Case Studies Submitted to the

Small Towns Water and Sanitation
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1 CASE STUDY OF KUMBO WATER AUTHORITY
Submitted by Nga Rudolf Foncha

LOCATION
Kumbo is located in the North West Province of the Republic of Cameroon around Longitude 14o E and Latitude 12o N. It has a population of about 40,000 with a growth rate of 2.7%. Kumbo Urban area covers land area of 630Km2. KWA water network is limited to the town.

GENESIS
This water scheme now called Kumbo Water Authority (KWA) was realized in 1974 for the Kumbo Community. It was managed by the Public Works Department and later from 1984 by the Cameroon National Water Corporation (SNEC)-government. In 1991, the population of Kumbo unanimously rose up against the Corporation. Reasons, which were mainly poor quality service, included:
1. Water flow was very irregular.
2. All Public Stand Taps (PTS) were closed and more than 80% of the population was deprived of potable water.
3. Number of cases of water borne diseases rose.
4. Water subscription rates & water bills were exorbitantly high.
5. Most of the infrastructure was not taken care of including watershed.
6. Lastly, this scheme was originally community based & not for profit project. It belonged to the Kumbo Community. There was a lot of sacrifice & manual labor contribution by the community. The population felt it should be as originally intended.
The government finally withdrew the management of SNEC leaving the Kumbo Community to manage it.

FINANCING OF THE ORGANIZATION
This Project has been self-financing from its creation. It's still seeking for external financing from donors for it heavy projects. It receives no subvention from the government. It has never gone in for any loan.

TECHNICAL INFORMATION
KWA has technicians such as plumbers & chemical mixer who are full time employees. Engineers are hired on temporary basis when need arises. Government technicians readily work with us on request.
Auditing Performance: The government Divisional Delegate of Mines, Water & Energy is responsible for auditing & furnishing information to both the government and KWA for performance improvement. It would have been more encouraging if there was a general department for water testing for the region.
This project has a capacity of 139m3/h & supply water to a population of about 40,000. It is a gravity scheme & has its sources from the streams getting their rise from a watershed area measuring 2008 hectares. Treatment Station:

1. Sedimentation Basin
   Length = 19.30m
   Width = 5m
   Maximum flow (Q) through basin = 139m3/h
   Surface loading = 1.44m3/h
2. Slow sand filtration Units

- Length per filter  =  20.04m
- Width per filter  =  5m
- No. of Units  =  3
- Filtration rate  =  0.29m³/h

Filtered water is chlorinated & saved in a 275,000 gallons tank for distribution to consumers. The main water pipeline is 16" in diameter. KWA equally uses diameter 12", 10", 8", & 6" for main distribution. Plumbers maintain all major valves and break pressure chambers. A hired local electrician maintains the electricity panel board.

**TYPES OF SERVICE CONNECTION**

- Domestic.
- Public Stand Taps.
- Commercial.
- Government Offices.
- Public Institutions and Organizations.
- Special - not charged.
- Raw water connection (not charged) - For gardening.
- Raw water connection (not charged) - For Domestic use.

We do not have purveyors' connection.

**METERING OF CONNECTIONS.**

All connections are metered except one that is still pending. Raw water connections are not also metered. KWA is still in the process of replacing old meters with new ones.

**AVERAGE NUMBER OF HOURS A DAY OF SERVICE.**

Under normal circumstances, workers operate 8 hours a day. But schedule two field workers on weekends and engage all other workers when there is major work on a week end or public holiday. At the Treatment Station, the average number of hours is 9 per day. A worker is always there at all times. They work in shifts.

**SERVICE INTERRUPTIONS**

For more than two years running, the Organization has not had an interruption that lasted a full day. Whenever there is a major leak or pipe explosion, more labor is hired and field workers' schedules are adjusted for immediate repairs. KWA has applied ring system in some areas and has a small alternate line to the main pipeline that serves during interruption. In case of drought, management resorts to rationing and all parts of the town covered are served daily. Notwithstanding, there is need to construct water tanks in strategic places within town to guarantee continuous water flow in the event of problem with the main pipeline.

**WATER CONSUMPTION**

Households: (average of 6) through PTS, about 27 liters of water is consumed per person per day. A total of 162 liters a day per household. All other connections have an average of about 50.71 liters per person per day. Currently, KWA has about 1,500 private connections and 68 functioning PTSs.
FINANCIAL INFORMATION
This project was financed by the Canadian International Development Agency (CIDA) in 1974 and later modified by the government in 1984. Unfortunately, KWA hasn't documents for the cost of the entire project.

Classification of Water Rates Payment.
1. Maintenance Fees or Meter Rate =200Frs CFA or US $ 0.33/m3
2. Private Connection Rate =175Frs CFA or US $ 0.29/m3
3. Public Stand Tap Rate =100Frs CFA or US $ 0.17/m3
(PSTs are not charged maintenance rate.)
Government is charged the same rate like private connection but unfortunately only 20% of the departments pay.

HOW REVENUE IS USED
It is used for maintaining the infrastructure and gradual rehabilitation of the asbestos pipes.
It is used for some projects like pipeline extension, construction of water tank for a particular area.
It is used for buying chemical-chlorine.
It is used for office running, tools etc.
It is used for the payment of salaries, wages, allowances etc.
It is used for the protection and afforestation of watershed.
It is used for training of personnel, logistics and others.
There is no exceptional clause in the Statutes to use KWA revenue for anyother thing other than for the running of the project.

INSTITUTIONAL INFORMATION
Community Role:
1. It elects representatives into the General Assembly (GA) which:
   a) Approves policies for the KWA proposed by the Governing Council (GC)
   b) Approves any regulations & rates proposed
   c) Approves pipeline network extensions
   d) Approves the budget
   e) Approves policies in respect of conditions of service, recruitment, & discipline of personnel
   f) Elects officials of the GC
   g) Amend Statutes of the KWA.
2. Is informed of how revenue is used.
3. It elects PTS officials of their circumscription.
4. PTS officials are accountable to them as well as the GA
5. Monitors the attitude of KWA personnel
6. Reports on leaks and illegal connections discovered.
7. Assist at will in protecting exposed pipes and in enforcing traditional injunction order against farming at the watershed area when requested by the Management of KWA.

Private Sector Role
1. Send their representatives to the GA and to the GC, e.g., the two mission hospitals and Nso Area Women's Co-operative Shop Ltd.
2. Reports on leaks.
3. Give short-term credit to KWA.
Local Government Role
1. Participates in KWA meetings - GA & GC
2. Requests and provided with technicians to follow up & repair damage on water pipeline network during road grading.
3. Collaborates with KWA.

OWNERSHIP, MANAGEMENT & LEGAL BASIS
Article 11.1.1 of the Statutes stipulates that “From the date of signature of this constitution, His Highness the Fon of Nso on behalf of the Nso people has handed over the Network of the Kumbo Town Water to the Nso Development Association who have delegated control to the KWA under conditions. KWA shall take over immediate control and management of the network including assets directly connected to the operations of the network.”
Nso Development Association (NSODA) is an officially registered organization and supervises the functioning of KWA.
KWA is a not for profit, apolitical organization with a financial, organizational and management autonomy. It is responsible for all the operations. To ease work and guarantee the smooth running of the organization, KWA is divided into specific organs & departments each having explicit defined functions. One of these is the treasury.
The Cashier is the only person authorized to receive and pay out money for KWA. Conditions and procedures are clear. There are exceptional situations when the Manager can handle money. She is fully responsible for any money shortage. She is therefore not compelled to give money either to the Manager or the Chairman without duly signed documents.
KWA is not responsible for any money paid other than to the cashier. The Manager constantly checks her ledgers. She gives weekly accounts of all the money paid in and out. Savings into the accounts of KWA are daily. She is officially allowed to keep a certain maximum amount for change.
The Accounting Department keeps the accounts. The Accountant and the Manager ensures that Cashier's records are clean. These accounts are in turn audited by the internal auditor on monthly basis and the external auditors at the end of the financial year. Auditors report to the GC & GA and copies of their reports and recommendations made available to KWA. Any member of the public has the right to see it in office on request.

CONTRACTUAL ARRANGEMENTS
There are limited to the supply of plumbing materials, tools, short-term projects such as tank construction, hiring engineer for studies, plan etc. PST beneficiaries have the right to charge higher rates for those using water from taps for gardening, house construction & for commercial purpose.

PLANNER, DESIGNER, & SUPERVISOR OF FACILITIES CONSTRUCTION
These higher technical services are hired when need arises. We equally rely on experts who are members of the GC. Their charges for service rendered are comparatively cheaper.

INGREDIENTS FOR SUCCESS

Fiscal Autonomy
This factor is very crucial because it allows KWA to operate effectively and efficiently within its financial limits. Priorities and emergencies are easily handled because finances are handy. Workers are
aware and work harder to improve revenue in order to have reasonable basis to request for better working conditions.

Revenue generated from water sold is strictly restricted to KWA water project. KWA GC and officials are only due sitting allowance. Their functions are non-remunerative. The Cashier of KWA as instructed by the Manager usually pays their allowances. They have a budget head that is approved by the GA. It insists that it should not be exceeded. The Manager manages the budget as a whole. He is closely supervised by the Secretary General and the Financial Secretary. The GC is not an autonomous organ.

This autonomy greatly increases KWA's incentive to be financially viable. This is one of the reason the current Manager was recruited to salvage the deteriorating situation. KWA since then has had incredible financial and general progress.

Financial and technical regulations fall within the Statutes of KWA & tie with the need for effective and efficient performance and the satisfaction of stakeholders and customers.

**Financing**

KWA has been having short-term private financing in the form of taking material on credit and paying later. The organization has no subvention from the government. Currently, they have a small project financing for the fencing of the watershed from HELVETAS - Swiss Association for Technical Assistance.

**Cost Effective Design and Works**

The capacity of the infrastructures meets the current & future needs of Kumbo. It is estimated that the project is capable of meeting the needs of Kumbo up to the year 2020 when the population is estimated to be about 68,000. By this time they will need to add another diameter 12” pipe from the main tank. The technology in place is not too complex to manage. It is a gravity scheme although we pump water to higher areas above the treatment plant. Water rate in this area is not increased because of the additional cost.

In 1998, the Management was able to convince the beneficiaries of the PTSs to start paying for water consumed simply because they were made to understand that existing asbestos pipes need to be rehabilitated with high pressure PVC pipes and that there was no adequate money to start gradual replacement. At the end of the year, 50 heavy-duty pipes were bought in order to motivate them and fulfill the promise of gradual rehabilitation of asbestos pipes. Major works are based on community priorities. These projects are examined at the GA before the budget is approved.

**Cost Effective Operation**

KWA is operated and managed in a formal professional manner. All the organs, officials, employees, representatives, PTS officials have explicit defined functions. Procedures are to an extent flexible for greater performance. It is partially run as a community business, i.e., to at least brake even and have a surplus for small projects. That is why PTS consumers were convinced to be paying.

Management is very cautious not to allow the total forces of demand and supply to determine price at which we supply water. Since the poor have never been use to directly paying for water consumed, this habit must be gradually inculcated in them through education and participation in the decision making for water payment. Their participation has been very effective with regard to the payment of water bills. Notwithstanding, we now consider water as an economic good as well as an absolute necessity. Users feel very satisfied with the water rates. Firstly, it is their
decision that is implemented. Secondly, when they compare with SNEC rates in neighboring towns - more than 50% difference to their advantage. Some consumers lived the hard experience in Kumbo when the project was run by SNEC.

Water waste is one of the major problems that management has been working against. It was discovered that free PTS consumption led to excessive waste that was greatly felt during dry seasons. With the introduction of payment by PTS consumers, there has been no water shortage during the last two dry seasons.

One of the reasons for metering PTS was to determine water waste and value through leaks so as to measure efficiency and performance.

Efforts are made to ensure that reported leaks are repaired forthwith. Major potable water waste is recorded from asbestos pipe explosions that need to be rehabilitated.

**Political Support and Conflict**

KWA belongs to the entire Nso community and is apolitical. Experience has proven that those politicians either need to support or allow the project as it is or risk their political popularity. Political conflict within the town has no adverse effect on the water scheme. It is very risky to bring in any ideas, which could be judged as being politically motivated. Such a person can be disqualified from participating in KWA meetings.

Service is provided for the entire community. Even where smaller schemes exist, KWA still extend water supply there especially for the dry season period.

**Management Stability**

The ownership of KWA, as already states in page 4 above, is indisputable. This scheme was realized with the financial & technical assistance from the CIDA. More than 600 families were displaced & resettled from the watershed area. No financial compensation has ever been made. The community provided the manual labor. Thanks to late Professor Bernard Fonlon, indigene, who negotiated for this aid. NSODA legally owns and supervises it.

Management is based on framed legal Statutes of the organization. Related State laws are applied and respected, e.g., labor laws. KWA is very cautious and confident of the water quality being supplied to consumers. But it would have been good if there was another state or neutral department to carry out regular water testing to see whether or not standards are meet.

To keep the organization on track, it has its mission, goals, organs, standing committee, financial regulations, expenses & allowance specifications, meeting guides, jurisdiction & assets laws, operation guide and amendment of the statutes provisions explicitly written and made available to those who need it. The statutes provide checks and balances at all levels. This is the catalyst of management stability. Also, the GC/Standing Committee on the one hand, and the Manager/personnel are working out of their consciences and are incredible, considering the allowance and remuneration. There is a lot of sacrifice.

Operations are vested with KWA. Decision making on operations is directly related to available finances and based on the operational priorities. Delays are avoided and priorities given due weight. Sustainability is guaranteed since our focus is on the organization's mission. Also, very important is the integrated management approach applied. Suspicions, rumors and sense of ownership as well as emotions of recognition are crucial.

In order to consolidate support for the organization, His Royal Highness the Fon (king) of Nso (Kumbo inclusive) is the only Patron of KWA. A unifying force and pride of the entire Nso people. Four other strong traditional authorities are members of the GA/GC/Standing Committee. Their impact is invaluable in sustaining support & disseminating information. They closely work with the Manager on daily basis as need arises.
It pays politicians who support the organization as it is and vise versa. Some influential community members have further distinguished themselves by supporting the water scheme through their expertise, e.g., water quality testing by Professor Dr. Daniel Latum. Most people in Kumbo now understand the necessity for potable water. Since the forces of law and order opt to protect our plants during instability periods, KWA operates freely during these times. Only some members of the Council are changed at a time in order to ensure a continuous smooth functioning of the organization. E.g., the Chairman/Vice and the Secretary General/Vice can not all be changed at once.

The constitution of KWA makes it very difficult for the Chairman or Secretary General by his policy to adversely affect the entire service. Community sense of ownership ensures sustainability to an extent. They are ready to contribute morally, financially, and physically when need arise. This is why some elite who resides outside Kumbo still contributes a lot towards the progress of the organization. The organization is classified above political level and remains apolitical. Although KWA is autonomous, it is ready and work closely with other related government departments and organizations. Joint activities are limited and guided by the official mission of KWA.

**MISSION OF KWA**

The mission of KWA is to efficiently and effectively organize the collection, treatment, and distribution of potable water at low rate to clients consistent with a high level of quality, reliability and customer satisfaction.

**GAOLS**

1. Sustain all infrastructures and installations.
2. Charge water rates not for profit motives.
3. Water quality must meet international standards.
4. Collaborate with both the traditional & administrative authorities.
5. Protect watershed area and the entire pipeline network.
6. Work closely with international organizations.
7. Create departments for effective & efficient management of the organization

**ORGANIZATIONAL ARRANGEMENT**

Patron: His Royal Highness the Fon of Nso Sehm Mbinglo 1 is the only patron.

Organs:

**The General Assembly**

It consists of consumers, traditional, external elite, important interest groups, businesspersons, hospitals, student union representatives, engineers, lawyer, & accountants. All the designated zones of the town & stakeholders are represented.

Ex-officio members include the Major of the town & related government department.

It is headed by Chairman & normally meet once a year. It is responsible for the approval of policies, regulations, rates, major projects, budget, and policies in respect of conditions of work, recruitment, discipline of personnel, elections of officials of the GC and amendment of the Statutes. These representatives work closely with the Manager on daily basis on matters affecting their area of jurisdiction. In this light, their functions are clearly defined to enable them know what is expected from them. Very active & efficient ones are motivated with rewards at the end of the year.

This organ oversees the GC.
The Governing Council
It consists of elected members from the GA, ex-officio members, President of NSODA, & Patron's representative.
It is responsible for the proper management & maintenance of the Kumbo Water supply network. Matters to be approved by the GA are studied &/or prepared and forwarded by the GC. It employs, disciplines & dismisses personnel of KWA. Approves all expenditure and contracts within the budget limits. Set up committees. Represents KWA before the Government and legal matters. Officers of the GC include the Chairman/Vice, Secretary General/Vice & Financial Secretary. Their functions are well defined. It is responsible to the GA.

The Standing Committee
It meets to resolve problems referred to by the Manager. It renders written accounts to the Council. These help to limit & check unnecessary frequent Meetings by the Committee since members are due sitting allowances.

Auditors
There are internal and external auditors who audit the accounts of KWA and report to the GC & GA.

The Manager
He/she is recruited on full time by the GC to run the organization on daily basis. His functions are defined by the Statutes & do not conflict with those of the other officials. These include:
- execution of all decisions assigned to him.
- manages human resources of KWA.
- ensures that all regulations concerning the proper functioning of the project are followed.
- ensures the collection of rate, fines etc.
- negotiates contracts for the services and recommend them to the Council for approval.
- undertakes approved missions
- prepares budget estimates and accounts for the year & present them to the board.
- approves water connection.
- makes and keeps inventory of assets of the organization.
- maintains stores and accounts. Ensures that parts and chemicals are ordered in advance.
- ensures regular inspection of the network.
- maintain good relationship with other organizations, institutions, and departments.
- maintains good relations with customers.
- makes monthly and weekly financial returns to the Financial Secretary and Secretary General.
- prepare quarterly and annual reports for the board etc.

PUBLIC STAND TAPS
Management has been further decentralized to the grass root level. Beneficiaries of each PTS elect their officials - The President, Treasurer & Secretary, to run it. These officials are answerable to them. They frame their rules and regulations. Furnish the office with a copy. The manager assists them when they so request to enforce decisions against violators.
The main office, reserves the power to disconnect any PTS if it is found dirty, for example. They are fully committed in running their taps and petty community disagreements are easily solved with no adverse effect on the management of the scheme.

**EXPENSES AND ALLOWNCES**
- Members of the GC & Officials are only due sitting and mission allowances. Office expenses are provided in the budget. The Patron is due reception allowance as determined by the GA.
- Financial Regulations cover the budget, revenue, banking, expenditure, reports and record keeping.
- Budget:
  KWA operates on the basis of a budget, which must not be exceeded except approved by the GA. This budget is operated by the Manager under strict supervision by the Secretary General. The Financial Secretary carries out monthly internal auditing & impromptu cash checks. He equally verifies balances at bank accounts.
- Revenue:
  Comes from charges to consumers, water connection & reconnection fees, fines for abusive uses/unhygienic PTS & water theft, sales of scraps, sundry income, gifts or grants etc.
- Banking:
  Money received must be paid into the bank account of KWA at the end of each day. The Cashier cannot keep cash more than a certain amount set by the GC. The signatories of the KWA bank account are the Chairman (or vice by official delegation), the Financial Secretary &/or the Manager. The Manager makes weekly financial report to the Financial Secretary of payments into the bank account.
- Expenditures:
  No loans of any sort are whatsoever granted by KWA. The Manager operates impress account. The GC determines the amount, which must be accounted for. Any purchase must be done by an official purchase order duly approved & must be backed by authentic receipts. In case of approval of any bill due payment, especially above a certain amount, the Manager, Secretary General and Chairman must co-sign in that order. Salaries may not exceed 30% of the income of the Authority from rates.
- Reports:
  The Manager makes available monthly reports of income & expenditure to the Secretary General and Financial Secretary. Audit reports must be submitted to the GC & GA.
- Records:
  the Manager keeps cash receipts booklets, payment voucher files. Cash book, general ledger & journal.

**CAPACITY OF MANAGER & OPERATORS**
The Manager, NGAH RUDOLF FONCHA, is a Bachelor degree holder in Law and currently advancing his managerial, administrative, leadership and computer skills in the USA. The Chairman, NTANTENG CHRYSSANTUS, has Master's degree in mathematics, the Secretary General, VIBAN MAURICE is a holder of first degree in Geography & Financial Secretary, NGAH STEPHEN, is a retired Accountant. In general, the current officials are very competent and doing invaluable job.

**HYGIENE & SANITATION**
The community is directly involved in hygiene education & sanitation especially beneficiaries of the PTSs. Taps must be kept clean or are disconnected and a fine levied before any reconnection.
FLEXIBILITY
Since the operation is in the hands of KWA, flexibility is guaranteed as the principal focus is on sustainability and customer satisfaction. But this flexibility is within the context of the rules and regulations. This can also take the form of delegation of power. The Manager hires and pays temporary labor. When the amount involve is high, the Secretary General must be informed even orally.
Where the Statutes is silent, and the main issue in question is within the Mission of KWA, the Standing Committee and the Manager resolve it or an Enlarged Standing Committee is scheduled to examine the issue and a written report is submitted to the GC and the GA.
KWA is relatively big and carries out its purchases on large scale. It is the Manager's intention, if approved, to create a forum for small water schemes within KWA area of jurisdiction and the reason is to share advantages of working together since the smaller schemes have a lot to gain from KWA.

TECHNICAL SUPPORT
The management of KWA provides technical support to beneficiaries of PST. Their taps are repaired free of charge. They only buy the required parts. Management readily provides some parts to them at cost price. The Manager helps in enforcing some of the their decisions, and educating them on how to manage their taps. The Manager helps them in resolving conflicts which are above them.

INFORMAL REGULATION - ACCOUNTABILITY
The management of KWA is highly accountable to the users. Users’ complains are responded to immediately. More important, we ensure that they have water regularly. If there is any scarcity, the little is rationed to all users. Any user has the right to complain if the bill is questionably high. Technician(s) is assigned to examine the cause or justify the bill. Where the water meter is faulty, the bill is adjusted accordingly. At times, when the bill is too high, caused by an unidentifiable leak, which the customer could not be reasonably reproached, the Manager can use his discretion to adjust. Management also teaches customers on how to check leaks after the water meter. Clients' accounting cards are open to them. In case of any financial doubt, we only use receipts and records to prove. KWA does not accept oral testimony. The audit financial reports & end of year balance sheet are open to those who want to know more about the finances of KWA. Journalists are free to participate in our meetings & report in their newspapers for the users and stakeholders.

COVERAGE
KWA has plans to rehabilitate all asbestos pipe networks, which covers a total distance of about 20km. Since this is a major project, that needs a lot of money, while seeking for grants, we decided to start handling it piecemeal. Some 50 diameter 300mm, 250mm, & 225mm PVC pipes have been bought to replace worn out asbestos pipes when they explode. There is also a plan to establish an alternative main pipeline covering a distance of 2km once resources are available.
We equally have plans to extend the pipeline network to five uncovered areas. Currently, KWA is working on one.
KWA also has plans to construct water tanks in strategic areas in town in order to insure regular supply of water. One tank has been constructed for the new area where extension work is going on. The Manager and operators are motivated and empowered to an extent given the limited resources available.
2 LOCAL WATER BOARDS SUPPORT PROGRAM IN SENEGAL

Submitted by Cedric Estienne

THE WATER SUPPLY MANAGEMENT IN SENEGAL

This program called PAGE (for Programme d’Appui à la Gestion de l’Eau, - Water Management Support Program) has been carried out by ISF\(^1\) and AFVP\(^2\) since 1996, in the Matam department, in the North-East of Senegal.

Funded by different donors, such as French Cooperation, French Regional Water Distribution Operator, Private funds, and (if accepted) by the EEC, this program reaches 47 (up to one hundred into 2001) small towns along the Senegal river.

What’s a « small town » in Senegal

They have a small water piped scheme based on a motorized pumping in a bore hole, that supplies from 2 000 to 10 or 15 000 inhabitants for the biggest towns (the average size is about 5 000 inhabitants). The typical water distribution network has from 5 to 20 standposts, and one or two drinking trough for cattle. Over 3 or 4 000 inhabitants, the number of house connections begin to be significant (up to 200 house connections in some towns of 8 000 to 10 000 inhabitants), but is also a reel problem in terms of hydraulic balance of the network (lack of pressure in some areas, increased number of leaks…)

Piped water scheme are numerous, but in bad condition…

In fact, most of the networks were designed for a few standpipes, and other connections were added, without any technical study, by local plumbers. Water boards often realize the damage « wild connections » can cause, but since some connections have already been authorized for some families, it is socially difficult to refuse later this right for other families. To refrain this uncontrolled growth of the network, a fee is often required to have an authorization to get connected, but even if it is financially interesting for the water board, it doesn’t improve the connection quality in any way…

…and the service quality is disappointing

That’s why the level of service is often very low. In the small towns where the network is in a bad condition (too many leaks, too many connections, imbalance between high and low areas), the employee in charge of pumping starts filling up the water tower early in the morning, and open the gate to the network when the reservoir is full, but goes on pumping. Most of users have their taps already open, and « wait for the water to come ». Some will have it quickly and in a good quantity (you can sometime see banana trees in private yards !), depending on the altitude of their area, the number of connections around, the size and the condition of the pipes, and others will have to wait for the first ones to turn off their tap to get a chance to see water coming in their area.

Except for one or two towns, users pay a fixed price for water, and the first ones to get water at their connection often let their tap open all day long with a basin or a barrel underneath. Thus the service is nearly non-existent for some families (they go to other area, and take the water by families that have a working connection, or to old wells), and intermittent for others, who can have water when the pumping is on, which lasts usually about two or three hours in the morning (around 8 o’clock), and one or two in the evening (around 6 p.m.). The rest of the time, the network is empty.

\(^1\) ISF = "Ingénieurs Sans Frontières" – engineers without frontiers
\(^2\) AFVP = "Association Française des Volontaires du Progrès" – French association of the voluntaries for progress
Small towns… or big villages ?

This situation is usual in the small towns over 5 or 6,000 inhabitants. But it is very different in smaller towns where there is very few house connections, people go to public standpipes, and don’t waste too much water. The limit between these big villages and the small towns previously described, is not a number of inhabitants, but rather a type of users behavior, and a type of water supply scheme.

− In smallest towns, that can be considered as big villages, standpipes prevail, and the water piped scheme is regarded as a collective good – often the main facility of the village. People don’t feel they are paying for water, but for having the pump of the village working. Production stays around 25 or 30 liters a day per capita, sometimes including cattle.

− When users behavior is rather « urban », water supply is more considered as a service, people act more like clients, and get as much as they can for the price they pay. Public standpipes are used by low-income household, and most of the users have house connections. In such networks, supplying 8 to 15,000 users, daily production can reach 60 to 70 liters per capita, with a lot of waste.

Traditional way of payment leads to insufficient income

The waste of drinkable water is also encouraged by the fixed price payment, regardless of the size of the town. A volume calculated payment reduces significantly the daily consumption, as seen in a group of villages (from 500 to 2,000 inhab. 6,000 inhabitants overall), where water is sold basin by basin. At 5 FCFA each (approx. 200 FCFA/m³ = 30 cts/m³), the daily consumption varies between 9 and 19 liters per capita, depending on the season. In one of the villages, users used to pay each basin until a rich shopkeeper decided to pay every month for the whole village (4 to 500 persons) ; the daily consumption (at dry season) increased from 7 liters per capita to 25 !

The water board of these villages set the price of the cubic meter at 150 FCFA (22 cents) because they calculated a cost around 130 FCFA/m³, including the cost of replacement of the system. But the cost of production depends a lot of the volume produced. 130 FCFA/m³ is a result for a very economic system (electric pumping, network very simple and in very good condition) and a limited production (no waste). This case being rather unique, the production cost in other towns is based on other figures. In very small towns, the fixed charges can reach over 70% of the total cost if they include the replacement cost. Production cost is around 150 to 200 FCFA/m³.

But in towns with a « quasi-urban » service, the cost decreases because of the over-production due to wasting habits. It can fall down to 70 or 60 FCFA/m³ (9 cents) considering the number of cubic meters pumped every day.

And the real production cost is not taken in account

But this cost is very theoretic, because water boards weren’t used to calculate it before the support of the program, and they haven’t set the price of water considering these costs. Household have to pay a contribution for the water system which is « politically » fixed to be acceptable by the whole population. The contribution is more expensive for a house connection than for those who go to the public standpipes, but regardless of the consumption, and rather for service level reason. Thus, the price of water is far below the real cost of production, which is not totally covered by the users contribution. Most of the water boards cannot spare funds in order to replace equipment, and even maintain the existing network.

Readjusting price and cost is the main issue for the water boards, but they need a support to analyze their situation, and clearly consider solutions to use. Selling water by volume seems to be the best solution, but it is not applicable right away. Paying water by bucket or installing meters on house connection requires time to be accepted by population. The cost per m³ calculated on fixed price
consumption won’t be valuable when consumption will decrease because of the price, or some household will be unable to pay their debt.

**Water management is not only a matter of price calculations**

Water boards have in fact nearly no room to manoeuvre, because population is used to a bad water service, and is not ready to pay more for the water. Increasing the service quality to justify a raise of price, is very difficult for water boards who manage a system in bad condition. The first need of a water board is, eventually, to reinforce its authority on users. They evolved from unofficial interlocutor of the State services when these ones were taking the whole water service in charge, to complete voluntary managers in charge of the system and equipment. Until recently (1997), their prerogatives were rather vague (collecting revenues, keeping accounts, …), as their legal basis. Members of the water boards are usually selected by heads of families (especially notables) and have no expertise of management. In many case, significant decisions have to be made in a meeting with notables, and unpopular changes may thus never occur. This lack of independence of the water board from the population makes it impossible to have contractual arrangements, audits of performance, and unpopular decisions.

At present, the senegalese State is planning a reform to clearly distribute responsibilities between State, users, private operators and local government. In fact, the two last actors are really new in the water management, and still not really involved. The facilities remains the property of the State, which delegate the management (including the daily charges of production and funding the equipment replacement) to the users represented by an official water board. Only the bore hole and the water tower shall be maintain and replaced by the State. The private sector should be involved for maintenance work, as plumbers and mechanics, and the reform recommends that the water board delegates the production functions to a private operator. But users and water boards are very reluctant, afraid of price rise for ones, and afraid to « lose the water supply management » for the others. All this description tends to give a very pessimistic idea of the water supply management by water boards. In fact, if many « ingredients for success » are missing, other indicators tend to prove that the situation can be significantly improved without changing drastically the present actors role.

**POTENTIALS AND IMPROVEMENT INDICATORS**

**The importance of training**

Water boards are willing to improve their capacities and to manage their facility in a professional manner, but they don’t have the abilities to calculate costs, provisions for replacement, and even price of water.

The short training given to water boards members by the program have been very appreciated, because it gave to them the means to prove to users the need to raise household contribution, or to evolve to a volume payment. Most of the water boards are now convinced that a volume payment is necessary. But it is very difficult to have the agreement of the population. Most of the time, water boards prefer not to begin with « soft changes ». After the training, and a few calculations on their income, they often decide to launch an inventory of users, cattle, house connections, which is the first step before raising water price. Others started a large campaign to reduce overdues, when they realize their « commercial losses ».

They don’t hesitate to propose re-election of the water board (election is not exactly the right word, because it is never really voted, but « decided »), in order to comply with the new national regulation, and especially to have more legitimacy in front of population. In fact, the autonomy (for decision, rules, …) of the water board improves quickly, as soon as people are informed of the new deal brought up by the reform (the State stops funding the water service, population must be charged for the whole
water costs, water supply systems could be operated by private managers, …). By its official mission, the water board is regarded as the one that must act. And after the training of the support program, members of the water board are considered as the ones who know what to do.

**Water boards first need authority and trust of the users**

As soon as they feel they have better authority or trust of users, water boards write up with the support of the program a regulation text for the use of the water facility, including payment deadlines and fines, and voted by a user-representative assembly.

But still, water boards have no financial autonomy, because revenues collected for water are insufficient. They can get financial support from migrants, for serious breakdowns, or investments to expand or restore the system, water management is not considered as a self-funded business.

To this point of view, outsourcing to the private sector is not well considered, and often associated with the idea of a more expensive service. Users know that any better service would be more expensive for them, and this is part of the reason for the present opposition to progress.

The only way for water boards to increase their financial means, is to prove to users the necessity of price raise, and that demands legitimacy, transparency and training. And they can be very efficiently helped by a training and support program such as the PAGE.

Compared to many reconstruction program or new investments, this kind of program allows, for a very low cost per town, to improve the viability of previously funded facilities. At the moment, only few water boards have climbed one level of service quality. But the mechanism of this progression is now known, and can be reproduced.

Yet, some blocking factors still are very hard to overpass with training and support program.

- **Political and management instability** : as long as the water board or the town government frequently changes or does not receive population’s trust, no improvement can be planned in water supply service.
- **Technical insufficiency of the piped network** : in spite of the willingness of the water board, if a part of the population is not supplied, a part of revenues won’t be collected, and the network won’t be repaired. Getting out of this vicious circle demands technical studies and significant investment. For this reason, the PAGE tries\(^3\) to install a fund for technical studies in the program, to pass over technical difficulties, and also to ensure management abilities before a new investment.

Small towns which are in a status quo for these reasons go on improving their water supply service with the support of the PAGE.

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\(^3\) The FET (Fonds d’Études Techniques – Technical Studies Fund) was a part of the program definition, but is still not funded.