major role, however, and no thermal pumping network concession contractor has signed with a private maintenance company.

The DH reforms are on the agenda and several studies are being conducted. The essence of the reforms is to refocus the DH's work on programming activities and monitoring work.

Situation in the Towns Visited

See table on page 7-8.

Dialogue modalities between actors concerned with water supply in small towns:

- Management models are varied. Even if in all cases a contract is signed between an operator and the DH, water supply management may be given to an individual, a community level structure, or a municipality.
- The private operators keep abreast of the users' demand (corresponding indicator: number of individual pipe connections since service began).
- Users are satisfied with the service (corresponding indicator: the excellent bill collection rate) and the systems' evolution capacity (corresponding indicator: users' financial participation to network and independent pipeline extensions).
- The concession contractors' commercial strategy encourages closer relations with the users (flexible and well-adapted commercial practices).
- There is demand from users for independent pipe connections (except in Sarandougou, a Halpulaar village, where the social context is different and demand is oriented towards public water points).
- The contract between the DH and the provider is for a short period (a year and renewable by tacit agreement). This limits the concession contractor's investment capacity and increases the cost of accessing water (repercussions of financial risks on users).
- Administrations and local collectivities do not pay for water though very often a compromise is

made (for example, the provider does not pay municipal taxes).

Network and pumping station maintenance

- A varied profile of providers with relatively flexible contracts.
- The quality of service is overall satisfactory. In some cases there exists undersized equipment with respect to solar systems (water production has become inadequate not only because of an increase in population but also because water consumption by unit has gone up due to a growing number of independent pipe connections.).
- The solar pumping stations are maintained thanks to full guarantee contracts signed with the provider selected under the PRS (company BTI). A majority of contractors have renewed their contracts with BTI and seem more or less satisfied with the service.
- Thermal pumping systems are subject to long intervention procedures for heavy repairs and lack locally available spares for normal maintenance and light repair work.
- Concession contractors are initially trained. However, greater attention needs to be paid to bring them up to requisite levels, especially with respect to technical aspects.
- Initial network plans usually exist, but are not always updated to include extensions, thereby making maintenance more difficult.

The financial viability of water supply services

- The price of water varies considerably (30 to 100 MU per cubic meter, i.e., US\$ 0.2 to US\$ 0.7) depending on the management

model, the city size and pumping facilities (thermal or solar pumping)¹.

■ DH fixes the maintenance and renewal charges and these provisions are generally respected especially with regard to the solar pumping system.

■ Presently, the price of water does not always take into account infrastructure renewal charges (aside from pumping equipment) and does not enable extensions.

■ The private contractor's pay differs widely from town to town.

■ The rate of bill collection is satisfactory from independent users; however, the contractors find it difficult to obtain payment from the local government authorities.

■ The providers do not have access to affordable bank credit.

■ With respect to maintenance, the providers have little freedom of action because the DH is still strongly involved in the heavy maintenance for stations.

Some recommendations

The participants considered three issues:

■ How can the provider contracts be improved?

■ What are the sustainable elements for community management?

■ How can the private sector become involved in maintaining thermal systems when real prices are not applied?

How can the provider contracts be improved?

■ An increase in the contract time period (presently a year) to 3 to 5 years would give the provider greater investment security.

Profile of a private operator ²

Abdallahi, a mining engineer, benefited from a placement course for unemployed persons with a degree. He was raised in the village where he now works as a private operator. He began work in 1995. The 23 km distance between the borehole and the village is one of his main difficulties. His motor-cycle has broken down and, therefore, he cannot go to the reservoir as often as he would like.

When he began work, the network had 130 subscribers. Now there are more than 320 independent pipelines. Water was very expensive before he took over (120 ouguiyas per cubic metre). This resulted in several people using the well.

By reducing the price per cubic metre, the Department of Hydraulics made it possible for the private operator to boost his work. This attracted people back to running water. Several people subscribed within the first week of this price reduction. Unlike the other contractors, "I allowed the people to buy the hardware themselves for their independent pipelines with some supervision from me. In this way, I acquired their confidence". In fact, it is important that confidence exists between contractors and users. It encourages development of works and creates healthy relations.

Presently there is a great demand for independent pipelines. However, the contractors cannot fulfill this demand unless the network is not extended to new settlements. Distrust and tribal conflicts have led to a considerable spreading and a disproportionate extension of the village. This, in turn, makes water supply a tricky affair to some homes because of their distance. Wells are no longer appreciated because the water is salty. Earlier each family had a well like it had a herd.

The plumber and his assistant respectively earn 15,000 ouguiyas and 10,000 ouguiyas. The problems in network management are numerous and have different reasons. The administration (the mayor, the police force) does not pay their bills and their consumption is high. "If I insist on payment they may create problems for me". The law does not protect private operators. They exercise their profession with difficulty. They can even be dismissed at any time.

The Sonelac may at any time ask to take over a network that it deems viable. "We work under constant fear of being dismissed at any time. All this has an effect on our way of working and the viability of our networks. Our situation is very delicate. However, I do not regret being here because I am doing good work and I am helping my 'family'...I have begun to get piping material from Nouakchott which I sell to users who want them."

When starting this work, Abdallahi did not obtain any loan. He did not receive initial training but was aware of the work of a private operator. He banks considerably on the 'GRET', a French capacity building NGO, for training in management. He earns 50,000 ouguiyas a month (FF 1,700), which is the highest declared income of a private operator. Those in charge of the public water taps, or 'bornes fontaines', earn on average 2,000 ouguiyas a month. "The cart handlers here go for supply to the public water taps. There is no competition between us or links at work. Each to his own. Most of them buy water for their own consumption." Out of the 14 existing public water points, only 10 are in full working condition. Only two watering holes are in constant use.

¹ It does not, however, mean that when the price of water is calculated, the recurring charges of the city in question is taken into account in a specific manner.

² In "Private operators in water supply management in the small centres of Mauritania", 1997, research action report N°9 headed by Hydroconseil for the program FAC "Water and Sanitation in surrounding areas and small centres", coordinated by the Water Solidarity Program.

Study tour in Mauritania Main features of the towns visited

City	Magta Lahjar	Guérou	Nbéika	Moujerita	Leikteit	Sarandougou
General information						
Water supply history	Supply ensured in 1993 within the 6-centre project (financed by the AFD)	Supply ensured in 1994 Financed by the Islamic Bank of Development	Solar supply started in 1994 under the PRS (financed by the European Union)	Source originally tapped in 1946. Solar installation under the PRS (1996)	Solar supply started in 1996 under the PRS (financed by the European Union)	Solar supply started in 1996 under the PRS (financed by the European Union)
Population	15,000 people	18,000 people	4,000 people	5,000 people	1,700 people	2,000 people
Pumping system	Thermal	Thermal	Solar	Solar+Source	Solar	Solar
Characteristics of early infrastructures	Two boreholes (31 m ² /hour in total) linked to the Sonelac network, two generating sets as standby, a 172 m ³ water reservoir	Two boreholes at an 11 km distance from the city. A 200 m ³ reservoir at 15 m. A 16 km initial distribution network. Tagat: A 4 m ³ reservoir and a 5 km network	One borehole. A 40 m ³ reservoir. 6 public water points. A 4 km distribution network	ND	ND	ND
Description of investments made by the concession contractors	At least 2 km of extensions	30 km of extensions	30 pipelines a year at the beginning. Today 7-10	Few	Few	Few
Number of independent pipelines (June 2000)	750	1,950	250	130	83	None
Number of public water points (originally/working)	12 (out of which 5 are being used)	24 (out of which 2 are being used)	6 (only one being used)	12 (out of which 3 are working)	3 (out of which 2 are working)	5 (presently all being used)
Average production (m ³ /day)	200 m ³ /day	250 m ³ /day	20-25 m ³ /day. Can go up to 76 m ³ /day	Nominal flow 65 m ³ /day	30-40 m ³ /day	Nominal flow 23 m ³ /day
Who looks after the operations & management?						
Department of Hydraulics	Maintenance (the manager often gives the advance)	Maintenance (the manager often gives the advance)	Contract follow-up with BTI	Contract follow-up with BTI	Contract follow-up with BTI	Contract follow-up with BTI
Community, users	Pay for the meters Contribute towards extensions	Pay for extensions	Management Committee formed of 3 persons each quarter	Little involvement	Little involvement.	Great involvement. 5-member committee and 8 persons in charge per quarter (voluntary). 6 people employed by the committee. The members change once a year
Municipality	Little involvement (exchange of payment of bills for municipal services against tax exemption for the concession contractor)	Little involvement (same for Magra Lahjar)	Dispute arbitration. Increasing involvement in the management	The management is a municipal employee since January 2000	Little involvement (Leikteit is not a main town of the commune)	Little involvement (Sarandougou is not a main town of the commune)
Private sector	Distribution network management given to a manager. The private sector has contacted the management for maintenance but does not intervene	Distribution network management given to a manager. The DH may give it/him the technical studies to be conducted for pipelines and extensions	Distribution network management to a private person (a trader from the city)	Reduced involvement since "takeover" by the Municipality	Little involvement since the distribution system is very small	Barely any involvement (community management)
Distribution system's management history and landmarks	Very stable management since 1993. A true enterprise	Very stable management since 1994. A true enterprise	Increasing number of disputes between the private operator and the Mayor since last elections	Until 1995; community ruling and bad management 1995-2000 private party January 2000... Municipality (water and electricity)	Management committee was set-up in 1998 (criteria - residential, literate and voluntary)	Very strong community involvement (village Halpulaar). Clear choice to only have public water points

Price of water (exchange rate at 250MU/\$)		Per month	Per month	Per month	Per month	Per month	Per month
Periodicity		Every two months (city divided in 2)	Per month	Per month	Per month	Per month	Per month
Price of a pipeline	18,000 MU (FF 562) for a max. of 40 m (meter belongs to subscriber)	22,600 MU for a max. of 30 m. Costs of breakdown 300 MU	1,000 MU (tax) + works. Cost of breakdown 1,000 MU (= several months' consumption)	ND	28,000 MU for a 60 m distance	ND	Per month
Sale price per m ² at the water point	ND	ND	30 MU for 200 litres, 1 MU for 5 litres	100 MU/m ³	100 MU/m ³	A price of 300 MU/month/household whatever the quantity. Free water for maternity, school, mosque, dispensary	No pipelines
Sale price per m ² for independent pipeline	76.9 MU/m ³	80 MU/m ³	50 MU/m ³	85 MU/m ³	35 MU/m ³		The price has gone up from 200 to 300 MU.
Remarks (has the price evolved, is it realistic...)	Price has reduced. The management finds that it is not adequate	The price has gone up from 68 to 80 MU/m ³	In 2000 the price has gone down to 50 MU/m ³ (from 85). The bill must be paid within 15 days from receipt	ND	The price may vary during the year.		
Contractual features							
Concession contract	With the DH	With the DH	With the DH	With the DH	With the DH	With the DH	With the DH
Maintenance contract	With the DH. No contract with a provider	With the DH. No contract with a provider	With BTI. The management must pay 24,000 MU/month	Contract with BTI. It must intervene within 72 hours	With BTI. The committee must pay 18,000 MU/month	Maintenance contract between the DH (Aleg), BTI and the committee. Over 5 years the committee must pay 1.1 million MU. After three years the village still owes 65,000 MU	
User satisfaction							
Quality of water	Judged to be bad. Water is bought from old wells from carpullers	Good quality	ND	Probability of pollution at source	Good quality	Salty water. Average pressure especially in winter	
Regularity in service	Fairly good	Satisfactory but recent breakdown of 15 days	Water is distributed part of the day and residential areas situated higher up have no water. Long and frequent breakdowns (2 months) in dry season	Fairly good	Insufficient. Alternate service between the two city areas	Very good. Only one breakdown in five years of the system's life	
Area covered by network	Insufficient	In some residential areas the families are too poor to contribute for extensions for themselves	Bill between 50 and 250 MU/month. Would be ready to pay more for better quality service. Payment time of 24 hours is too short	Consumption of 3-4 m ³ /family	Price varies during the year according to the season. This means 400-800 MU/month for 12 persons	Public water point too far	
Price of water (low/OK)	Monthly bill of 600 MU/month for a household of 7 people.	A bill of 1,440 MU/2 months for a family of 12. The poor households say they can pay 80 UM/m ³ but cannot pay for the extensions	A road company supplies water by truck free of cost temporarily. During the rains the people go to the well for water.	—	—	—	A lump sum considered to be affordable by most families
Other striking observations	Contributions by households for extensions	Since 1998 organization of a private operators 'GIE' to revise roles and responsibilities	—	—	—	—	—

- The provider should be involved in fixing the price of water.
- Define the communes' role regarding water system management.

What are the sustainable elements of community management?

- A better definition of respective roles involved in management services.
- Legal recognition of managing communities.
- Financial incentives for persons in charge of the community (limit voluntary work).
- Transparency in selecting those in charge and in financial management (regular internal and external audits).
- People's involvement at all decision making levels including investments and standard equipment choices.
- Maintain price equalization among users, which will guarantee solidarity.
- Limit the number of motor-generator sets and engine models.
- Create a federation of users' associations.

How can the private sector become involved in maintaining thermal stations when real prices do not apply?

- Define a political framework that will clearly outline each actor's role.
- Avoid oversizing systems in order to reduce costs.
- Identify more attractive markets for the private sector by defining a geographical area or increasing the size of their markets.
- Ultimately define incentives for providers.
- Encourage new local private actors to come forward. For example, identifying and providing truck mechanics with the requisite training.

Lessons Learned from the Mauritanian Experience



All participants agree that the strength of the Mauritanian experience lies in the fact that the legal framework is relatively light (a decree of a few pages supplemented some months later by a law). The framework has, therefore, evolved through practice and is easily understood at the local level.

This set-up allows a considerable delegation of management, which will:

- improve community management (because a contract has been signed between an individual, usually a member of the management committee, and the DH);

A maintenance contract with full guarantee for 'PRS' installation facilities (outside Tagant, Mauritania)

Customer service is looked after by the company BTI under the responsibility of SIEMENS SOLAR

- Contract with a 5-year full guarantee for spare parts and labor
- Repairs within 72 hours of being informed
- Yearly company visits to all systems
- Permanent stock maintained of spare parts (administrative supervision)
- Annual premium paid to BTI per system (from 200,000 to 60,000 MU i.e. US\$ 900 to US\$ 260)
- Annual installments paid by the providers directly or from savings account with OPT

- enable a genuine private company to manage services; especially in fairly large cities (such as Guerou and Magta Lahjar); and,

- go through a communal management system (for instance, Moudjeria where the municipality has 'taken over' the management of the system in a non-negotiable manner – it has employed the old provider as municipal employee in charge of water supply distribution).

Even though ultimately the management model remains quite flexible, the fact that there exists a management delegation contract with the DH guarantees a minimum of regularity and continuity, in particular with regard to payments for heavy maintenance and pumping equipment renewal. The flexibility in the contract allows for a good adjustment with respect to the city's size.

Whether it is solar equipment or thermal, pumping station maintenance is in fact crucial in a country which possesses practically no alternative solution to water supply except a water conveyance method. Solar equipment maintenance gives fairly good results. With regard to thermal equipment, however, the state finds it hard to withdraw in favor of the private sector thus rendering the supply chain less flexible.

Mauritania's asset is to have taken advantage of the conjunction of two events (the failure of water supply management by communes and the need to find work for young college graduates who could not be absorbed in government service). The current innovative management delegation has allowed Mauritania to obtain solid practical experiences since the DH has been monitoring these private operators for over 5 years.

CONCLUSION: And now?



The participants were generally satisfied with this study tour although the logistics were not always easy to organize. The thirty-odd people who regularly took part expressed the wish to continue exchanging information and experiences on the theme of Water Management in Small Towns. A part of this network could continue

operating via the Internet. Some of the documents written during this visit can be downloaded from the Water and Sanitation Program site.

The other outcome of this visit will be a case study that will document the Mauritania experience in greater detail. The recommendations made during this visit will contribute to the terms of reference for the local consultants who will conduct the study. The Water and Sanitation Program and the French 'Hydroconseil' French office will support the study.

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Some documents

- Ruling 87-289 dated October 20, 1987 appointing the communes.
- National Policy document with regard to water 1990.
- Policy Declaration for the Development of Water and Energy (September 23, 1998).
- Decree 93-124 dated December 21, 1993 defining operational conditions and drinking water supply equipment management.
- Law R-189 dated August 14, 1994 and its annex: Specifications applicable to operations and management of drinking water equipment.
- DH's presentation during the seminar "Water Supply Management in the Small Towns of Senegal's River Basin", Water Solidarity Program, Paris, December 1994. Act published in 1995 under the supervision of D. Allély and B. Collignon.
- Program documents of Improvement in Rural Water Services ('ASHYR - Amélioration des services de l'hydraulique rurale') and Mohamed O/ Tourad's presentation (Tenmiya) during the introduction Seminar 2000.
- Synthesis of the electronic conference "Water Management in Small Towns" organized in March 2000 within the framework of the Global Initiative "Small Towns".
- Presentations of the countries present at this study tour during the introduction seminar (Benin, Burkina Faso, Cape Verde, Madagascar, Mali, and Senegal).
- Presentation of the Urban Water Department, DH ('Service de l'Hydraulique Urbaine, Direction de l'Hydraulique') made during the introduction seminar.
- Presentation on the Solar Regional Program ['Programme Régional Solaire' (PRS)] made by Isselmou O/ Ahmednah during the introduction seminar.

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