

**Community management and partnership
with civil society**

workshop in Nairobi

March 5-7, 1997

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EXPERIENCES IN COMMUNITY WATER MANAGEMENT

MURUGI MUGUMANGO WATER SOCIETY

BY:

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COMMUNITY MANAGEMENT AND
PARTNERSHIP WITH CIVIL SOCIETY
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1.0 INTRODUCTION.

Murugi Mugumango water society is situated in Murugi and Ganga locations, Mwimbi Division of Tharaka/Nithi District in the Eastern Province of Kenya.

It comprises an amalgamation of five smaller water groups namely, Wiru formed in 1975, Kianjagi 1977, Kiriani/Kithare 1978, North and South Mugumango in 1978.

Wiru, Kianjagi and Kiriani/Kithare water projects merged in 1980 to form Murugi water project and proceeded to build an intake on Kamara river and also laid approximately 2.5km of 6" delivery main. North and South Mugumango water projects merged in 1982 to form mugumango water project and proceeded to build an intake on river mara.

Murugi and Mugumango merged in 1982 to form Murugi/Mugumango water society. It was observed that, their activities would be more economical and easy to implement if they worked as one unit. The project had therefore grown to include three sub-locations comprising approximately 140 sq.km.

The project continued to struggle independently until 1983 when it became the first water project in Kenya to receive external assistance from Canadian Hunger Foundation (CHF).

As a legal measure, the beneficiaries sat down and formulated the By-Laws according to the local requirements. This was done with the knowledge of all the members and whatever contains in the By-laws was a general view of all the members. (It can only be amended by the General Meeting of Members).

The by-laws covered all the areas of the project from planning to operation and maintenance and explained how funds shall be raised towards the project development.

The by-laws and application forms were then forwarded to the registrar of societies and the society was registered on 7th June 1984 as service rendering society (Non profit making) under the Societies Act Cap 108 Laws of Kenya.

This was necessary on one hand to make it a legal entity and on the other hand to avoid direct interference from the governmental or political organizations.

In 1984, agreement between the donor(CHF) and the community was signed and 2.8 million worth of materials, technical assistance and training of staff on the h job was received.

The materials served to construct 60km mainline and other non local materials. The society had e raised Ksh. 600,000= as their financial contribution w towards the project before CHF came in.

The society provided locally available materials e.g building stones, sand, ballast etc and all labour required(both skilled and unskilled) for implementation. CHF appointed Research and Planning Services (R.P.S) to administer the project on their behalf and Technoserve Incorporated to implement the project on behalf of CHF.

2.0 OBJECTIVES.

The projects objectives for which it was established were to improve the health and living standard of its members in accordance with self-help principles through provision of piped water throughout the project area and in particular to:

- 2;1 Establish intake, storage tanks, break pressure tanks, main pipelines and other infrastructure necessary to deliver water to the water project area.
- 2.2 Ensure that water is made available to all qualified members within the project area on an equal basis.
- 2.3 Ensure that systems and procedures are established and maintained for on-going operation and maintenance of the water project for the continued delivery of water to members after the water project has come into operation.

3.0 PARTICIPATING/PARTICIPATED AGENCIES.

- 3.1 Ministry of land Reclamation, Regional and water Development MLRRWD.

This provided technical officers in the initial initial stages of survey and drawing of route plans.

- It provided materials worthy Ksh.200,000 to put up the offices building.
- It still provides technical advice to the community through the management committee.

3.2 MINISTRY OF CULTURE AND SOCIAL SERVICES.

This is represented in the management committee by Social Development Assistants.

- The S.D.A advises the management on community mobilization and participation in project development.

3.3 CANADIAN HUNGER FOUNDATION(CHF),

This is the main sponsor of the project and it also offered technical assistance, for example provision of experts during implementation.

3.4 Swedish International Development Authority(SIDA)

This provided 13 master meters and their installation.

4.0 PROJECT ACTIVITIES

The project activities include:-

- 4.1 - Supply of water to qualified members
- 4.2 - Expansion of pipelines
- 4.3 - Improvement of supply system to cope with the increasing No. of consumers.
- 4.4 - Education campaigns on operation and maintenance of the scheme.
- 4.5 - Education of staff on management of the scheme.
- 4.6 - Training other interested communities on community based water management. Trainees or visitors compensate as follows:-

1	-	5 people	Ksh.	1500=	per day
6	-	10 people	Ksh.	3000=	per day
11	-	20 people	Ksh.	6000=	per day
over 20 people			Ksh.	300=	per person per day.

5.0 PROJECT MANAGEMENT

(See the attached appendix on organization chart)

5.1 General Meeting.

The supreme authority of the water project rest in the General Meeting of members which is held once annually or on such other occasions as may be deemed necessary in accordance with the By-laws.

5.2 Management Committee

The affairs of the water project are managed by management committee which consist of 9 members elected by general meeting.

4 in Murugi, 4 in Mugumango and 1 general member. Chiefs, assistant chiefs and social development assistants are members of the management committee by virtue of their offices. The management committee is a policy maker.

5.3 Executive Committee.

The office bearers of the management committee are the Chairman, Vice chairman, Treasurer and Honorary Secretary.

They are elected and responsible to the management committee.

The office bearers sign all the documents, contracts and cheques on behalf of the management committee. The Executive committee implements the decision or policies of the management committee.

5.4 Sub-Committee.

The society has two sub-committees namely

5.4.1 - Murugi Sub-committee representing the Mugumango area
Murugi area of water project and

5.4.2 Mugumango sub-committee representing the Mugumango area
of the water project.

Each sub-committee consist of eight members elected at the general meeting and include the four members of the management committee representing that area.

The main responsibilities of the sub-committee are to provide a medium of communication between members and management committee and to plan and organize labour contributions by the members among others.

5.5 Project Personnel.

The project has seventeen(17) members of staff appointed by the management committee through interviews.

They are headed by a project manager who is responsible to the management committee.

He is responsible to the day to day affairs of the project.

- Each worker has a cleary defined daily task so that his performance can be measured, caused of inefficiency examined and mak more efficient methods found.
- Staff working conditions are continously improved and standards set to ensure that tasks are easily accomplished.

5.6 IMPLEMENTATION OF THE OFFICE SYSTEMS.

5.6.1 Field Operations.

After a member completes his payments, he has to fill the agreement forms and other necessary application forms for water connection. After his connection is authorized by the management committee, the following actions are taken:-

- a) Inspectors take the measurements from the nearest tee to the members homestead. This enables the office to know the number of pipes required. The member does the trenching and provides all the required unskilled labour.
- b) The field supervisor verifies the measurements before they are taken to the project manager for final authority.
- c) The member collects the materials from the stores after which a plumber is sent to do water connection to the member.

Items looked at for proper maintenance and operation of our water system are:-

5.6.2 Accounting System.

This is the responsibility of the project manager.

Proper records are kept for control over the financial management of the water supply.

Revenue collected and individual account records are maintained in the office so that total billings every month is well known.

The financial report is compiled from the data from income and expenditure accounts.

Also estimates of billings and informations on actual collections arrears are provided. Stores issues in relation to maintenance costs should be readily available.

5.6.3 Connection records.

Each connection has its two years record in form of water ledgers where, the connection number, meter size, date of connection and necessary information are all shown.

5.6.4 Meter Records.

This should indicate the location, maintenance record and

reading of meter which is reviewed every month to determine faulty meters that require replacement or checking.

Monthly summaries are carried out covering, outstanding bills, at starting of period, newbills, payments, outstanding bills at the end of month.

5.6.5 Meter Reading Books.

These record the present information from the field meter reading and dates in these books is transferred to the water ledger which helps in preparation of bills.

5.6.6 Conflicts resolution and prevention.

If a member refuses pipeline to pass through his shamba, he/she is expelled from the water project and the alternative route found. It is important that members sign a ^{grant of easment} before the implementation.

- Education to members is necessary on operation and maintenance of their project. by
- We encourage payment of shares, asking members to deliver coffee cherry to our accounts with coffee societys. This has assisted very much.
- We discourage irrigation by able people during during dry seasons. One may have his/her water disconnected and or fined.

5.6.7 The general meeting of members is held once annually. It is in this meeting where the members give their ideas and are considered. If approved the committee implements.

5.6.8 Ownership.

The project is owned and managed by the local community. We are now in the process of legally possessing all pieces of lands where we have constructed our tanks and even where our offices are to avoid any future problems which may arise.

5.7 Technological.

As early as 1914, the former chief organized the local community and trenched an open farrow. The farrow was met to serve the local coffee factories. It also served for domestic purposes for the local community.

Early in 1970's the different groups started organizing themselves and thought of piped water in order to reduce pollution and have water closer to their homes.

This was very simple because the systems were gravity fed. Although the community had very little technical knowledge, they managed to lay a distance of two km of main line before they got a donor who assisted in financial support and technical services.

6.0 COMMUNITY INVOLVEMENT AND ORGANIZATION.

This project was initiated, owned and managed by the local community. We encourage social understanding among the members by division of project area into sub-units in order to ease the labour work and to speed up information in the entire project area. These sub-units are headed by sub-committee leaders to whom the members of the area report when they face problems before the matter reaches the top management committee.

When it comes to location of tees from which the consumers will tap water, it is these sub-committee leaders who are called upon to assist the project technicians.

During the installation of pipelines we make sure that the consumers are informed right from the beginning about simple technical problems which may arise on the water pipeline and how to avoid them.

Members are made to be prepared to contribute towards the operation and maintenance of the structures. Otherwise there is no point of incurring high investment costs if in the end there is no funds to maintain the installation structures.

This is done right from the beginning where whoever wants to become a member of the project must agree to buy application form, pay registration fee, membership fee and also to be metered in order to pay for water according to the quantity consumed.

7.0 OPERATIONS AND MAINTENANCE.

The consumers after being registered and enroled as members pay the shares and deposits as follows:-

7.1.1. Pioneer Members

Entrance fee	Ksh.	20=
Share capital	Ksh.	3365=
Pipes deposit	Ksh.	3000=
Meter deposit	Ksh.	3220=
Water use advance	Ksh.	120=
Standpipe and connection	Ksh.	1400=
Total	Ksh.	<u>11,125=</u>

7.1.2. Late Applications(Side down)

Pay above	Ksh.	11,125=
Penalty	Ksh.	200=
Labour charges	Ksh.	1,140=
Application form	Ksh.	50=
Total	Ksh.	<u>12,515=</u>

7.2 INSTITUTIONS

7.2.1 small institutions (Primary day schools, churches)

Application form	Ksh.	50=
Entrance fee	Ksh.	20=
Penalty	Ksh.	200=
Share capital	Ksh.	6865=
Pipes deposit	Ksh.	3000=
Meter deposit	Ksh.	3220=
Water use advance	Ksh.	120=
Connection and standpipe	Ksh.	1600=
Labour charges	Ksh.	1440=
Total	Ksh.	<u>16,215=</u>

7.2.2. Big Institutions $\frac{3}{4}$ "(Boarding schools)

Application form	Ksh.	50=
Entrance fee	Ksh.	20=
Penalty	Ksh.	200=
Share capital	Ksh.	6865=
Pipes deposit	Ksh.	4000=
Meter deposit	Ksh.	4290=
Water use advance	Ksh.	600=
Standpipe and connection fee	Ksh.	2000=
Labour charges	Ksh.	1140=
Total		Ksh. <u>19,165=</u>

7.2.3. Large Institutions 1"(coffee factory)

Application form	Ksh.	50=
Entrance fee	Ksh.	20=
Penalty	Ksh.	200=
Share capital	Ksh.	6865=
Pipes deposit	Ksh.	6000=
Meter deposit	Ksh.	6300=
Water use advance	Ksh.	300=
Standpipe and connection fee	Ksh.	3000=
Labour charges	Ksh.	1140=
Total		Ksh. <u>23,875=</u>

7.3 Water tariffs

Revenue for the water supply is derived from the sale of water as follows:-

7.3.1 Individual consumer

0m ³ - 30m ³	Ksh.	20=
over 30 ³ m	Ksh.	2= per m ³

7.3.2. institutions

0m ³ - 30m ³	Ksh.	100=
over 30m ³	Ksh.	3= per m ³

The above charges are very low compared with the present situation in the economy. The management committee has reviewed the tariffs to be presented to the members for consideration and approval in their Annual General meeting.

The new proposals are:-

Individuals.

0 - 30m ³	Ksh. 90=
over 30m ³	Ksh. 5= per m ³

Small institutions.

0 - 30m ³	Ksh. 200=
over 30m ³	Ksh. 6= per m ³

Big institutions

0 - 30m ³	Ksh. 250=
over 30m ³	Ksh. 7= per m ³

7.4 Meter Maintenance Fee.

We charge Ksh. 10= for meter maintenance per month.

7.5 Billing.

After the water bills have been prepared the office messenger delivers them to the members through schools and churches according to members' address.

After fourteen(14) days from the date of invoice all defaulters are disconnected from water supply.

A reconnection fee of Ksh.60= is charged for turning on the water supply.

7.6 Illegal water connection.

A member who connects him/hor self with water illegally is charged Ksh. 1000= plus estimated water consumption.

He is disconnected from water supply until the next annual general meeting which would either dismiss or reinstate him/her.

7.7 Illegal Water Extension.

Extensions to other persons are not allowed. Members who do so are treated like No. 7:5 above.

7.8 Internal/External Conflicts

The project has experienced very few conflicts since its initiation.

- Some members refuse to have pipelines pass through their land.
- Members in the past differed with the management committee when they were advised to review the water tariffs.
- High payment of shares and deposits makes less fortunate members unable to have water connections.

The project is registered as a water society.

20%
using
pipes
for men
water

For that reason matter, all members have equal rights. They all pay the same and are entitled to consume equal amount of water. Some rich people may consume more and pay more.
- Water is used by everybody at home so long as he/she is a direct beneficiary to our registered consumer and as long as it is paid for.

8.0 ACHIEVEMENTS AND IMPACT.

Although the project has been successful, over 20% of the user community is lacking access to its services due to technical limitations.

Some community also tend to think that water is natural thus, there should be no charges at all.

Remarkable achievements have been registered in the areas served.

8.1 - Women don't walk long distances to fetch water.

8.2 - Members have been able to engage in agricultural activities thus increasing food production and cash crops.

8.3 - Members have had time to start kitchen gardens thus malnutrition has been reduced.

8.4 - Community have got time to start income generating activities such as poultry keeping, pig keeping and dairy cattle.

8.5 - The water supplied is of good quality thus water related diseases have declined.

8.6 - Employment has been created.

9.0 CHALLENGES.

9.1 - Sustainability of the project.

Increase of prices in repair materials cannot cope with the revenue generated from water sales. Hence the need of more education to members so that they could understand the need for increasing the monthly payments.

The project covers approximately 140sqkm. To give the necessary services to members in good time is difficult. Hence the need of improving transport in the field.

9.2 Due to population increase the project experiences water shortages in most areas of the project. There is need to improve the supply system.

9.3 Upper and rich people do small irrigation. Thus cause causing water shortages in lower part of the project in dry periods.

10.0 FUTURE PLANS.

- 10.1 Construct five more 100m³ tanks in order to boost the quantity of water for our members.
- 10.2 Provide transport to our working team to ease operations and maintenance of the project.
- 10.3 Look for any other economical activities.

11.0 LESSONS LEARNT.

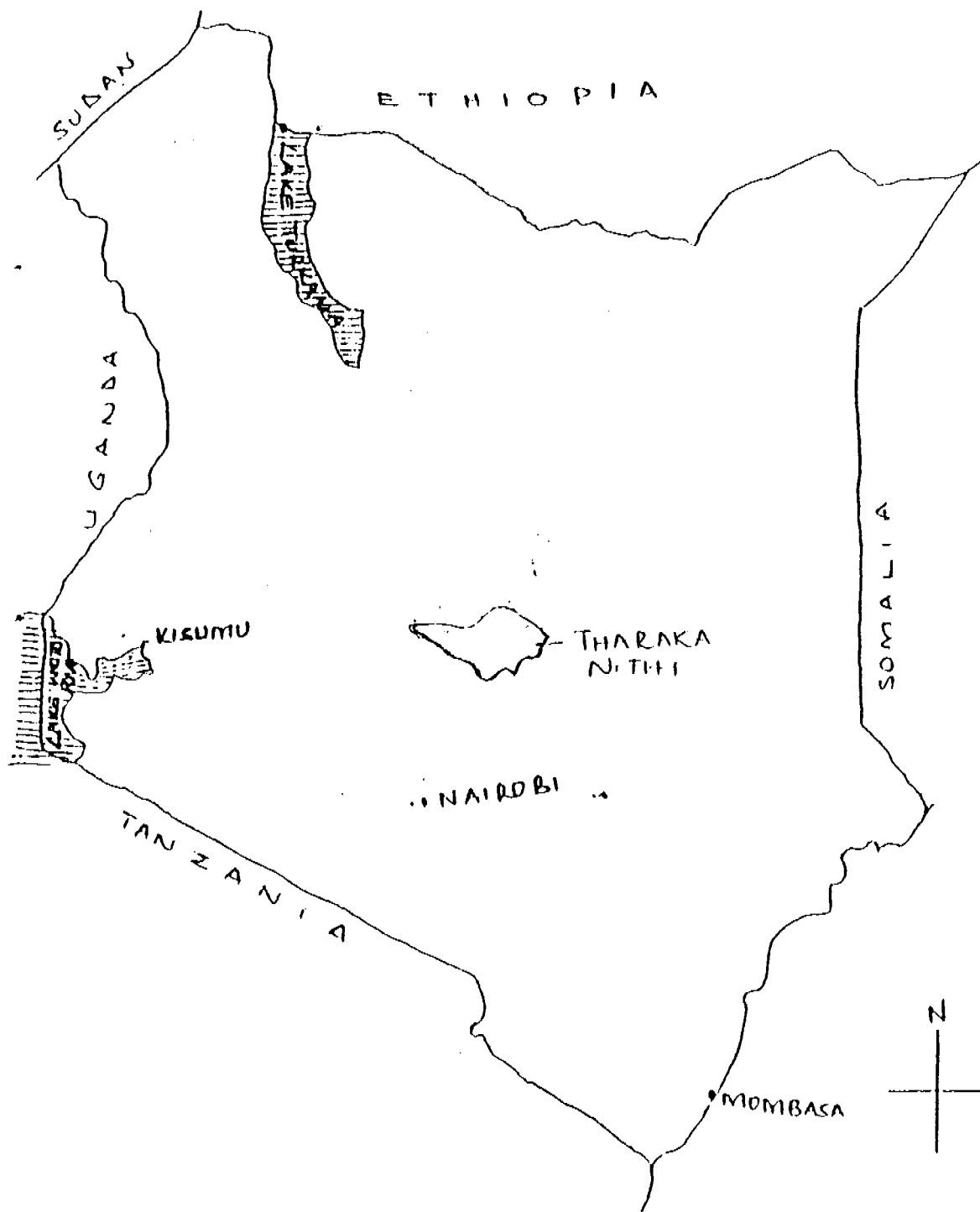
11.1 - For a community project of this nature to succeed, the beneficiaries should be involved at all stages of planning, designing, construction and operation and maintenance.

11.2 - The sustainability of any water supply system is based on its ability to collect adequate revenue to meet its operation and maintenance costs.

A water project should be compared with a lorry which should earn enough money for its maintenance and to purchase another one in future when it wears out.

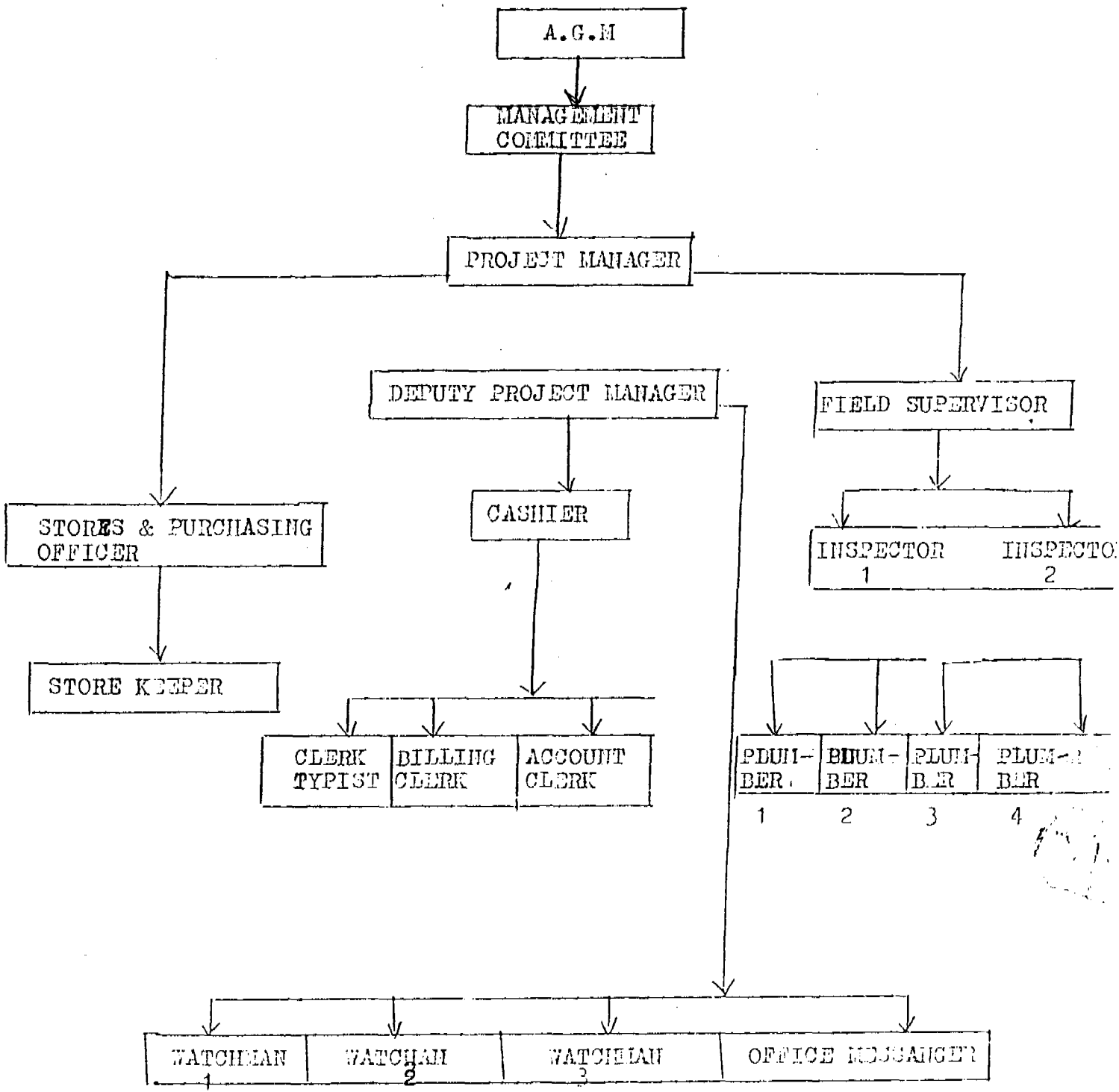
11.3 - The success of the present management committee is attributed to their devotion and the ownership of the project.

The community had identified their water problem as early as 1970 and had unsuccessfully tried to solve the problem.



A MAP OF KENYA SHOWING LOCATION OF THARAKA NITHI

MURUGI MUGUELANGO WATER SOCIETY
 ORGANIZATION CHART
 (CHAIN OF COMMAND)



Case II
Study

REGIONAL MEETING IN AFRICA, NAIROBI KENYA JANUARY 1997

THEME: Community management of portable water and sanitation and partnerships with civil society.

Project case study "ECO-VOLONTAIRE WATER AND SANITATION PROJECT OF NGUEMBÉ"

PROJECT LOCATION: Village of Nguembé, rural community of Ngadiouf, Administrative District of Niakhène, Tivaoune Dept, Thiés Region.

PARTNERS: ANID/IWS/THE NGUEMBÉ COMMUNITY

FUNDING: ANID, USAID/Population of Tivaoune Dept.

Méckhé, December 1996
by Mohamoud Diop
Coordinator, ANID-Senegal

ABSTRACT

Water, a vital element of eco-systems and human societies, is progressively becoming more and more rare in quantity and quality for development and community needs.

In Senegal, like elsewhere in the Sahel region, it's becoming a rare commodity sought after by both rural and urban population.

During the last few years, the water needs of rural populations are more urgent than those of towns because majority of the populations of Sahel countries live in rural areas where the principal activities (agriculture and livestock rearing) are strongly dependant on water.

In the Sahel, drought and desertification continue to advance and constitute a real menace to agriculture and to the provision of portable water to populations. Some efforts have been depicted in the improvement of water policies, it is estimated that a village in the Sahel region lacks a permanent source of water and in most parts of these countries, the minimum (35 litres/person), which represents the international standard is still a long way to go before being achieved.

Majority of water sources in the major parts of rural areas of the Sahel disappear in the dry season. Very few villages enclaved in the Sahel have permanent and adequate sources of water, conforming to the standards set by OMS.

It is also estimated that the population of the Sahel will double between 1995 and the year 2000 and that 3/4 of this population will be located in the rural areas. If this projection comes true, we can imagine the level of effort each Sahel country will undertake in order to lessen the eventual crisis associated with the problems of water supply especially in rural areas.

It is for the above reasons that ANID (African Network for Integrated development) is to undertake from 1996, in partnership with civil society and it's financial partners, projects in order to facilitate the realisation of development micro-projects centred on water and sanitation.

*Water quantity since 1970
what is needed?*

RADI
*also in five other african
countries
Guinea Conakry - Guinea B.*

INTRODUCTION.

In 1994, ANID which was already a partner of the International Water Secretariat (IWS) had, through this partnership brought it's technical and administrative support for initiating a development programme centred on water and sanitation.

This integrated development programme targeted the village of Nguembé, located in the region of Thiés-Senegal. Communally it was called "Eco-Volontaire" (=Eco-Voluntary) Programme, because of it's human development approach, it was considered a success model by the society and NGOs in facilitating access to water and sanitation.

The success of this programme has touched the hearts of all the neighbouring communities and thus giving rise to confidence in rural populations, administrative and local authorities giving respect to ANID and IWS. This has placed ANID at an important place as a development actor in the hearts of Local Development Committees (LDC) in the two administrative districts of Senegal (Mérina Dakar and Niakhène). The LDCs are the framework for consultations, exchanges and reflections between the actors.

During the LDC meetings, ANID was solicited by more than 10 village groups to initiate similar programmes, because in all the zones mentioned, the search for water is the centre of preoccupation of the inhabitants.

Since April 1996, with the financial support of USAID (NGO Support Project) ANID is in the process of executing a similar project by way of duplicating the Nguembé project. This duplicate project targets 11 villages of which 9 are water supply projects and 2 for the development of a basic literacy programme.

It is in view of this that the present study proposes to have a general perspective of the Eco-voluntary project and to make a detailed account on community management of water and sanitation in Nguembé village of Senegal.

The objective of this case study is:

- * to show the strategies, methods and approaches characterising originality in the system of management of portable water and sanitation in Nguembé
- * do a summary evaluation of experiences gained and/or consolidated, their strengths and weaknesses, with a view to showing the implications and impact of the project.
- * to point at the general and specific parameters of successful initiatives in the management of water by the community similarly in sanitation and on local experiences and know how.
- * to document all useful lessons and experiences having traits of integration of various factors in community

management, not only in the reinforcement of partnerships between different users of water, but also with the government structures, NGOs, donors, local communities: all these actors in the dynamic search for a better model for the management of water in an autonomous perspective.

- * to denote the human and institutional aspects of community management of water in so far as means of integrated development are concerned

The present case study focuses on the results of Nguembé following the plan below:

- a) Present the situation in Nguembé
- b) The water and sanitation programme of Nguembé
 - i) areas of internal/external conflict
 - ii) technological options associated with community organisations and ways of knowing them
 - iii) Initiating and managing a water system

A PRESENT SITUATION IN NGUEMBÉ.

i/ Location

The village of Nguembé is situated in the region of Thiés, Department of Tivaoune, administrative district of Niakhène, rural community of Ngandiouf. It is situated 4 km from Pékesse and 5 km South-West of Ngadiouf.

ii/ Physical Framework

The village is situated inland and thus does not benefit from the cool air found at the coast. It's climate is the Sahel type - hot and dry marked by a short irregular rainy season and a dry season (8-9 months). Annual rainfall for the last 3 years has been 300mm in 20 days. Certain years are marked by severe drought with a rainfall deficit going up to 40-60%. Temperatures vary between 21^oc and 36^oc. The harmattan blowing through the Sahara dessert from January to May brings about sand and dust storms often raising temperatures up to 46^oc.

Arable soils are tropical ferruginous of beige colour, very much degraded by monoculture and wind erosion. Vegetative cover is sparse. The short rainy seasons and precipitation fluctuations do not favour a permanent hydrographic network throughout the zone. Many underground water sheets of different depths and quality can be found in the area.

The effects of drought and desertification are greatly felt at Nguembé where majority of the population depends on agriculture and livestock rearing for their livelihood. These two activities

have developed less and less bearing a hard blow on the socio-economic stability. This has spontaneously led to the exodus and migration of the able bodied from the village. Majority of the youth migrate temporarily during the dry season to the large urban centres (Dakar, Thiés, Kaolack) while others to Europe (Italy and Spain) in search of work and money. The village left with women, who contrary to the men do not know the exodus.

The women therefore become, the principal living forces of development in the village. They take to small businesses and with the few men present, to farming activities notwithstanding the lack of sufficient quantity of water.

Education in the villages is particularly religious; it is obtained from Madrassahs or arabic schools and mainly concentrates on children. The rest of the population is illiterate. This is one reason why the children and women are predominant in the cultivating of market gardens. Gardens are small due to lack of enough water to satisfy irrigation and other needs. These needs are far from being met inspite of the existence of a borehole equipped with a handpump which was installed by the NGO World Vision in 1990, and 3 traditional wells. Two of which dry up during the dry season.

Inspite of the existence of these three water points (one borehole and 2 wells), access to water for domestic and pastoral consumption as well as for farming activities is still difficult. The main reason being the inadequacy of the manual pumping system which was found tedious by the women who are charged with the responsibility of providing water for their families.

Even if it were true that this manual system has the advantage of being easy to operate and cheap, it has a very small output and cannot meet the diverse water needs of the population.

For example, before the intervention of ANID/IWS, the time spent by the women looking for water enough to meet their needs which includes water to irrigate a small kitchen garden of 400m² was estimated at 10 hours per day. This time, for the population of Nguembé which comprises 800 people in 34 villages and a livestock population comprising 975 cattle, 1,642 sheep and goats, 130 horses and 115 donkeys, was an underestimate.

The water needs of Nguembé, calculated according to international standards is estimated at 35 litres/day/person.

Surveys carried out by World Vision before it's intervention, concluded that the village's water consumption per day was 10,200 litres. 7% of this need which is covered by the borehole installed with a handpump is far from meeting the needs of the village. The resulting document from the survey cited above stipulates that:-

"taking into account the importance of this village's water needs and despite the installation of a double

handpump, one motor pump can sufficiently supply the village with water."

The community of Nguembé who had for the past 2 years searched in vain for a financial partner to install their borehole with a motor pump, were approached by ANID to reflect on their water problems together. They knew ANID and the success of the initial projects it had undertaken with support from an NGO "Eau Vive"(= water lives) in three of the neighbouring villages (Dawakh Gadiaga, Ndatt DIAGNE, Darou Sam) situated 9 and 11 kms respectively from Nguembé.

ANID which was already at the time a member of the Administrative Council of International Water Secretariat (IWS), would take the opportunity to develop a partnership with the village of Nguembé. This partnership with the approval of ANID and IWS was seen as good and possible to rise up to the challenges associated with water supply and sanitation. Access to water, in so far as justice and peace are concerned, is the most legitimate and fundamental human right.

B/ THE ECO-VOLUNTARY WATER AND SANITATION PROGRAMME OF NGUEMBÉ.

This is an integrated development programme, participatorily managed, with it's core concentration on water. Along this programme are other socio-economic and ecological activities e.g market farming, afforestation, livestock rearing and training. During a MARP (Méthode Accélérée de Recherche Participative) study carried out in this village by a multi-disciplinary team from ANID SENEGAL, the hydraulic valve was identified as the first priority.

The valve would arouse the village's dormant potential i.e the community know how, it's organisation system, it's resources, communication methods, it's evaluation and mobilisation capacity and management.

This allowed for integrated and participatory planning of the overall strategy (co-existence of indigenous and western knowledge) of the project. The latter is marked by innovative and the transfer of modern technology all adopted to fit local situations, having contributed to the solving of various problems targeted to reduce internal conflict of interest associated with the use of water whose demand is higher than supply.

I/ AREAS OF INTERNAL/EXTERNAL CONFLICTS.

All conflicts which made it difficult to have access to enough water have presently been solved by the ECO-VOLUNTARY project for the benefit of the inhabitants of Nguembé. These conflicts were solved by the installation of a motor pump on the borehole,

setting up works, infrastructure and installing diverse equipment.

1.1 Conflicts Associated with Needs and Usage.

Between market farmers and livestock rearers.

The water consumers of Nguembé are housewives, market farmers and livestock owners. Conflicts between livestock owners and farmers existed even before the ECO-VOLONTAIRE programme came into being. The conflict was particularly the proximity of the kitchen gardens tended by the women to the water point (borehole). At that time there was no drinking trough, livestock were served with water fetching cans (basins, barrels, buckets) near the borehole, thus the case of livestock wandering into the gardens was common. This often became a source of conflict between those concerned.

With the establishing of the Eco-Voluntary programme, this conflict was solved. All problems which emerged from the MARP study were considered. Consequently the water trough which was 40 m away from the water points, was relocated 400m away.

Water for who? poor vs rich.

Another conflict which the project has tried to solve concerns the use of water, more so domestic use. Some families with better means procured horse or donkey drawn carts which were used to transport vast quantities of water making those who did not have carts queue for long hours.

This problem created many conflicts which the Eco-Volontaire water project eradicated. A systematic measure was taken by placing taps in each compound. This was made possible by contributions from a village in Europe. 5 drinking fountains were placed in areas less frequented by domestic water users. This extension work has guaranteed equity and peace, two important factors of community development and social cohesion.

Water Vs Sanitation/Hygiene.

Before the water and sanitation project, water was constantly diverted by users (families and livestock rearers) living directly next the water points (boreholes, wells).

The result of this was stagnant water which was a source of diseases because it was conducive to the breeding of mosquitoes, flies, the multiplication and spread of water borne diseases such as cholera, bilharzia etc. In addition very few families had latrines. The woods surrounding the compounds were an ideal place for faecal disposal for most of the inhabitants.

Public places frequented by children, were points of all sort of waste disposal (domestic refuse, animal dung). With the commencement of the water and sanitation project, majority of the families, with the extension of the network into the compounds, were able to have decent toilets and were equipped with an evacuation system which has no effect on the environment.

Domestic refuse and animal dung are now used for decomposing which serves the market gardens. The sanitation and hygiene conditions of the village have improved tremendously due to this project.

NGOs' Objectives Vs. Local Needs.

Even if it is true that NGOs such as ANID, acting in this area in particular and nationwide in general, after a decade, will know all the problems facing the population it will be evident that no development project particularly in rural areas can succeed without involving the real beneficiaries at all stages, from the identification of needs to project realisation and the subsequent evaluation.

The water and sanitation project of Nguembé is a real example of community participation. The project was initiated following the demands expressed by the Nguembé community. Through the immediate response of ANID, the studies carried out using MARP, which allows for the villages to identify and prioritise their needs by conducting a participatory walk involving everyone (men/women, young and old, poor and the well to do). It also allowed for the programme planning by clearly defining the roles and responsibilities of each actor (ANID, the population, local authorities) etc. In this process ANID played the role of advisor, trainer, coordinator and facilitator. Participation of the Nguembé population was divided into three related levels.

- * reflections throughout all processes
- * financial and local materials contributions
- * contribution of labour and expertise if it exists, for all necessary tasks

1.2 System Ties.

Water Control and the Implications of the Community.

The Nguembé group comprises 163 members from 34 homesteads existing in the village. This group is managed by an office called "Comité de Gestion et de Suivi Villageois"(CGSV) (Management and village Connect Committee MVCC). This committee supervises and coordinates the activities of six technical commissions listed below:

- * Hydraulic Commission (water and sanitation)
- * Market gardening Commission
- * Reafforestation Commission
- * Local produce processing Commission

* Training Commission

With the exception of the Reafforestation commission, for which ANID developed a partnership with the NGO PREVINOPA (specialises in agroforestry), all other commissions were formed by the villagers and are communally called "eco-volunteers."

The water and sanitation "eco-volunteer" works with all commissions but mostly with the hydraulic commission which controls the use of water and keeps, under the supervision of MVCC, the revenue collected from monthly subscriptions and dues to be paid by all users (domestic, agricultural and pastoral). A list of users (individual and collective) and the tariffs to pay is drawn by the whole community and is placed at the disposal of the hydraulic commission who manage it according to the procedures and regulations established by the community.

A bank account was opened to keep money collected which would be used to repair the motor pump when it eventually breaks down, maintain equipment, existing works and infrastructure. All violations or defiance of procedures and principles are penalised by the management committee (CGSV) under the proposition of the hydraulic commission and conforming to the relevant clauses of the regulations drawn by the group.

The actual form of management and control of water emanates from traditional practices which reflect, besides representing, the notion of shared responsibilities and that of the sharing of responsibilities and roles biased towards de-concentration of tasks and the ability and competence of each group (men, women, youth).

The involvement of the village chief (by regularly informing himself of the overall functioning of the project), as well as other notable sages of the community is constantly helping animators (eco-volontaire) in order to give weight to regulations and procedures for the management and control of water and its implications on all actors in the village who have responsibilities in different areas.

Traditional Vs Modern Systems.

The relationship between the modern and the traditional relates to the mode of transfer of techniques and western technologies with the importation of modern materials and equipment for the pumping, storage and distribution of water.

The organisation structure, method of community management, form of communication and the implications of the technologies applied are looked at from traditional and cultural aspects which license the volunteering, solidarity and the sharing of responsibilities. All these can be practised in a climate of confidence and transparency which are in Nguembé like everywhere else, two intertwined cultural factors. The notion of solidarity rests remarkably well between immigrants and the natives left behind,

who work in all areas to develop their village in order to ensure a better life for the present generations and those to come.

1.3 MANAGEMENT TIES.

Public and Community Management.

Water is considered in Nguembé, just like everywhere else, as a factor which promotes the social, economic and ecological well being of the community. That is why its use is governed by community managed procedures because all ecological, social or economic decline is of concern to the community. Being an important component of natural resources, its economic, social and ecological use has been collectively well mastered and whose degradation has been checked by the management currently taking place.

Women, who are the majority, often feel excluded from the management of the hydraulic funds even if they form a bigger part or the entire membership of the existing committees and commission. They have been the most concerned by the problems of water in the past as well as the present.

This poses the problem of tradition versus culture which become a complex obstacle in the real implications on the effect women have on the management of water thus causing a conflict of interests between gender groups who manage according to the community's laid rules.

The animation and sensitization programme initiated by the ANID field team has tremendously contributed to the impulsive changes in this area.

II/ TECHNOLOGICAL OPTIONS ASSOCIATED WITH COMMUNITY ORGANISATIONS AND WAYS OF KNOWING THEM.

Supply is done by an underground PVC network which follows a distribution plan concluded after consultation between the population and ANID technicians. Different water collecting tools (basins, taps, water troughs) were identified according to priority by the community itself.

The distribution was developed following a system of simple sluice gates which facilitated the movement of water to areas the villages wanted.

The pumping system was made of a group of diesel driven motor pumps installed at the borehole. The system was well covered in a cement constructed cabin with holes for aeration. This made it secure as children and animals cannot gain access to the cabin.

Two youths selected by the villagers to be mechanical facilitators were charged with the responsibility of insuring proper operation, functioning and maintenance of the pumping equipment. These two eco-volunteers also received preliminary and technical training in simple repair and have undergone a theoretical and basic literacy course in the national language. This allows them to handle the pump and also hold animation sessions on hygiene and prevention of water borne diseases. The latter is good in the management of the underground distribution network which feeds:-

- * 5 drinking water fountains sparsely placed throughout the village. These fountains are less frequented since villagers have water in their compounds
- * 4 water pans of 4m³ each serving to irrigate a market garden of an area of 1 hectare and a village forest of 1/4 hectares.
- * 1 water trough for feeding water to the village animals and others from neighbouring villages

The taps, water troughs and pans are served with water from a reservoir of 50m³.

INITIATION AND MANAGEMENT OF WATER SYSTEMS.

The water reservoir is covered and has a horizontally slanting opening to allow for cleaning of the interior walls. The reservoir cover allows the users to avoid all kinds of natural pollution (infected dust, algae, corpses of aerial ravagers). Also the water trough, water reservoirs such as irrigation basins have a drainage system to facilitate evacuation of polluted, affected or used water.

The control of water usage is assured by the hydraulic commission in coordination with water "eco-volunteers" (pump maintainers) thanks to a system of sluice gates, the proportional distribution of water enough to meet the needs of the users (market gardeners, livestock rearers, families) is possible.

All this is done following a periodical calender established by CGSV and applied to the letter by the hydraulic commission. This calendar often flexible and varies according to seasons, is evaluated periodically by the CGSV, Hydraulic commission and the consumers. This enables them to foresee and prepare for any eventual conflicts of interests between water consumers.

The proper functioning, maintenance, repair and purchase of motor fuel, payment of pump operators' allowances is assured by the hydraulic cash-box which constitutes paid rates.

The rates are fixed according to a certain number of technical, social and economic criteria. Recovery of monthly rates is assured by the hydraulic commission which has a register of the sum payable by each consumer.

The remainder of funds not used in the running the system is deposited in a bank in a fixed account co-signed by the president and treasurer of the group.

Besides the fixed account, the group has a current account which accommodates all other groups' funds from diverse sources (market gardens, millet mill).

To help the village properly master/ control the tools associated with management, ANID has developed an important basic literacy programme in Wolof language which has presently enabled all members of the commissions and of MVCC to read, write and calculate in their language and to properly manage the water and other activities

CONCLUSION.

The Eco-Voluntary water and sanitation programme of Nguembé permits the "weaving" of a network of partnerships working to defend the rights of the community to access to a sufficient quantity of portable water and proper sanitation in the homes and villages. It has created a dynamic state of exchange, planning and reflection between development actors (NGOs, civil societies, parastatals and administrative or local authorities).

The results (qualitative and quantitative) attained in this programme have been positively appreciated by everyone including local authorities in the area. This programme has seen the emergence of similar projects in the regions confronted by the same water and sanitation problems.

Similarly ANID, at the demand of communities and local authorities is in the process of starting another profitable water and sanitation programme in 9 villages thanks to financing by USAID (NGO support project).

This programme which is a tentative duplication of the Eco-Voluntary programme of Nguembé involves a total population of 4,720 inhabitants has started showing it's success since April 1996.

The Nguembé experience has shown that it is good and possible to struggle and defeat poverty brought about by the lack of water. It has confirmed that it is possible to fight all forms of social and economic marginalisation, ecological degradation, brought about by the lack of water and decent sanitation, which are essential factors in sustainable development in all Sahel countries, and in particular rural areas.

Community Management and Partnership with Civil Society

Workshop held in Nairobi, Kenya

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Water As An Entry Point For Development at District Level

A case study of ProNets' work in Ghana:

Upper West Region.

Written and Presented by:

E. Judith Thompson.

ProNet , Ghana.

Introduction:

In Ghana we are at a very interesting time in our development. Our government has provided us with a development plan called Vision 2020. Vision 2020 is to jettison us from where we are to becoming a middle income country.

Fourteen years ago, Ghana launched Africa's first Economic Recovery Programme. For almost the same length of time Western donors have claimed that we are the continent's model reformer. We have obeyed all their rules about trade liberalisation and all that goes with it. We now have a multi party democracy and even though the incumbent has survived for 15 years we now hear all sides of the story as far as statistics are concerned. Now all of a sudden, **The Financial Times** can do a story on our economy and it reads thus: "**Ghana, African trailblazer begins to falter.**"

This points to the fact that the statistics and the success stories are mainly for the consumption of the World Bank and the like. As a Ghanaian Non Governmental Organisation (NGO) we have always been acutely aware of the fact that there has been economic growth in our country to the detriment of social justice. Our mission in ProNet has therefore been to work with small communities in order that they improve upon their health and general well being starting with the provision of potable water, hygiene education and sanitation.

Non Governmental Organisations in the development process in Ghana:

At this stage in my presentation allow me to go off at a tangent for a while about Non Governmental Organisations (NGOs). Over the last decade there has been a mushrooming of NGOs. Prior to the '80's the state was in control of resources and was duty bound to provide for all its people goods and services. The social sector was the preserve of government. Ghana had after independence till the early '80's had a string of civilian and military governments which aligned themselves more with what was then the communist bloc than with the West. Indeed in the years immediately preceding the beginning of our Economic Recovery Programme the World Bank was almost a dirty word. But times change.

Very rapidly after the country started to implement the Economic Recovery Programme, government shifted most of the costs of health care, education, water supply etc. to the consumer. It made a lot of sense according to the rules of the game that they were playing but it did not take into account the fact that the percentage of its citizens who could pick up these costs was low. As a result of this realisation some NGOs sprung up in Ghana which were seeking not to provide aid to marginalised communities, but who were prepared to work with communities and work through their problems and prioritise them and build capacity with the communities to overcome their challenges.

These NGOs, ProNet included, are staffed by professionals who are learning as much from communities as they are giving them. They are also working with other community and district based NGOs. NGOs like ours have now become the latest craze for some donors, sometimes for the wrong reason and sometimes for the right. When donors are looking for contractors who do not have a profit motive, their motive is bad. However, when they are looking for facilitators of knowledge sharing and strengthening of management skills at community level their motives are right.

The government of Ghana is a bit suspicious of NGOs because some of them are businesses pure and simple and the NGO tag suits them fine because of the tax privileges that they can exploit and the growing opportunities for work. Government is therefore anxious that there is some system of regulation for NGOs. We think it should be internal, government wishes that they could control it.

In the water sector in Ghana, government is desirous of working with NGOs whose mission is to provide communities with choices and to use simple technology and to share skills and knowledge which will enable communities to take charge of their lives. Thus, we in ProNet have found that we have a mission that satisfies us and the nation.

Background information:

Information on the political economy

This case study will outline how we work in the Upper West Region of Ghana and I shall now attempt to give you some insight into the Upper West Region.

The Upper West Region is the newest of the regions in Ghana. Carved out of what was the Upper region in 1983. It was created out of the realisation that there were enormous problems of isolation and neglect of the area and to stimulate development there should be an administrative structure that would be empowered to draw up development plans and execute them. There is great potential in the region for cotton production, livestock production, sheanuts, groundnuts and sorghum.

In colonial times the Upper West Region was the North Western part of "The Northern Territories" The Northern Territories of the British Colony of the Gold Coast was a labour reserve. The colonial authorities made minor investments in education, health and transport networks in the South as the commodities which were of most value to them - Gold, diamonds, bauxite, timber, cocoa etc. were produced in the South. In the Northern Territories investments in these sectors started just before the Second World War. The colonial government recruited labourers for the mines, non commissioned officers for the army and police and other non skilled labour from this labour reserve.

As a result of this and the fact that post colonial administrations have been dominated by the Southern elite indicators of relative poverty paint a bleak picture of that region. (See appendix 1) The table indicates that the region ranks between 8th and 10th for most variables.

Natural and human resources

The area lies in the Savannah high plains, which is generally gently undulating with an average height of between 180 and 300 metres above sea level. The rolling nature of the landscape implies that the topography is no barrier to agriculture. (Dickson and Benneh 1970) The area is generally well drained with the main rivers being the Black Volta and its many tributaries which provide numerous valuable dam sites.

The region is underlain by the Precambrian Crystalline Basement Complex rocks, notably the Birimian System which is mainly schists, phyllites, greywackes and metavolcanics. It has high mineral potential and groundwater potential is rated as limited to moderately good. However, for those areas which have limited groundwater potential the aquifer yields are adequate for rural domestic water and livestock watering needs for the now.

The most critical climatic factor which has a bearing on the cycle of agricultural activity is rainfall. Its seasonality limits farmers to one harvest a year in contrast to Southern Ghana where farmers are able to win two harvests because of the double maxima rainfall regime.

The people of Upper West

The most important factor for development in this region lies in the energy of its people. To quote Songsore and Denkabe

“ They are resilient and resourceful because they have managed to survive a history of neglect and exploitation from colonial times as well as the challenges of nature. (Challenging Rural Poverty in Ghana: The case of the Upper West Region”)

The age and sex distribution of the population in the region show two main trends:

1. The youthfulness of the population.
2. The sex imbalances reflected in a preponderance of females over males.

These statistics are not surprising, as mentioned earlier this is an area which has a past and present record of providing labour to the South. Invariably it is the men in their prime who migrate to the South to work. It has therefore meant that the development of the region is to a very large extent dependent on its women.

Ghana's Community Water Strategy:

There are three main objectives of the Community Water Strategy:

1. To provide basic water services to communities that would contribute towards the capital costs and pay normal operation, maintenance and repair costs.
2. To ensure sustainability of these facilities through community management, private sector provision of goods and services and public sector promotion and support.
3. To maximise health benefits by integrating water, sanitation and hygiene education interventions.

The overall development strategy for the community water and sanitation programme is the sustainability of services through the decentralisation of planning and management. The governments decentralisation policy is intended :

1. To make districts more autonomous, more responsive to local needs and better able to assist communities to obtain improved services.
2. To make communities decision makers, owners and managers of their water supply facilities.

The National Community Water Strategy will be demand driven, this means resources will be channelled to districts based on the demand for improved services by communities and district performance in supporting them.

To participate in the National Strategy, districts will be required to set up District Water and Sanitation Teams (DWSTs) and establish revolving funds to support community school and health centre needs for latrines.

Communities will choose water and sanitation systems based on information and training provided by NGOs, the private sector and district governments.

The private sector which in the context are latrine builders, drilling contractors, well contractors, hand pump mechanics and hard ware suppliers are to provide the goods and services.

Hygiene education is to be an integral part of water and sanitation programmes. Hygiene education programmes bring about behavioural change which should lead to

1. Increased water use for personal hygiene.
2. Protecting source water quality.
3. Protecting water quality during storage and handling.
4. Containing excreta in a hygienic latrines.

Cost sharing is an important principle of the National Strategy. It is mandatory for communities to make a contribution in cash or kind or both.

Prior to the National Strategy, the Upper West Region like the Upper East and Northern regions had been served with some boreholes supplied under a bi-lateral agreement between the government of Ghana and Canada. For a decade and a half the region was part of the Upper Region Water Project which metamorphosed into the Water Utilisation Project. Under this project communities were supplied with boreholes fitted with hand pumps. The villages were targeted according to the needs which were classified by the regional planners and engineers working on the project. The majority of communities who were targeted were in need of water but they were not consulted on the technology that would be used, they knew next to nothing about maintenance and the management of the facility initially was the preserve of the Ghana Water and Sewerage Corporation. (GWSC)

In the early '80s development thinking and government policy began to change and the programme managers and GWSC management realised that water facilities are better used and maintained once they are the felt need of a community. For the urban educated elite they will pay for potable water because to a large extent they can make the connection between clean water and better health and the convenience of having water within their homes or compounds. So at this point in time the managers of the water programme in the Upper West and East, the GWSC and the Canadian donors sought to transform the programme. A lot of time and effort went into training village based volunteers who focused on hygiene education. Pump mechanics were trained and were dealing with some routine maintenance and the hand pumps used were all to be of a type which could be operated and maintained at village level. The one sore point in this programme was the issue of payment of tariffs. The GWSC slapped tariffs on the water points and communities either paid the tariff or had their pumps removed from the borehole. Needless to say, for communities which were provided with "free" water without much consultation and with low incomes the wisest thing to do was use traditional water sources like streams and dams to obtain water.

The programme did provide water and there was definitely an attempt to involve communities in management, but it was difficult to rectify the situation after community members had gone through such a bad experience.

The churches were also valuable sources of funds for water provision. The Catholic Church provided a number of boreholes to communities and for the educational and health institutions that they managed. They maintained "their" boreholes and made sure that they had stocks of spares and mechanics or priests who kept the facilities running. Here again the facilities were "provided" by the church for the use of communities.

The combined efforts of the church and the state provided some water coverage to this part of the country. As outlined above, it is difficult terrain, rainfall is low and there are periods of near drought, under those circumstances government and other agencies might be excused for implementation strategies which were not centred on meeting community needs.

Working in the Upper West

Needs, wants and uses of water in the region.

Water is essential to human life. In Upper West, most communities that we have worked with have been interested in a source of water for domestic purposes of drinking, washing, cooking and for their animals.

To a large extent, women are keeping the communities in the region together and one of their major tasks is the collection and storage of water for domestic use. Women without a water source in their community are the ones, along with children over the age of 5 who will set out early in the morning and in the evening in search of water. They are acutely aware of the inconvenience of water in distant locations, their men realise that water would should be nearer, but it is a womans issue mainly. In most ethnic groups in this region, animal rearing and ownership is a masculine affair. Animals need water and so to the men, water for animal use is extremely important and young boys who look after animals, know that they need to trek for water if their animals are to live and multiply.

ProNet got involved in its work in the Upper West region because of a request made to two NGOs that we work with in the Upper East region. A youth association of a community asked if they could have some assistance in obtaining a source of water. They had in mind a hand dug well. The association, I must add was male dominated but they were sensitive to the fact that water was needed for domestic use first and once there was a source animals would have access to the water as well.

ProNet has been in receipt of funds for its water sector work from WaterAid. In Ghana the WaterAid programme has supported NGOs who by and large are constructing hand dug wells, improved pit latrines and training village health workers. The experience of bore holes made communities slightly uncomfortable with looking at a technology which was as complicated as that. Traditionally, families and communities used water from streams and dams and they also had local wells, which were holes in the ground, frequently unlined, but which produced water. So WaterAid, ProNet and the Nandom youth association had similar objectives. What was most important to all parties was a potable water supply, simple technology which communities knew about and could maintain.

• simple technology
simple technology
and possible to maintain

Water As An Entry Point at District Level, ProNet, Upper West Region, Ghana.

E. Judith Thompson, Executive Director. March 1997

Prior to the request from the youth association our field team leader had been a part of a team which had done participatory rural appraisals in some communities in the region and had discovered first hand that communities are not homogenous in that the needs differ according to gender and age. He was also now acutely aware that communities were able to think throughout their major challenges and find the solutions and so they should be a part of the process of planning and implementing the water programme. At the same time we in ProNet felt that as an NGO working with rural communities, we should work not only with communities but also with district administrative structures. We set ourselves a number of objectives in our work

1. Promotion of community ownership and management of the systems which have been requested for in the first place.
2. To advocate for the adoption of hand pumps which can be maintained at village level. There is a locally manufactured pump, the Nira AF 85.
3. The provision of the improved hand dug well.
4. Improvement of viable existing hand dug wells through rehabilitation.
5. To work in collaboration with established district structures - the District Water and Sanitation Team, the District Health Management Team . To strengthen and empower them through training.
6. To train national service personnel in order to create a pool of competent artisans who will work at community level and provide skilled labour in an environment where there is an ever increasing demand for improved facilities.

WaterAid agreed to fund our activities in the region because they could identify with our objectives. The regional and district teams for water and health also thought that we could be of some use in the region. The Regional Water and Sanitation Team and the District Assemblies were resigned to having NGOs work closely with communities in order that they make choices, manage their facilities and have access to hygiene education.

Strategies

The community has been the single most important actor in our work. The District Water and Sanitation Team receives requests for facilities and ProNet staff carries out animation work in the communities. We consider that there are four stages in this process.

1. Various participatory techniques are used with different groups in the community to establish basic facts about the community - felt needs, populations, water sources, settlement pattern, taboos, seasonal activities.
2. Formation of water and sanitation committees with female and male representatives. The committees have pump maintenance and health members on them in addition to the normal chairman and secretary.
3. Communities contribute sand, stones, organise the excavation of the well.

4. ProNet assists in the lining and finishing of the well. We have skilled well liners who are doing their national service. They are supervised by our field supervisor.

The national strategy outlines that a contractor should construct a well once the NGO has done the animation work. However in this region commercial hand dug well contractors are scarce and they charge exorbitant rates. At community level, men and women are prepared to contribute their labour for a water facility and that we actively encourage because it then means that the communities go through the entire process of construction and will automatically have a keener sense of how to manage the facility. We have therefore been advocates of the modification of the strategy along these lines and the Regional Water Team has accepted the modification.

Sanitation

Households rather than communities gain access to sanitation facilities. For ProNet this is more desirable as it is better managed and maintained and the national strategy concurs with this.

Households obtain technical advise from out Upper West Team on the dimensions of their pits and they go ahead and dig them with family labour or they hire labour. ProNet provides technical advise and lining materials for the pit. The Ventilated Improved Pit is the best and most affordable. The super structure is provided by the home owner and we assist with roofing sheets. The household picks up 50% of the cost of sanitation.

Hygiene education

Every community that we work with has health volunteers. ProNet makes sure that in every community three are trained, two women and one man. We work with the district health team in this area. They provide us with community health nurses who provide training to these volunteers.

The volunteers are trained as trainers and they use participatory materials that have been produced centrally by ProNet to pass on health messages to community members. These messages lead to an improvement in the usage, collection and storage of water and this in turn leads to better health.

Water and Sanitation Committees

These are the managers of the water system and we have spent time training them in the following areas.

- Stock control.
- Elementary book keeping to facilitate the community itself to collect and keep records of their pump maintenance money.
- Hand pump installation for men and women.
- Confidence building .

- Health and Hygiene Education approaches.

Monitoring

Even though ProNet feels that it is playing an important role in the provision of water and sanitation facilities and we work with district structures, we still see the need for our work to be monitored. There are three sets of monitoring done. One is by ProNet monitoring team, one by the District Water and Sanitation Team and the last by the Regional Team.

ProNet has a mobile monitoring team which visits every other month and looks at technical specifications, the quality of training of village based volunteers and water and sanitation teams and assesses the impact on the communities. The team in Upper West have found this very useful as their skills in construction and as trainers have been sharpened by these visits. Regular monitoring has also led to the modification of the vent pipe material for latrines from the PVC pipe which is expensive to one using bricks which are locally made and cheaper. It is therefore a necessary requisite of change and innovation.

The regional and district monitoring has also been very useful. The district teams are looking at our work with the eyes of government which is interested in making sure that the facilities will be sustained. Community members are motivated to keep at their community work if people from government show an interest in what they do and how. It makes community volunteers feel like they matter and that is sufficient motivation. ProNet staff have been gently reminding district and regional staff of this and have facilitated planning sessions with them so that as part of their work programmes they monitor community water initiatives.

Lessons learnt

- Communities are capable of making choices about the type of technology that they prefer.
- The hand dug well is a simple technology which communities can use to acquire a potable water source which they will be able to maintain.
- Water and Sanitation Teams can be supported by NGOs like ProNet with training in order that they are able to perform their roles creditably.
- Training is an essential function of NGOs today and should be for communities and government agencies as well so that they are all equipped with basic management skills.
- Advocacy is a major part of NGO work and it is possible to be an advocate for alternative technologies and techniques without necessarily being on a collision course with government agencies.

Conclusion

The provision of water, sanitation and hygiene education is extremely important in any society. In Ghana and other parts of Africa the challenge of its provision is being addressed by a variety of agencies - government, NGOs, the private sector . In Ghana we have a framework which gives us something to aim at.

It is important that we all work at provision of this basic need and that we are bold enough to examine the work that we do and make amendments to it in order that we achieve our goals. In Ghana if we continue to work diligently at our goal we could be a middle income country by the year 2020.

APPENDIX 1

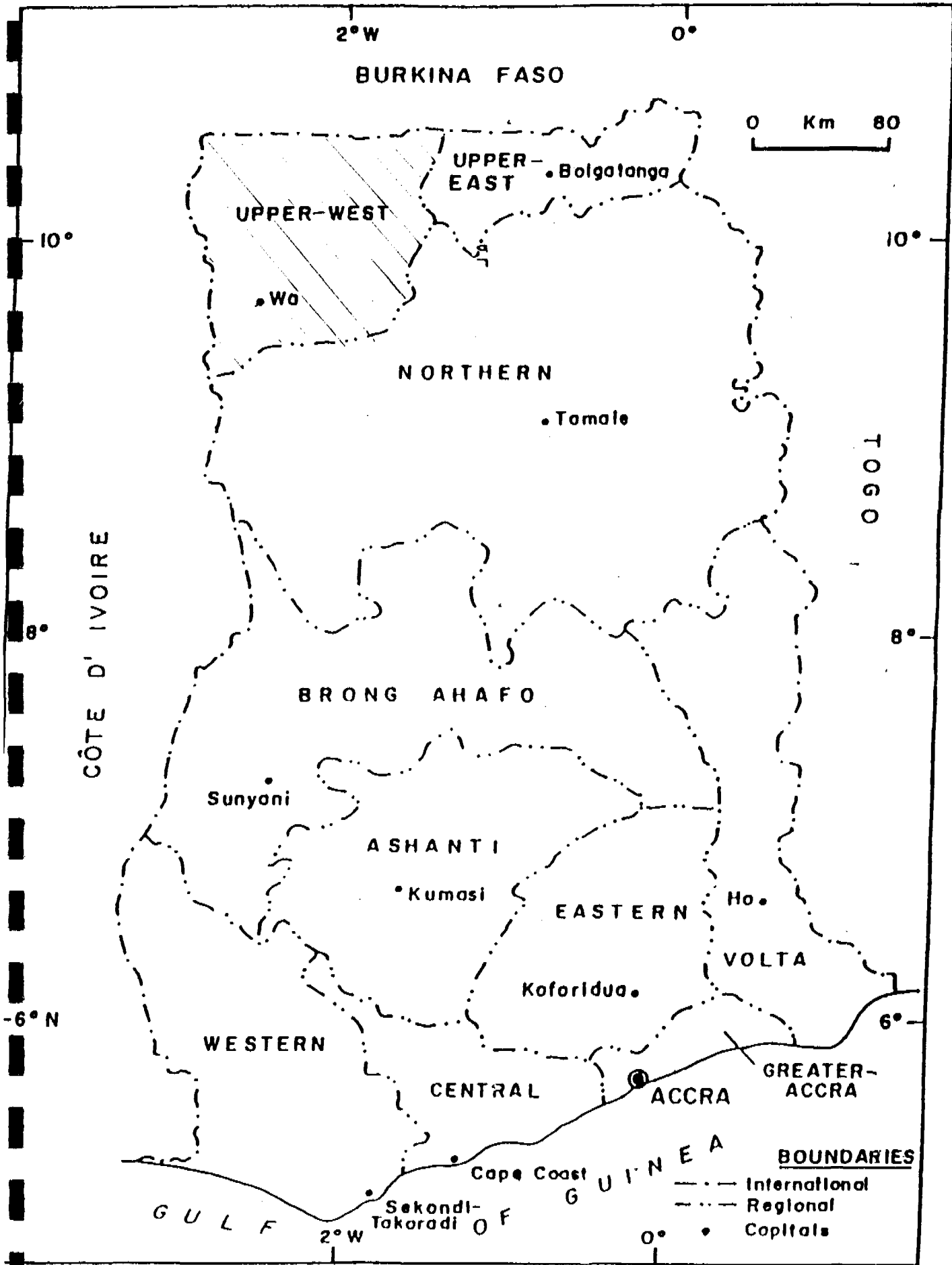
Indicators of Relative Poverty: Upper West Relative Position among 10 Regions.

Welfare Variable	Best Regional Score	National Average	Worst Regional Score	Upper West Score	Upper West Rank
<i>Health</i>					
Pop. per Medical Doctor (1987)	5,764	20,450	63,095	53,886	8th
Rural Pop. Health Coverage(%)	100%	-	10.8%	18.5%	9th
Infant Mortality Rate (1978-87)	57.7	77	138.3	103.1	9th
Childhood Mortality Rate (1978-87)	48.9	-	132.3	132.3	10th
<i>Nutrition</i>					
Percentage of Children Falling below 80% of Harvard weight for Age Standard 1986.	29.5%	36.1	47.8	47.8	10th
Percentage of Acute PEM (Wasting) in children 12-23 months 1986.	32.6	-	67.3	67.3	10th
Education Enrolment of Girls as a (%) of Total enrolled 1987/88.	49.0%	44.2%	33.1%	40.7%	8th
Percentage of Trained Teachers 1987/88.	87.4%	53.5%	36.2%	54.0%	4th
* Percentage of Women 15+ years illiterate	21.9	39.7	81.7	81.7	10th
<i>Sanitation & Water Supply</i>					
Percentage of Total Pop. equipped with Water Supply Facilities	91%	48%	27%	39%	9th
<i>Economic</i>					
No. of Smallholders below the Poverty Line 1986.	47.7	66.8	97.5	69.4	6th

Source: Compiled from ROG/UNICEF, 1990

* Derived from Ghana Demographic and Health Survey, 1989, p.8.

MAP SHOWING PROGRAMMING AREA



The Administrative Regions of Ghana

MOROCCO ASSOCIATION FOR RESEARCH AND ACTION ON HEALTH AND
HYGIENE

COMMUNITY MANAGEMENT OF DRINKING WATER
THE CASE OF IMILIL VALLEY, RHERAYA MARRAKECH
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COMMUNITY MANAGEMENT OF DRINKING WATER

A CASE STUDY OF IMILIL VALLEY, RHIERAYA, MARRAKECH

INTRODUCTION

Background of the Study

This study has been carried out in a number of village communities situated in the Atlas Mountains who belong to the Rheraya tribe.

Administrative Set up of the Study Zone

Administratively, the population studied is set in the rural community and the *Caïdat* of Asni. A *Caïdat* is headed by a ¹Kaid who is an agent of the authority representing the interior Ministry at the local level. The Asni *Caïdat* is attached to the Tahanaout Circle (a unit superior to a *Caïdat* and headed by a Super Kaid). Together all these entities from the Haouz District and Marrakech Province the population was estimated in 1982 as 12,308 people in 1768 homesteads and in 65 villages.

Tribal set up of the study zone

The community belongs to the Rheraya tribe. This tribe is divided into 5 i.e. Ait Mizane, Ait Ifghane, Sidi Fars, Oussertak. Each division occupies a valley - *Assif*, which bears the name of the fraction (e.g. the Ait Mizane Valley, or Ait Mizane *Assif*).

The five valleys form a basin across the Rheraya Wadi. Each fraction is subdivided into a number of villages. In the tribal structure, the village is fundamentally an organisational, economical and social unit. In each village the population is divided into lineages - *Tighsamt*. The lineage composes of homesteads called *Takat*. All the villages studied are situated along the n°Ait Mizane Valley.

Natural environment of the study zone

The area studied is mountainous. Three areas can be distinguished: the piedmont (Dir, Berb, Azaghar); the valley (berb, *Assif*) and high mountains (Berb, Adrar).

These areas are differentiated by altitude. In the piedmont, the altitude varies between 900 and 1200 m, it is situated in the valley and goes beyond 3000 m in Adrar. One of the villages studied, Tamassit is located in the piedmont, the other three in the valley have a varying altitude of between 1600 and 1800 m.

The climate is the Mediterranean type (Emberger, 1930). Annual relief varies between 400 and 500 mm. Snow cover varies from year

¹ Kaid - North African rural Chieftain

to year. Minimum snowfall occurs from an altitude of 1,500 m. stops in April and lasts for 3 months.

Water resources constitute surface (Wadi) and underground water. These serve drinking and irrigation purposes. Water is managed collectively. Snow constitutes the principle water reserve. During summer which is from the month of June water is scarce but in winter and Spring it runs permanently in the streams.

Income levels

Recent studies on the agriculture economy of Rheraya are not available. A study dating 1986, done in 2 villages of Rheraya i.e. Immi Oughlad and Wansekra gave the following income structure. Of the 22 families studied in Imi Oughlad, 15 had an annual income from agriculture, of less than 3000 Dhirhams, 18 between 3,000 and 6000 dhs and only 2 families had an income of more than 9000 dhirhams.

In Wansekra, with the same annual income structure, 2 families fell in the first group, 10 in the second, 6 in the third and 5 in the last. Income of the groups will be elevated after the introduction of fruit farming in the region.

Characteristics of villages studies

The villages studied are Tamassit-100 homes, Tagadirt n° Ait Ali - 45 homes, Aguerseoual 34 homes and Tamatert 22 homes. All these villages are situated along the Assif stream, which passes through the Imilil Valley.

The peasants of Imilil Valley are agro-pastoralists (farmers as well as livestock rearers), practising intensive agriculture (using animal manure and water) on small land subdivided into gardens and semi intensive livestock farming which depends on the mountains and cultivated land for survival. Twenty years ago these peasants took to cash crop growing of orchards (apples, cherries, pears). These activities have positively transformed the economy of the region. Social life is strongly marked by a tradition of solidarity in the provision of water for irrigation, division of land, construction of mosques and schools, land management and mutual aid in agriculture and pastoral duties.

The case of Imilil valley shows how mountain communities manage water resources particularly drinking water. We focus on approaches adapted to make local systems work and to decentralise water supply; and draw out lessons from the strong and weak points of the experiences.

We shall first present the water situation before the initiation of the water supply project. We shall show the results envisaged

by each community, then the effects of these results and lastly, the lessons learnt from these experiences.

1 The Water Situation.

Water supply is from springs (âĤĤ), streams (âĤsif, Oued) and wells (in the case of the Piedmont villages). These different water points are used jointly or separately for domestic use, watering livestock, irrigation, production of energy essentially for running grain mills and in construction sites.

Generally, it can be said that there are enough water points but are inconsistent in the supply of water. In other words access to water is considered laborious and has high economic and social cost on women and children. Two factors are evident: inconsistent supply of water and labour.

In order to appreciate better the water situation in the cases studied we have provided the following parameters: - the number of water points; the quality of water; the degree of consistency in supply; the distance covered per day in search of water. Table No. 1 (see annex 2) shows the situation in the villages studied.

- * The **number of water points** in the communities studied vary from between 2 and 4 in number and are characterized by their diversity with a predominance of springs.
- * The **quality** of water according to the users is considered to be good except for occasional pollutants such as floods which affect water, leaves from trees and branches, stones thrown by children (in the case of wells), infiltration of organic matter (animal dung mostly) in sources near homesteads and by animals. In the Aguerseoual spring, trout has been introduced as a measure to ensure cleanliness.
- * The **distance**: water points are located at varying distances from homes and the community as a whole (40 m - 700 m in Aguerseoual, 20 m - 1 km in Tamassit, 100 m - 1 km in Tagadirt n'Ait Ali, 300 m in Tamatert). These distances are not fixed throughout the year but vary according to season. Those who fetch water are forced to move to the furthest located water points when those near dry up.
- * **Seasonality**: Water is abundant during winter and spring but is scarce in summer and autumn with the most affected months being August- September. Supply being irregular, villagers resort to other sources located far away. This is the case with the Oued stream which is considered insufficient because of washing clothes and bathing which are done down stream. Access to water becomes problematic during drought when certain sources dry up and water from the Oued stream becomes scarce down stream.

- * **Labour:** It is the women and children who are responsible for searching for water. In some rare cases, families engage the service of a labourer (khaddar) to fetch water and for other agricultural and pastoral work. A donkey is also used for this task. Water drawing equipment are therefore necessary - plastic tanks of different capacities: 30, 70, 100 litres costing 30, 70, 120 dhirhams respectively.

In Tamassit we have estimated a daily water consumption of 250 l for a family of 8 during the winter. Time allowed for the provision of water in the home is 4 hours per day during normal times six hours per day during washing and bathing days. In summer this time increases because water is more scarce and needs increase.

Water and hygiene

The relationship between water and hygiene can be understood better from the such relative parameters as cleanness of water sources, treatment of water points, evacuation of waste water, animal and domestic waste, body hygiene and water related diseases.

No proper measures have been taken to maintain the cleanliness of water sources. Preventive treatment of water also depends on the competence of public health agents who are rare because of the location of villages. Waste water is poured outside or drained, in most cases, into small gutters dug in village alleys. As for sanitary facilities, some latrines exist in the houses of the rich. In absence of latrines people relieve themselves any how and anywhere - in the open air, in the orchards, behind thickets or in gullies.

Body hygiene is maintained in different ways: in small rooms in the houses or incomplete bathrooms near the houses. These bathrooms are made from reeds which take the form of an inverted basket and are covered with cloth or ground lined with lime.

Toilets are available to majority of the people in the village, men use the ablution in the mosque. These are of two types; the small ablutions for use before daily prayers and the big ablutions for purification after sexual intercourse. In summer, bathing in the Qued stream is very common.

2 Setting up, financial and institutional systems for drinking water supply.

The interest held in the supply of water is an ancient one. Villagers have always treated springs by digging canals, cleaning, installing pipes or making pans of either mud and stone or cement. Occasionally, a reservoir is built in order to store water from a stream that drains from the Targa canal.

Local initiatives concerned with water supply follow well thought out objectives in trying to overcome constraints and in assuring the community an available and regular water supply. These initiatives are a response to new needs expressed. How do communities in the Imilil valley organise themselves to solve their water problems? The Imilil case shows that there are no set rules.

In fact each community adopted a specific approach to solve its water problems. This approach is adapted from parameters such as the project concept, its adoption and management, the nature of relations between the idea and people (beneficiaries), modalities of participation of the community in realising the project, the regulation of water usage, and the solutions found.

Project concept, realisation and management.

The establishing of drinking water supply projects is by the Jmaa'a of the community. Jmaa'a is a historical principle vested with the management of local affairs having regard to equality of all families. Jmaa'a is not similarly in all communities studied.

In Tagadirt and Aguerseoual, the Jmaa'a operated alone when it was supported by a foreign NGO. In Tamatert it functioned as a Development Association. In Tamassit it was controlled by the law.

The case of Tamassit shows how the association is formalised and under the Jmaa'a jurisdiction. The association does not annul the Jmaa'a which is formed voluntarily. This gives rise to formalised and contractual relations whereas in the traditional Jmaa'a, relations remain informal and management laws less solid.

In all these cases, the traditional working mechanisms of Jmaa'a are visible in all stages of project realisation as we are going to see from the following. If Jmaa'a is seen as a way of social promotion in rural development activities, the experience of Tamassit demonstrates the factors that favour its institutionalisation into an organisation or cooperative. The Jmaa'as of the valley are moreover in turmoil and associations have been formed (in Aguerseoual) or are in the process of being formed (in Tagadirt).

Relationship between initiator and beneficiary.

The nature of the jurisdictional framework serving the activities of the group, informal Jmaa'a or formal Jmaa'a (association), will influence the relationship between the initiator and beneficiary. When the initiator is the informal Jmaa'a, the beneficiary of the service is treated as a member of the Jmaa'a even when he/she is a member of the association. Each membership will give him obligations and responsibilities.

Mode of community participation.

Two types of community participation were observed:

- the beneficiaries participated in financing the project. This was calculated according to the financial ability of the user and mainly according to generosity of the beneficiaries. This voluntary action has led to the distribution of financial responsibilities among the community. On the contrary, Jmaa'a, established as an association, demands from its members payment of equal contributions, calculated according needs of the project and partly according to the number of members.

In both situations, the contributions are spread out and paid when money is available. During the fruit harvesting season, the peasants open their purses very easily.

The beneficiaries finish their days work. In four experiences the Tiwizi Institute (mutual aid and reciprocity of service rendered, see Annex 1 on the Jmaa'at) was being rehabilitated. A general rule was observed: the masons, maa'llems were paid when labourers were volunteers. The women were charged with feeding the work force.

- Some villagers participated by giving land for sinking wells (Tamassit) or for building reservoirs.

Regulation of water use.

The Jmaa'as and more particularly the associations have tried to elaborate on a "water code" in defining the conditions of access to water services by the users. This regulation has taken different forms depending on the Jmaa'a.

- An "oral code": in Aguerseoual priority is given according to use. First is for drinking, then for animal feeding, lastly for washing clothes and irrigation. In case of a ceremony (marriage, baptism) or construction work, exceptions can be made.
- A code written on paper, listing the names of members of the committee charged with the realisation of the project in Tamatert. This code applies in cases of fining where water has been used for irrigation.
- A written code duly signed and authenticated indicating membership. It binds every member to accept the conditions stipulated in his/her contract.

Free service is offered to the mosque and cemetery in Tamassit.

A separate service exists to cater for homes far away from the water network by installing for them a water point with a meter close to their homes. The poor are exonerated from all contributions. In Tamassit, the association has offered credit facilities.

Technical solutions.

The setting up of a water supply system is a taxing process with many steps to be followed.

1 Concept and problem statement.

Water problems of the community always feature in their Friday prayers or in religious festivals. The dimension of the water problem was discussed and found identical in all the cases studied.

- * a chronic water shortage during dry seasons (summer - autumn) and during drought.
- * the heavy burden of fetching water from long distances of during summer and the severity of winter and the need to relieve women and children of the burden of carrying water
- * the expressed need for drinking water first, then for other uses later (bathing and latrines).

Discussions of solutions.

The discussion of the solutions to water supply problems generally rotate around two constraints that need to be overcome i.e social and physical constraints.

2.1 social constraints.

- It is necessary to convince the doubtful and sceptics of the project feasibility. The elders, known as Jmaa'a Lakhar, who are the guardians of tradition, had their own reservations when women and the young adhered to the project idea right from the beginning.
- The identification of a water resource to be exploited, above all, examining all the compromises on harmonious use.
- The choice of suitable locations for installing the supplies (canals, reservoirs, drinking water fountains) - between collective or private lands. The choice made should safeguard all users' interests.

2.2 physical constraints.

The ecosystem of mountainous areas sets specific constraints and dictates technical solutions in the supply of water. Relief (gradient and altitude), the topography (ravines separating homesteads), location of water resources (in the mountains or Oued

river bed), location of homes in relation to the water sources are so much the parameters that determine the possible solutions.

spring water

In three cases Jmaa'a mobilised water from springs. It involved a spring situated in the mountains more than 1 km from the route and difficult for livestock to access. These springs are necessary for livestock watering and their use is mainly with the livestock's interests at heart. In Tagadirt, spring water was left running for about 10 metres before being covered, this made it possible for livestock use.

Technically, the gradient allows the water to flow into pipes which pour water into a reservoir. Other pipes draw water from the reservoir to drinking water fountains located in the major areas of the villages.

Well water.

In one case a well was dug in the Oued river bed contrary to the gradient, an electric pump is used to lift water from the well and feed reservoirs present in all homes. A pipe transports water to the dwelling area from where it is easily branched into the homesteads.

The water supply systems installed in the villages studied offer varied and combined services (Annex 2, Table 2).

- Tamassit: Water in the houses through direct branching from the network.
- Tagadirt: Water drawn directly from the reservoir into an underground cistern.
- Aguerscoual: Constant water supply in public drinking water fountains or from pipes (non fixed) relaying water into homes.
- Tamatert: Constant water supply in public drinking water fountains. Three other drinking water fountains have been installed.

Additional indicators relative to the tagadirt case

The Jmaa'a of Tagadirt has been preoccupied with the question of drinking water supply.

- * 1964, the Jmaa'a built a reservoir near the Talaint spring in the village. The reservoir is 1m wide, 3m long and 1.6m deep. This reservoir never fills even halfway and is not sufficient

for all the village's needs. The reservoir was constructed with the aid of an ancient rural community - Sidi Fars.

- * 1979 another reservoir was constructed near the first 0.80 wide, 1.20 long and 1.5 m deep. The reservoir was set to obtain water from a spring to be used for irrigation.
- * 1986, distribution of a canal from the Targa n'Charig spring, located 1160m north of the village. The villagers dug a drain and installed a pipe. The system functioned for 3 years then pipe choked up. Water drained by the pipe and canal that replaced the first is diverted into an underground cistern in the village mosque. The water collected is used by the mosque and for domestic purposes. Water is directly drawn from the reservoirs or the underground system.

3 The effects of water supply networks.

Emergence and generalisation of needs.

Water brought closer to or in the houses encourages families to improve their kitchens, construct turkish baths and install sinks and latrines equipped with septic tanks.

Freedom from work (fetching water) for women and young girls and their taking to maintenance activities such as cleaning, and taking care of the house and children (washing floors and clothes more frequently, baths for members of the family and in particular children) or to income generating activities eg cloth repairing or working with wool (the case of Aguerseoual).

Perverse Effects.

The availability of water and it's unusual consumption (in quantity) has brought perverse effects. In the absence of a sanitation network, the evacuation of waste water into streets/alleys engenders odours, filth and the risk of diseases. The people are aware of these dangers.

From free water to payable water service.

Mutual aid and solidarity have reduced the costs of installing water supply networks. The cost of branching a distribution network to each home in Tamassit is less costly, 3500 dinars compared to the same service offered by a decentralised system nearby in My Brahim for 10,000 dinars. The services in Tamassit are being paid for just as in other villages. The equipment necessary for maintenance is the main cause of costs in the provision of water.

Migration to Tamassit - starting of a land market.

Particularly in Tamassit, some families from the villages situated in the high mountains have shifted to be near Asni. As a result, 100m² of land for building which cost 5000 - 6000 dinars has escalated to 7,500 - 9500 dinars after the installation of the water network.

Acquisition of skills and knowledge.

Knowledge and new skills were acquired by the peasants in technical, legal, medical and communication matters.

- * water hygiene is ensured by treatment using chlorine in Tamassit by a water caretaker.
- * The advent of new problems/needs, such as evacuation of waste water by a system of appropriate canals.
- * Drawing of contracts between users and caretakers in charge of the water service in order to ensure good relationships and membership enrolment in Tamassit - materials society.
- * Advent of new trades - 4 plumbers in Tamassit.

Conflicts.

In the case of Tamakert, conflict arose from two major causes:

- Rules were vague and did not stipulate the rights and obligations of the users.
- The institutional setting was often interfered with when a foreign NGO accompanied by a local on one side and the Jmaa'a on the other, is assured of financing the project on condition that water is supplied directly to the local's house or to where the members of the Jmaa'a stay. The NGOs objectives and those of the Jmaa'a, it would seem, were not well drawn out and clarified from the beginning. Certain homesteads contested these privileges extended to the local. This conflict risks worsening considering the problems associated with placing business before rights.

New community projects.

In Tamassit, the association has felt the need to acquire a motor pump to help in the drainage network. In Aguersequal, a development association is in the creation process with the help

of a Moroccan NGO. In Tagadirt, the Jmaa'a hopes to set up a water distribution network.

Conclusion.

The water problem varies in severity within each village of the valley. The communities dispose their institutional and financial potential and their material ability to in order mobilise water resources.

- ° A study on how Jmaa'a functions is necessary in order to bring out it's organisational capacity and it's traditions related to the management of development affairs in general and to water in particular.
- ° It is imperative to institutionally reinforce Jmaa'a in order to see the creation of village associations in the valley, meant to become the new legal arm of the Jmaa'a.
- ° The existing associations show that it is not the planting of Jmaa'a pure and simple, but it's recomposition where there is an emergence of new actors, notably the young, who carry out the new projects without surpassing the old who possess the powers. The redefinition and new division of responsibilities is in process.

The question of water poses itself in technical, institutional and financial terms specific to each community. The placing of water supply networks in the valley is preceded by a framework consistent in attracting funds and helping the Jmaa'a to :

- formulate in clear terms problems and needs associated with water and also other needs.
- search for appropriate solutions to these problems and to it's organisational and financial capacities.
- encourage planning between villagers and with possible partners (local authorities, rural communities, NGOs) and the definition of responsibilities and rights of each partner.
- encourage the exchange of experiences between communities engaged in the installation of drinking water systems.
- to assist the Jmaa'a and associations in legal matters in order to elaborate on regulations concerning water use, internal regulations, formulas of contract drawing and in stressing on the clauses preventing conflicts.

ANNEX 1.

"LAJMAA'AT"

Text drawn from : Pastoral Organisation in Rheraya of the Atlas: pastoral production, rights and rituals. Faculty of legal, economic and social sciences - Casablanca.

1:1 La Jmaa'at

It is a territorial unit that involves several villages, stretching its jurisdiction and control over its territory (amazient), that englobes according to J. Berque "Three notions; one Agriculture, the other politics and third of the country" (J. Berque 1978: 413). Concerning social unity, Lajmaa'at is of lineage composition - 3 to more than 10 lineages (ighs, plural ighassan: patriarchial and lamp rearers) cohabiting and forming a Lajmaa't. Lajmaa't "begins (...) there where there is no longer natural or conventional kinship" (J. Berque, 1978: 418), what can challenge all allegations of communal ancestry that otherwise does not resist the diversity of parental origins.

ANNEX 2.

Tables 1 and 2.

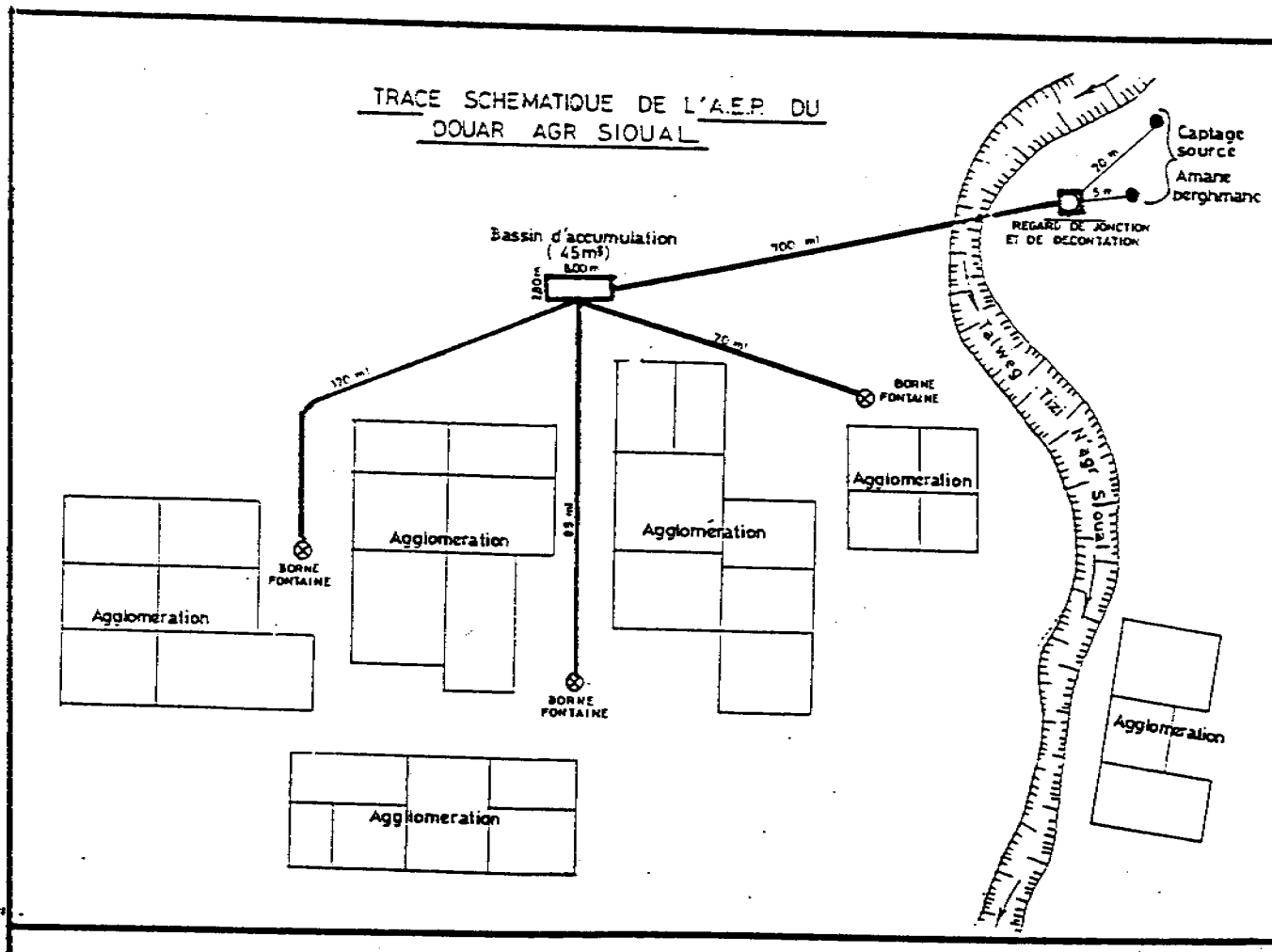
Table 1 - Water situation in the areas studied.

	Aguerseoual	Tamassit	Tagadirt	Tamatert
Number of water points	3 springs+ the Oued stream	1 spring + 1 well + the Oued stream	3 springs of which one feeds an underground reservoir	2 springs
Water Quality	good	good	good	good
Steadiness of supply	insufficient in summer-autumn	insufficient in summer-autumn	insufficient in summer-autumn	insufficient in summer-autumn
Distance covered in search of water	100 - 700 m	400 m - 1 Km	100 m -1 km	300 m
Constraints	resort to the Oued waters during drought	pressure on springs have draw water at night have to filter water using a cloth	have to resort to the furthest water point	have to queue have to resort to a secondary stream

Table 2. Setting up, financial and institutional systems for drinking water supply.

Parameters for project realisation	Institutional structures	Technical solutions	Resources mobilised	Type of service	Secondary effects
Areas					
Aguerseoual	Jmaa'a + a recent association	spring + canal digging + drinking water fountain + some individual piping	self financing	drinking water fountains in major areas + piped water in homes	septic tanks + turkish baths + fit in kitchens + a domestic water project
Tamassit	Development Association	wells + pumps + canal digging + reservoir + branching water to houses	self financing + support from rural community and authorities	domestic water: a water distribution network designed according to RADE	septic tank + turkish baths + fit in kitchens + a waste water evacuation project
Tagadirt	Jmaa'a	* spring + canal digging + underground reservoir * spring + canal digging + drinking water fountains (public and private)	self financing + support from rural community	a water tank for the mosque + water in homesteads (reservoir)	drinking water supply project
Tamatert	Jmaa'a	spring + canal digging + reservoirs + drinking water fountains (public and Private)	Dutch NGO + sustained by the Jmaa'a	drinking water fountains in major areas + fountains in homesteads	isolated cases of septic tanks + fit in kitchens + conflicts concerning water

Le schéma de l'installation
 plus moderne à
 Temzassit
 en cours :



KEY TO PHOTOGRAPHS.

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Introduction

Aim of the study.

This study presents a case of community management of water in the Imilil valley. To solve the problems related to drinking water, hundreds of communities have recently been involved in the planning and installation of a decentralised water system. The case of Imilil will be illustrated by the experiences of 4 villages.

The Imilil valley comprises other valleys which form the territory of the Rheraya tribe, located 60 Km north of Marrakech. The cases studied are in Tamassit, 100 homes; Tagadirt n'Ait Ali, 45 homes; Aguerseoual, 18 homes and Tamatert 22 homes. All these cases are located upstream, along the Assif stream which flows through the valley.

The peasants of this valley are farmers and livestock rearers, practising intensive agriculture (using animal manure and water) on small land subdivided into gardens and semi intensive livestock farming which depends on the mountains and cultivated land for survival. Twenty years ago these peasants took to cash crop growing of orchards (apples, cherries, pears). These activities have positively transformed the economy of the region. Social life is strongly marked by a tradition of solidarity in the provision of water for irrigation, division of land, construction of mosques and schools...

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Seasonality: Water is abundant during winter and spring but is scarce in summer and autumn with the most affected months being August- September. Supply never being regular, villagers resort to other sources located far away. This is the case with the Oued stream which is considered insufficient because of washing clothes and bathing which are done down stream. Access to water becomes problematic during drought when certain sources dry up and water from the Oued stream become scarce down stream.

Labour: It is the women and children who are responsible for the search for water. In some rare cases, families engage the service of a labourer (khaddam) to fetch water and for other agricultural and pastoral work. A donkey is also used for this task. Water drawing equipment are therefore necessary - plastic tanks of different capacities: 30, 70, 100 litres costing 30, 70, 100 dinars respectively.

In Tamassit, we have estimated a daily water consumption of 250 litres for a family of 8 during the winter. In order to replace this quantity, 4 shifts and 1 hour's work is needed to replace 60 litres at any one time. Water is used for drinking, washing dishes, irrigation, and the same quantity, once a week for bathing and washing clothes.

We shall show how 54.8 litres of water/person/day was arrived at from the following calculation.

$$(240 \times 7) + 480 + 480 = (2640 \div 7) \div 8 = 45.8 \text{ litres.}$$

Time allocated to provision of water in homes has risen to four hours during normal days and to six hours on the days clothes are washed and bathing is done. During summer, the time allocated increases because water is more scarce and needs increase.

Water and hygiene: there is no proper action that has been taken in looking after and keeping water clean that can be talked about. Apart from the unique case of trouts, preventive treatment is low because of the lack of competent public health officers who rarely frequent the communities. Waste water is poured in outside drains, in most cases by small gutters dug in the village alleys. Bathrooms and toilets only exist in the houses of the well off. In the absence of toilets, people relieve themselves anyhow and anywhere- in the open air, in the orchards, behind thickets, or in gullies.

2 SETTING UP, FINANCIAL AND INSTITUTIONAL TECHNIQUES OF DRINKING WATER SUPPLY.

The interest held in the supply of water is an ancient one. Villagers have always treated springs by digging canals, cleaning, installing pipes or making pans of either mud and stone or cement. Occasionally, a reservoir is built in order to store water from a stream that drains from the Targa canal.

On the contrary, local initiatives concerned with water supply follow well thought out objectives in trying to overcome constraints and in assuring the community an available and regular water supply. These initiatives are a response to new needs expressed. How do communities in the Imilil valley organise themselves to solve their water problems? The Imilil case shows that there are no set rules.

In fact each community adopted a specific approach to resolve the question of water. This approach is adapted from parameters such as the project concept, its adoption and management, the nature of relations between the idea and people (beneficiaries), modalities of participation of the community in realising the project, the regulation of water usage, and the solutions found.

PROJECT CONCEPT, REALISATION AND MANAGEMENT.

The setting up of drinking water projects is the Jmaa'a of the community. Jmaa'a is a historical principle vested with the management of local affairs having regard to equality of all families. Jmaa'a is not applied in the same way in all communities studied.

In Tagadirt and Aguerseoual, the Jmaa'a has been supported by a foreign NGO. In Tamatert it has taken the form of Tamatert Development Association.

In all these cases, the traditional working mechanisms of Jmaa'a are visible in all stages of project realisation as we are going to see from the following. If Jmaa'a is seen as a way of social promotion in rural development activities, the experience of Tamassit demonstrates the factors that favour its institutionalisation into an organisation or cooperative. The Jmaa'as of the valley are moreover in turmoil and associations have been formed (in Aguerseoual) or are in the process of being formed (in Tagadirt).

Beneficiaries.

When the facilitator is the Jmaa'a, the beneficiary of the water services is treated as a member of the Jmaa'a even when he/she is enrolled in the association. Each capacities charge him/her with particular responsibilities.

Mode of community participation.

Two types of community participation were observed:

- the beneficiaries participated in financing of the project. This was calculated according to the financial ability of the user and mainly according to generosity of the beneficiaries. This voluntary action has led to the distribution of financial responsibilities among the community. On the contrary, Jmaa'a, established as an association, demands from it's members payment of equal contributions, calculated according needs of the project and partly according to the number of members.

In both situations, the contribution are spread out and paid when money is available. During the fruit harvesting season, the peasants open their purses very easily.

- All the community members participated by surrendering some land for sinking wells (in Tamassit) or building reservoirs.

Regulation of water use.

The Jmaa'as and particularly the associations have tried to elaborate on a "water code" in defining the conditions of access to water services by the users. This regulation has taken different forms.

- An 'oral code': in Aguerseoual priority is given according to use. First is for drinking, then for animal feeding, lastly for washing clothes and irrigation. In case of a ceremony (marriage, baptism) or construction work, exceptions can be made.
- A code written on paper, listing the names of members of the committee charged with the realisation of the project in Tamatert. This code applies in case of fining where water has been used for irrigation.
- A written code duly signed and authenticated indicating membership. It binds every member to accept the conditions stipulated in his/her contract.

Free service is offered to the mosque and cemetery in Tamassit.

A separate service exists to cater for homes far away from the water network by installing for them a water point with a meter close to their homes. The poor are exonerated from all contributions. In Tamassit, the association has offered credit facilities.

Technical solutions.

The setting up of a water supply system is a taxing process with many steps to be followed.

1 Concept and problem statement.

The water problems of the community always feature in the Friday prayers or Aya. The dimension of water problems were discussed and found identical in all cases studied.

- * a chronic water shortage during dry seasons (summer - autumn) and during drought.
- * the heavy burden of fetching water due to the long distances of water points during summer and the severity of winter and the need to relieve women and children of the burden of carrying water
- * the expressed need for drinking water first, then for other uses later (baths and latrines).

Discussions of solutions.

The discussion of solutions for water supply problems generally rotate around two constraints that need to be overcome i.e. social and physical constraints.

2.1 social constraints.

- It is necessary to convince the doubtful and sceptics of the project feasibility. The elders, known as Jmaa'a Lakhar, who are the guardians of tradition, had their own reservations when women and the young adhered to the project idea right from the beginning.
- The identification of a water resource to be exploited, above all, examining all the compromises on harmonious use.
- The choice of location for installing the supplies (canals, reservoirs, drinking water fountains) between collective or private lands. The choice made should safeguard all users' interests.

2.2 physical constraints.

The ecosystem of mountain areas sets specific constraints and dictates technical solutions in the supply of water. Relief (gradient and altitude), the topography (ravines separating homesteads), location of water resources (in the mountains or Oued river bed), location of homes in relation to the water sources are so much the parameters that determine the possible solutions.

spring water.

In three cases Jmaa'a water was collected from springs. It involved one of the spring located in the mountains, more than 1 kilometre from the main route. Technically the slope favours a gravity flow system. Water flows into pipes which drain into a reservoir. Other pipes draw water from the reservoir to the drinking water fountains situated in major areas of the villages.

Well water.

In one case a well was dug in the Oued river bed. An electric pump is used to lift water from the well. A pipe transports to the dwelling area from where it is easily branched into the homesteads.

These two systems have given rise to two types of water supply systems: public drinking water fountains and domestic supplies - pipes relaying water to the houses, division of homes directly according to the distribution network (see table 2).

Table 2.

Parameters for project realisation	Institutional structures	Technical solutions	Resources mobilised	Type of service	Secondary effects
Areas					
Aguerseoual	Jmaa'a + a recent association	spring + canal digging + drinking water fountain + some individual piping	self financing	drinking water fountains in major areas + piped water in homes	septic tanks + turkish baths + fit in kitchens + a domestic water project
Tamassit	Development Association	wells + pumps + canal digging + reservoir + branching water to houses	self financing + support from rural community and authorities	domestic water: a water distribution network designed according to RADE	septic tank + turkish baths + fit in kitchens + a waste water evacuation project
Tagadirt	Jmaa'a	* spring + canal digging + underground reservoir * spring + canal digging + drinking water fountains (public and private)	self financing + support from rural community	a water tank for the mosque + water in homesteads (reservoir)	drinking water supply project
Tamatert	Jmaa'a	spring + canal digging + reservoirs + drinking water fountains (public and Private)	Dutch NGO + sustained by the Jmaa'a	drinking water fountains in major areas + fountains in homesteads	isolated cases of septic tanks + fit in kitchens + conflicts concerning water

3 The effects of water supply networks.

Emergence and generalisation of needs.

Water brought closer to or in the houses encourages families to improve their kitchens, construct turkish baths and install sinks and latrines equipped with septic tanks.

Freedom from work (fetching water) for women and young girls and their taking to maintenance activities such as cleaning, and taking care of the house and children (washing floors and clothes more frequently, baths for members of the family and in particular children) or to income generating activities eg cloth repairing or working with wool (the case of Aguerseoual).

Perverse Effects.

The availability of water and it's unusual consumption (in quantity) has brought perverse effects. In the absence of a sanitation network, the evacuation of waste water into streets/alleys engenders odours, filth and the risk of diseases. The people are aware of these dangers.

From free water to payable water service.

Mutual aid and solidarity have reduced the costs of installing water supply networks. The cost of branching a distribution network to each home in Tamassit is less costly, 3500 dinars compared to the same service offered by a decentralised system nearby in My Brahim for 10,000 dinars. The services in Tamassit are being paid for just as in other villages. The equipment necessary for maintenance are the main cause of costs in the provision of water.

Migration to Tamassit and ...

Particularly in Tamassit, some families from the villages situated in the high mountains have shifted to be near Asni. As a result, 100m² of land for building which cost 5000 - 6000 dinars has escalated to 7,500 -9500 dinars after the installation of the water network.

Acquisition of skills and knowledge.

Knowledge and new skills were acquired by the peasants in technical, legal, medical and communication matters.

- * water hygiene is ensured by treatment using chlorine in Tamassit by a water caretaker.

- * The advent of new problems/needs, such as evacuation of waste water by a system of appropriate canals.
- * Drawing of contracts between users and caretakers in charge of the water service in order to ensure good relationships and membership enrolment in tamassit - materials society.
- * Advent of new trades - 4 plumbers in Tamassit.

Conflicts.

In the case of Tamatert, conflict arose from two major causes:-

- Regulations were vague and did not stipulate the rights and obligations of the users.
- The institutional setting was often interfered with when a foreign NGO accompanied by a local, on one side and the Jmaa'a on the other, is assured of financing the project on condition that water is supplied directly to the local's house or to where the members of the Jmaa'a stay. The NGOs objectives and those of the Jmaa'a, it would seem, were not well drawn out and clarified from the beginning. Certain homesteads contested these privileges extended to the local. This conflict risks worsening considering the problems associated with placing business before rights.

New community projects.

In Tamassit, the association has felt the need to acquire a motor pump to help in the drainage network. In Aguerseoual, a development association is in the creation process with the help of a Moroccan NGO. In Tagadirt, the Jmaa'a hopes to set up a water distribution network.

Conclusion.

The water problem varies in severity within each village of the valley. The communities dispose their institutional and financial potential and their material ability to in order mobilise water resources.

A study on how Jmaa'a functions is necessary in order to bring out it's organisational capacity and it's traditions related to the management of development affairs in general and to water in particular.

It is imperative to institutionally reinforce Jmaa'a in order to see the creation of village associations in the valley, meant to become the new legal arm of the Jmaa'a.

The existing associations show that it is not the planting of Jmaa'a pure and simple, but it's recomposition where there is an emergence of new actors, notably the young, who carry out the new projects without surpassing the old who possess the powers. The redefinition and new division of responsibilities is in process.

The question of water poses itself in technical, institutional and financial terms specific to each community. The placing of water supply networks in the valley is preceded by a framework consistent in attracting funds and helping the Jmaa'a to :-

- formulate in clear terms problems and needs associated with water and also other needs.
- search for appropriate solutions to these problems and to it's organisational and financial capacities.
- encourage planning between villagers and with possible partners (local authorities, rural communities, NGOs) and the definition of responsibilities and rights of each partner.
- to assist the Jmaa'a and associations in legal matters in order to elaborate on regulations concerning water use, internal regulations, formulas of contract drawing and in stressing on the clauses preventing conflicts.

LAKE BASIN DEVELOPMENT AUTHORITY

COMMUNITY MANAGEMENT AND PARTNERSHIP WITH CIVIL SOCIETY

A PAPER PRESENTED BY
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1.0 INTRODUCTION

1.1 General

The Lake Basin Development Authority (LBDA) is a statutory organisation established by an Act of Parliament in 1979 and is mandated to plan, initiate, co-ordinate and implement development projects and programmes within the Lake Victoria drainage basin, a region defined as the entire catchment area of all rivers drainage into Lake Victoria, in Kenya and covers about 47,709km². It represents about 84% of Kenya's total area of 569137 Km² and comprises the entire administrative provinces of Nyanza and Western and parts of Rift Valley-Bomet, Kericho, Nandi, Uasin Gishu and Trans Nzoia Districts. Close to about 12(twelve) million people live within the region accounting for about 40% of Kenya's total population of around 30 million.

1.2 LBDA-Rural Water and Sanitation Programme

In the Water and Sanitation sector, the Authority has initiated and implemented the Rural Domestic Water Supply and Sanitation Programme (RDWSSP) which covered the whole of Nyanza Province (Fig. 1), with an estimated population of over 4million people. The programme involved the construction of wells, dams, protected springs, roof catchments and VIP latrines and started in 1982 as a pilot project with assistance from the Royal Netherlands Government. The pilot phase ended in 1983 and phase I of the RDWSSP was implemented between 1985 and 1988. From 1989 to 1991 September, the programme was implemented on an Interim basis. Phase II of the RDWSSP commenced in September 1991. Between September 1991 and April 1992, the Programme management and Programme Consultants designed new implementation approaches for phase II and at the same time LBDA and the Royal Netherlands Embassy (RNE) held discussions on new working protocols for the programme.

One of the requirements was that the Authority decentralises the RDWSSP and leave the implementation of the programme to the established District Water and Sanitation Programme (DWSPs) and District Water and Sanitation Development Committee (DWSDCs) under the general guidance of the respective District Water Engineers (DWEs), while continuing to play a co-ordinating and monitoring role at the Provincial steering committee (PSC) level in line with its statutory functions in its area of jurisdiction.

The changes were effected on 1st July, 1995 and the Authority has since then continued to offer similar services as those offered by the then Dutch Funded LBDA - RDWSSP but at a reasonable cost to the recipients throughout the Lake Basin Region. These are now being done through the Water and Mineral Resources/Geology Division (WAMR/GD)- a division of Lake Basin Development Authority comprising of high calibre organisational and technological capacities developed during the many years of involvement with the RDWSSP.

LBDA has also established a working relationship with other institutions and non-Governmental organisations in the water and sanitation sector and serves as a reference centre in the region.

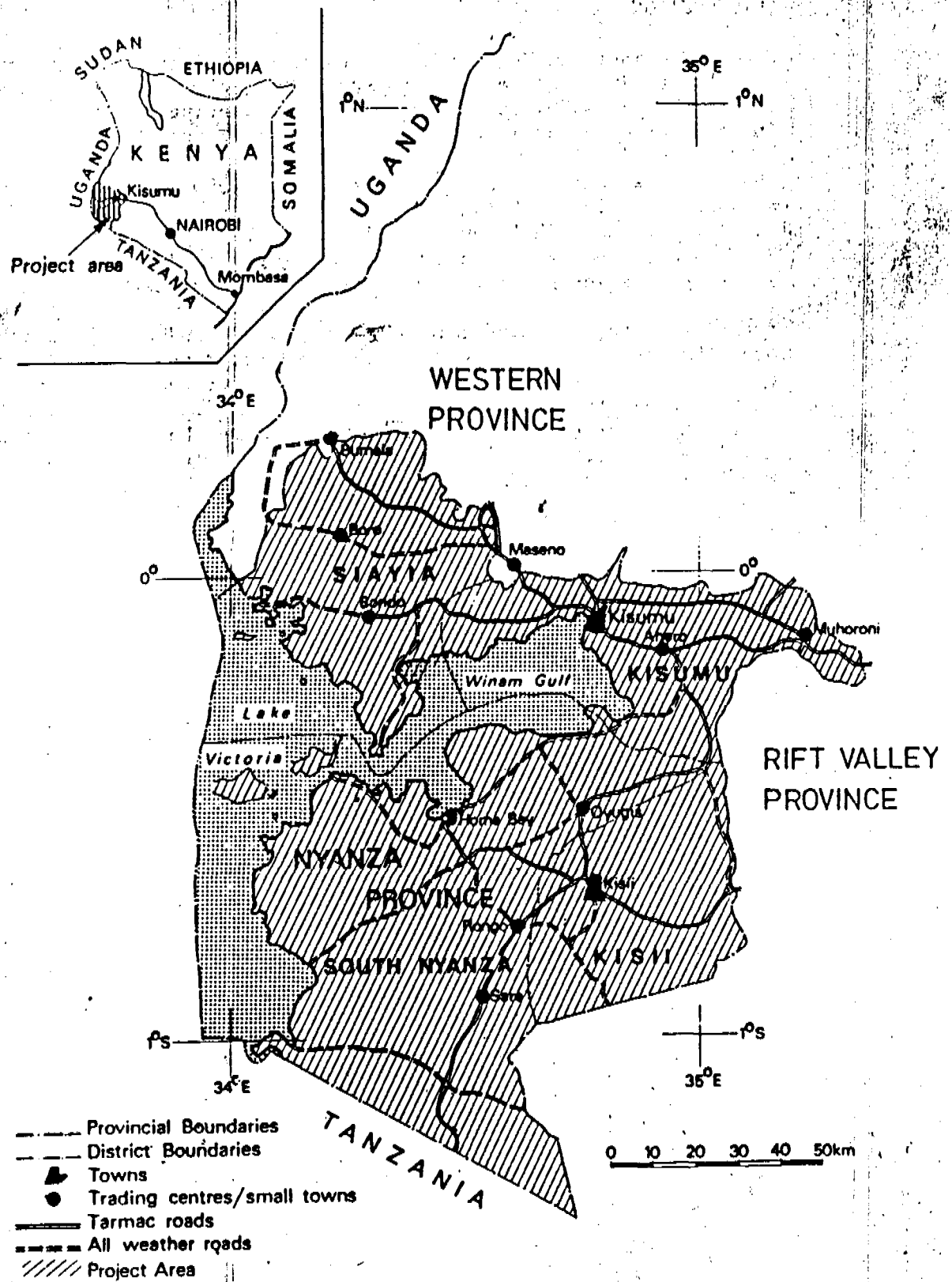


Fig. 1. LOCATION OF NYANZA PROVINCE

2.0 *LBDA-WATER WATER AND SANITATION PROGRAMME*

2.1 *Water and Sanitation activities-General*

As noted earlier since the Water and Mineral Resources/Geology of LBDA costs the provision of services in the Water and Sanitation sector, no conflicts have risen between uses of water because prior to a given community/group of persons or person requesting for our services they would have conceived or agreed upon whatever use they would require the resource for and raised any fee required for surveys or other preliminary works. Most activities in the water sub-sector are geared towards the provision of water for domestic uses rather than productive purposes. The productive exploits of water such as in livestock watering and irrigation are on a very minimal level due to unexplained reasons. The Socio-economic placement of the Lake Basin Region inhabitants has also made the resource more readily available to the elite (mostly private) since the majority of the people are usually poor and are not able to meet their basic social requirements let alone afford the minimal costs charged by the Authority for the preliminary surveys. The end result is that this greater part of the population usually compromises their hygiene by using unsafe and unclean water and may only be forced by existing health requirements to provide for some unimproved sanitary facilities. VIP latrines are also common with the elite and some public rural institutions.

The Non-Governmental organisation (NGOs) operating in the area have realised the need of the greater majority and have set their objectives in line with these felt needs and many a times have asked LBDA to carry out some works for them in the area of water and sanitation for it has come to their knowledge that for whatever programme they are interested in to succeed, it is desirable that they provide water as a basic requirement.

2.2 *Water and Sanitation activities-Implementation approach*

In all cases of community management and partnership projects in the area, it has been observed that both the women and children on one hand and men on the other have worked harmoniously in their respective roles.

Women (and to some extent children) being the traditional water searchers usually take it upon themselves to ensure that the projects are successful and sustainable by offering volunteer services in the provision of free labour and availing of the local raw materials at the site while men who are the traditional landowners avail the land for the construction of the water facility. Men also participate in paid roles as cheap technology artisans in well construction. Culvert manufacturing, pumps repair and manufacturing.

The participant communities are involved in the whole process of planning, implementation, resource utilization, operation and maintenance of the water supply system through the formation of water committees composed of elected respectable elders and other villagers - men and women. This kind of organisational arrangement incorporates and utilizes the existing indigenous rural institutions which have evolved over time and are subject to a lot of respect and minimal abuse thus assisting in conflict resolution and prevention.

Although the comprehensive water resources survey carried under the LBDA - PDWSSP revealed that in large parts of Nyanza Province development of groundwater by means of well and boreholes is the only feasible solution the technology choice (surface water/groundwater abstraction and supply) is made after a comprehensive site specific water resources survey has been done and due regard taken in consultation with the beneficiaries on factors such as project scale & costs, water supply demand, social, cultural, human approaches etc.

All perceptions to solutions are invoked in order to come up with an agreeable choice but priority is given to local users interest.

A lot of efforts is taken to protect and improve the traditional systems of water and sanitation management as depicted by such techniques as the conservation and protection of water catchment and spring sources using indigenous vegetation and the digging of unimproved pit latrine.

Areas which bring conflict with the communities socio-cultural beliefs such as the use of transferable latrine slabs on newly dug pits as done by the previous LBDA-RDWSSP are avoided and the communities are encouraged to opt for new slabs and also given technical advise on the manufacturing of the slabs and lining blocks.

The international standards on water quality are taken as a guide to potability standards while system and parts sizes are standardized to allow their use locally and internationally.

The hand operated groundwater systems though centralised and expensive have proved likeable in most donor funded community based rural projects as opposed to rainwater harvesting systems such as roofcatchments which though decentralised and inexpensive have been found to favour only the few well-off families capable of building at least the corrugated iron-roofed structures. The former has also proved to be reliable, with low costs in terms of operations and maintenance due to the cheap technology involved and inbuilt transfer mechanism of the same to the village based artisans, pump handlers and social workers through training and provision of institutional development packages at various levels of the water supply project. The said activities are thus easily reproducible within a given community and elsewhere due to the involvement of water committees and the large proportion of the local population.

A number of artisans such as Merk Engineers of Homa Bay have now grown into fully fledged small scale entrepreneurs involved in the provision of pump spares and other handpumps currently being used in the region and are now extending their market area beyond the region, thanks to the LBDA - RDWSSP. The ready availability of the said further ensures that the installed systems are sustainable. Other local institutions such as Approtech are currently involved in the development of handpumps and recently came up with a peddle pump suitable for irrigation purposes. The pump design has been done with the rural woman and child in mind in line with the government policy on involvement of women in all development spheres. This kind of innovation is being encouraged and LBDA has already been approached to assist in the promotion of the handpump. Dissemination of such information to local users and other outside public is usually realised through shows such as the Agricultural Society of Kenya sponsored shows and Jua Kali exhibitions such as the recently held BAT(K) Ltd sponsored Jua Kali exhibition; in seminars and workshops and in technical reports and papers done by LBDA staffers.

Spring protection encompassing both the indigenous (stone piles, bamboo stalks etc) and modern (retaining walls and pipes) techniques are common in areas of moderate to high rainfall.

Small scale piped supply schemes are usually developed and run by institutions with technical assistance from Lake Basin Development Authority. The systems reliability is usually far from satisfactory due to the management and operation & maintenance problems associated with the mechanization and large scale of most supplies. Vandalism of pipes sometimes play a major role in bringing down these system when they extend beyond the institutional boundaries.

Most of the projects in the water and sanitation sector are usually donor funded to a greater degree but a small proportion of the financing may be raised by fund raising instil ("Harambee") by the beneficiaries as a cost sharing measure and a means of instilling beneficiary responsibility. The operation and maintenance costs are usually realised from the "sales" of water. These "sales" here are nothing to be viewed in the commercial context for they barely meet the operational and maintenance costs and only helps in sustaining projects and any rise to such levels would virtually mean crippling of the supply and non utilization of the resource from such a project.

LBDA therefore provides water supply system servicing at a minimal cost affordable to most of the regions populace so as to help out in such cases. The Authority also assists in soliciting for project implementation funds where communities have organised themselves and raised money for preliminary activities such as for groundwater surveys.

Where donor funding is totally unavailable it has been observed that the communities have themselves gone ahead to dig up unlined open wells, dams and groundcatchments in a bid to avail themselves the scarce resource and minimise incidences of water related diseases. At such traditional water points "draw off" areas are provided for both domestic and livestock watering and the sources are well protected to prevent misuse and water pollution. Water source rehabilitation is done on a communal "harambee" basis during the dry spell. Notwithstanding all those measures taken by the Government, NGO's and communities themselves over the past many years it has still been difficult to realise the official national policy of providing safe and clean drinking water within easy reach primarily because of lack of adequate funding in the water and sanitation sector.

3.0 CONCLUSION

From the above discussion it evident that the Water & Mineral Resources/Geology Division of LBDA has developed an effective and sustainable system for community management and partnership with civil society and given adequate sector funding and utilising the existing organisational and technological capacities it has the capability of being self sustaining and these would bring about a responsible and efficient community based management of the scarce water resource in the Lake Basin Region. It is interesting to note that the division supports a greater part of its recurrent expenditure using funds generated from its activities in the water sub-sector. Further dissemination of primary health information would enhance the desire for improved water systems and bring about self reliance in the division in line to the government policy of divestiture in public institutions.

The WAMR/GD's participation in sanitation activities by way of need assessment, sensitisation and supply of VIP and Sanplat latrine slabs and advisory on construction of structures should go hand in hand with the construction of water facilities as the former has been found to attract minimal attention especially amongst the rural poor. This should be done through the provision of suitable incentives or subsidies by the government or donors and technical assistance by LBDA.

SOUTH AFRICA - AN OVERVIEW OF THE DOMESTIC RURAL WATER SUPPLY SECTOR

by

Ricky Murray

"South Africa is a land of contradictions and extremes. Nowhere is this clearer than in the distribution of basic services. In a country with nuclear power, cellular telephones and vast inter-catchment water transfer schemes, more than 12 million people do not have access to an adequate supply of potable water; nearly 21 million lack basic sanitation." Department of Water Affairs and Forestry: Water Supply and Sanitation Policy - White Paper (1994).

1 Domestic rural water supplies: pre-1994

The history of water in South Africa cannot be separated from the history of the country as a whole. This history reflects the unequal distribution of resources, and it is similar to the history of housing, land ownership, education, and the provision of other services. Most of the water used in South Africa is for white commercial agriculture.

Prior to the political changes in 1994, when the white, minority government was replaced by a nationally elected government, there was no state policy on domestic rural water supply, and there lacked a uniform or coherent strategy with respect to the implementation of domestic rural water supply projects. South Africa was divided into numerous "self governing" or "independent" states which covered about 13 % of the land, and in which about 44% of South Africans lived (Development Bank of Southern Africa, 1991). Many of the people living in these areas were forcefully removed off land which is now owned by white farmers, timber companies and the state. Large portions of these state owned lands are now game reserves. The people who live in the former "independent" states are amongst the poorest in South Africa, and they depend mostly on state pensions and money sent by family members who work in the mines and in the industrial centres. Any discussion on South African domestic rural water supplies, refers almost solely to some 14 000 villages which make up these areas.

Some of the most difficult problems associated with the sustainability of domestic rural water supply schemes are a result of the resettlement programmes which were implemented at the turn of the century and which continued until about twenty years ago. This programme which is locally and ironically referred to as "betterment", involved dividing the land into separate areas for settlements, grazing and agriculture. Local people, who previously settled according to the availability of natural resources, like soils, grazing lands and the availability of fire wood and water, had the plan imposed upon them without consultation. As a result there were numerous uprisings against "betterment". In some areas where people resisted betterment, the state

appointed new tribal authorities who were willing to "buy into" the resettlement programme. Because of these "illegitimate" tribal authorities and because some "legitimate" tribal authorities worked with the state during the resettlement programmes, for many South Africans, the tribal structures lost their credibility. This is still a problem today, as civic and tribal structures compete for local support and control over development processes. In order to entice people to resettle, the state promised people water - a promise which could never be kept considering the limited resources the state allocated to water provision for much of this century. This promise, although made decades ago, is one of the main factors which will affect the sustainability of domestic rural water supplies.

Each of the "independent" states had their own domestic rural water supply plan, and the responsibility for implementation and operation and maintenance (O&M) rested with different departments in each "independent" state. The relevant department would decide on the type of water supply scheme to be provided, and it would be responsible for O&M. As a result there is great diversity in water supply infrastructure within South Africa, as one "independent" state would favour handpumps and another would favour windmills, or bulk supply schemes. In all cases, there was either no community participation in the selection of technology, or there was no meaningful community participation. The main reason for a lack of meaningful interaction was because the governments of the "independent" states only recognised tribal structures, and not civic or other community based structures. As stated earlier, many of the tribal structures were created by the former South African government, and therefore many of them lacked popular support.

The rate of domestic water supply delivery was slow and the O&M record was pathetic. The "independent" states did not have the financial or human resources to provide this service, and in most cases they lacked the political will to solve the domestic water supply problems. For example, in the Northern Zone of the Transkei (a former "independent" state), of the 239 windmills only 10 % were operational at the time of inspection in 1991, and of the 24 handpumps, only 30 % were operational (Steffen, Robertson & Kirsten, 1991).

2 Domestic rural water supplies: post-1994

Since the political changes in 1994, the Department of Water Affairs and Forestry (DWA) developed a national policy on water affairs. This followed a consultative process with organisations and individuals interested in water related issues. The main policy principles are:

- Development should be demand driven and community based;
- Basic services are a human right;
- "Some for all" rather than "all for some";
- Equitable regional allocation of development resources;
- Water has an economic value;
- The user pays;
- Integrated development;
- Environmental integrity.

These points are discussed in DWA's White Paper on Water Supply and Sanitation Policy

(DWAF, 1994) and in DWAF's Water Law Principles (DWAF, 1996). In the past, people were promised free water and in most instances, got nothing. Now, the chances of getting a water supply scheme are high, but people will have to pay for the operational expenses.

Many African countries do not have such a policy (Abrams, 1996). The significance of having a national policy is that it provides a foundation for planning and the drawing up of development strategies. In the absence of clear and adequate water supply policies, governments do not provide leadership to the sector which results in a wide variety of different approaches being adopted by aid agencies, NGO's and different government authorities. A clear policy is also necessary to act as a guide and to confine political promises to deliverable services. The policy has to be supported, practically implementable and it has to be developed in a consultative manner, otherwise it may be undermined and difficult to enforce. In some African countries which have such a policy, many of the project planners and implementors are unaware of it, and are therefore not working within the policy framework (Abrams, 1996). This tends to undermine respect for policy and the state's role of leadership and guidance in the sector. While broad consultation is essential for the development of a respectable policy, dissemination of it is equally important.

The responsibility for the implementation of domestic rural water supply schemes rests with the Department of Water Affairs and Forestry (DWAF), who have established a branch called Community Water Supply and Sanitation. This branch of DWAF now faces the challenge of supplying potable water to the thousands of rural settlements which do not have any formal water supply scheme, or whose schemes are broken down or operating below an acceptable minimum level of service. This "basic" level of service, is defined in DWAF's White Paper entitled "Water Supply and Sanitation Policy", and includes:

Quantity: 25 litres per person per day. This is considered to be the minimum required for direct consumption, for the preparation of food and for personal hygiene. It is not considered to be adequate for a full, healthy and productive life which is why it is considered as a minimum.

Cartage: The maximum distance which a person should have to cart water to their dwelling is 200 m. In steep terrain this distance may have to be reduced to take account of the extra effort required to cart water up steep slopes.

Availability: The flow rate of water from the outlet should not be less than 10 litres a minute and the water should be available on a regular, daily basis.

Assurance of supply: The supply should provide water security for the community. Two factors are important here.

First, schemes for domestic water supply should ensure the availability of "raw" water for 98% of the time. This means that the services should not fail due to drought more than one year in fifty, on average.

Second, the operation and maintenance of the system must be effective. This aim should be to have no more than one week's interruption in supply per year.

Quality:

Once minimum quantity of water is available, its health-related quality is as important in achieving the goal of a water supply adequate for health. The quality of water provided as a basic service should be in accordance with currently accepted minimum standards with respect to health related chemical and microbial contaminants. It should also be accepted by consumers in terms of its potability (taste, odour and appearance).

Upgradability:

The desire of many communities to upgrade a basic service to provide for household connections should be taken into account during planning. If this is not done the system could either fail due to illegal connections or have to be expensively upgraded when there is a demand for house connections. Any additional infrastructure required to provide upgraded services will not be considered as part of the basic needs infrastructure.

While DWAF accepts responsibility for the implementation of domestic rural water supply schemes, the department does not accept responsibility for the operation and maintenance (O&M) of the schemes - this responsibility lies with the beneficiary communities or their local governing bodies. In some cases this may mean the collection of tariffs and paying an outside agent, for example a water board, to undertake O&M, however, in many cases, it implies management and O&M at the village level.

For the first time in South Africa's history, the state views community involvement in domestic water supply schemes as an integral part of the water supply developmental process. The challenge that faces South Africa in this regard, is to make community involvement meaningful. This implies that development planners need to consider all the social factors which will affect the sustainability of a domestic rural water supply project. This topic will be revisited later.

3 Funding the implementation of domestic rural water schemes

DWAF is the main funder of domestic rural water schemes. Other funders include Mvula Trust, a domestic water and sanitation funding organisation which receives a substantial portion of its budget from DWAF, and international NGO's. Most funding organisations comply with DWAF's policy principles listed above. The planners and supervisors of water supply schemes are private consulting engineering companies and NGO's.

DWAF's funding policy

- There are no capital cost limitations;
- Communities do not contribute to the capital cost of the project;
- Communities have to pay for O&M;

- Communities must have a representative steering committee;
- DWAF pays for labour at going rates;
- DWAF encourages the use of local contractors;
- DWAF requires a skills assessment be undertaken prior to project implementation and DWAF pays for water committee training;
- A one year O&M mentorship is necessary before DWAF hands over the scheme to the community or their local government structure;
- Funds for project implementation are paid to the consultant on a claim basis.

Mvula Trust's funding policy

- The maximum per capita capital cost (in US dollars) is as follows:

Community < 500:	\$ 90
Community 500-1500:	\$ 50 + \$ 0.04(1500-n), where n is the number of people to be served
Community > 1500:	\$ 50
- Communities do not contribute to the capital cost of the project;
- Communities have to pay for O&M - they have to establish an emergency breakdown fund before the completion of the project;
- Communities must have a representative water committee;
- Mvula pays for labour at going rates;
- Mvula encourages the use of local contractors;
- Mvula pays for water committee training (about \$ 6 000 - \$ 11 000 per project);
- Mvula support integrated water supply, sanitation and health education projects;
- Funds for project implementation are paid to the community's water committee in disbursements.

4 Operation and maintenance - the big challenge

In order to provide 25 litres per capita per day within 200 m of each homestead, in most cases water will have to be pumped to a village reservoir and then reticulated throughout the village. In some instances water can be obtained from an existing bulk supply scheme, however, more commonly, local boreholes or surface water sources will need to be developed. Handpumps, solar pumps and windmills in virtually all the cases will not be able to supply the demand, and therefore electricity and diesel driven pumps will have to be used. Since electricity is generally unavailable in these rural areas, most villages will rely on diesel driven pumps. While extremely robust machines, diesel engines require regular servicing if they are to last more than ten years. Most rural dwellers have not had any experience of maintaining an engine, let alone managing a water supply scheme. This raises some crucial questions: *Is South Africa's policy appropriate? Will the water supply schemes currently being implemented still be operational in ten years from now? When a major repair is required or when infrastructure reaches its design life, will the community have raised sufficient funds to cover the necessary expenses?*

In order to make sure the most appropriate scheme is selected, several factors need to be considered during the planning stages of a project. These factors are listed below.

Factors which affect the sustainability of rural water supply schemes

- **Community requirements;**
- **Water demand, present and future;**
- **Affordability to pay for O&M and replacement costs;**
- **Willingness to pay for O&M and replacement;**
- **Local skills:**
 - **management;**
 - **financial management, budgeting, collection of funds, bookkeeping banking and paying for services;**
 - **ordering materials and payment for materials, and recording the necessary information;**
 - **tariff collection;**
 - **conflict resolution;**
 - **technical skills like servicing an engine, operating a water treatment works, fixing pipes and taps, etc.;**
 - **accessing technical and financial management support, and identifying support companies or organisations;**
- **Political and legal issues, like the legitimacy and support of the water committee, water rights, etc.;**
- **The impact of the scheme on community health and welfare, economic potential, the environment, and on other current or future users;**
- **Technological infrastructure;**
- **Regional plans for the area;**
- **Community participation.**

While each of these factors could be discussed in depth, I believe skills development and community participation are the main factors which affect the sustainability of a rural water supply scheme. A number of the other factors, such as affordability and willingness to pay can be addressed through meaningful community participation. Appendix 1 lists the skills required and the training programme needed for a water committee or local governing body to manage a rural water supply scheme. While a comprehensive training programme is essential, of equal importance is follow-up support. Not only are the necessary skills not always acquired during a short-term training programme, but often people who have obtained marketable skills leave the village in order to seek employment in the urban centres.

Since educational facilities in the former "independent states" are poor, management, numeracy and literacy skills in rural areas are limited. While training is a time consuming process, local and international experience has shown that without the necessary skills transfer to appropriate community representatives, the chances of sustainability are limited.

Funders like Mvula Trust require that the water committee manage the projects' funds, bank accounts, make payments to suppliers, organize labour etc. Extensive training is required in order to ensure the water committee can carry out the tasks. Such training is costly and time consuming. Often budgets are insufficient to cover appropriate training, and in some cases where adequate funds are available, insufficient or inappropriate training is provided. One reason for this is that the responsibility for the implementation of these schemes commonly rests with companies who have a technical focus, and do not realise the significance of training, or do not have the capacity

to undertake appropriate training.

Community interaction is currently a popular concept and it is part of the government's policy in relation to domestic rural water supply projects. However, it is very difficult to achieve in a meaningful way. All the role players in development, such as political leaders, community leaders, community structures, government structures, non-governmental organisations, contractors and engineering consultants, regularly refer to community interaction, consultation, involvement, liaison, etc., however, they seldom acknowledge the complexity and significance of community interaction processes, and commonly pay lip service to the necessary consultative processes.

Community interaction is probably the most difficult aspect of a development project, and often small budgets are allocated to this component of a project. The South African experience, which is no different to the international experience, shows that if community interaction is not taken seriously the chances are that the project will fail within a few years of its implementation.

Some of the key social factors which influence sustainability are listed below.

Key social factors which influence the sustainability of a domestic rural water supply scheme:

- the community, as opposed to an outside agent, identifies their needs;
- the community shows a willingness to resolve internal conflicts;
- the community supports the project;
- the community shows a willingness to pay for O&M;
- the community shows that the operation and maintenance of the scheme is affordable;
- the community shows a willingness to operate and maintain the scheme;
- the community understands the implications of long term O&M, especially the financial implications;
- the community is willing to choose suitable people to manage the development process and the operation and maintenance of the scheme.

These points may appear as being obvious, however, they are seldom seriously considered by development planners. Consider the last point for example. It may be quicker and appear suitable to the community and the implementing agent, for a school teacher or a shop owner to manage financial and operational matters concerning the project. However, long term O&M requires that a group of people who have an interest in the scheme be trained in all the skills necessary to manage the scheme. This also means that people who are likely to remain in the village once they have acquired management and O&M skills, and who are prepared to transfer their skills, be nominated by the community for training. Because women are more likely to remain in a village after acquiring marketable skills, the community should encourage skills development amongst women, and accept that all aspects of O&M can be managed by women.

Appendix 2 covers the development process used by a development NGO, Rural Support Services.

5 Qoqodala - a case study of a domestic rural water supply programme

Qoqodala is located in the former "independent" state of Transkei. It covers approximately 50 km² and consists of twelve villages of a generally scattered nature. The total population of the area is about 12 000 with villages varying in sizes from less than 200 people to approximately 2000 people. Sufficient clean water has been a major problem for the Qoqodala residents. More than ten people per day on average used to visit the Qoqodala clinic for treatment of gastro-enteritis, and scabies, skin rashes and ringworm are very common amongst the Qoqodala residents. Almost all the water collected for domestic purposes was unhygienic, the only 'safe' water came from a government handpump in one of the villages with a population of about 1 200 people and numerous unprotected springs which yield an average of only 3 000 litres per day. One of the twelve villages, Maqwatini has sufficient spring water, and this has been developed by Rural Support Services with European Union funding. A government windmill, in a total state of ruin lies on the ground next to a borehole in one of the villages with a population of 1900 people.

In 1991 the Qoqodala residents approached the Rural Support Services (RSS) for assistance with domestic water supplies after attempts to get the former Transkei Government to assist had failed. RSS staff visited the area to hear the Qoqodala Resident Association's request but were unable to hold a successful meeting with the Qoqodala residents due to conflict between the tribal authority and the civic structures. RSS was then asked to withhold the application whilst the Qoqodala residents sorted out their internal problems.

A year later the Qoqodala Civic Association asked RSS to re-consider their application for domestic water supplies. RSS agreed and from then on, community meetings and workshops were held. These meetings and workshops covered topics like: the development process RSS uses when working on a water project, the selection of democratic water committees, the training of committee members, and especially the roles of the chairperson, secretary and treasurer, how to organise labour for the project and the different types of water systems, their pros and cons and especially their financial and maintenance implications.

During the period of these meetings a detailed inventory of all surface and groundwater sources was developed by RSS and population figures of each village were gathered by the Qoqodala Civic Association. Table 1 lists the populations of each village and their domestic water requirements. At that stage the government did not have a water supply policy, and RSS took twenty litres per person per day to be the minimum requirement and 40 l/p/d to be the desired requirement.

TABLE 1: QOQODALA WATER REQUIREMENTS

VILLAGE	POPULATION	MINIMUM WATER REQUIREMENT (m ³ /d)	DESIRED WATER REQUIREMENT (m/d)
Luxeni	1300	26	52
Blankwe	700	8	16
Mazongozini	350	4	8
Mayaluleni	1900	38	76
Mmangweni	1000	20	40
Bowdeni	1200	24	48
Manelspoort	600	12	24
Lalini	600	12	24
Kwa Xusha	1000	16	32
Mahlatini	160	3	6
Kwa Nzolo	800	12	24
Maqwatini	2000	40	80

A surface water source was suitable for Mahlatini and a spring source suitable for Maqwatini. The remaining villages required groundwater sources.

The groundwater investigation resulted in the drilling of eighteen boreholes, fifteen of which were water bearing and three of which were dry. Thirteen of the higher yielding boreholes were test pumped and the results show that all the villages in the Qoqodala area now have sufficient, good quality water to meet their domestic requirements. The sustainable borehole yields ranged up to 80 m³/day. All the boreholes that were chemically and bacteriologically tested yield water that is safe for human consumption.

The results of the drilling project were presented to the communities at village meetings and they were informed about how much water they could get from each borehole, the types of pumps they could install on each borehole, and the pros and cons of the various types of pumps. While most

villages initially opted for windmills, they all changed their minds in favour of diesel driven pumps after considering the reliability and quantity of water that windmills could provide.

Maqwatini's spring protection scheme was funded by the European Union and the funds for the implementation of the remaining villages' schemes came from Mvula Trust. The Mvula project's funding was approved in mid-1994. Since Mvula Trust's requirements are that the village manage the funds, extensive financial training was required. The implementation progress of the projects varied from village to village. Some of the projects went quickly due to motivated community members and because labour was paid for. The implementation in these villages was complete in about a year. In others, the progress was slow due to ongoing conflict within the communities, and in two cases there are still the odd tapstand to complete.

The main problems encountered during implementation were:

- In some cases the labour fund ran out. The funds were managed by the water committees, and they opted to pay for labour on a daily rather than a task basis.
- Men would stop working on the project once the labour money had run out. Women were left to complete the projects voluntarily.
- Cash flow was often a problem, with delays arising from the water committee's financial management processes, the funder's bureaucratic processes and from RSS's financial processes.
- Supplies of materials were sometimes not paid timeously by the water committee. One supplier sued the water committee for failure to pay by a specific date.
- Suppliers were often late with deliveries.
- Trained committee members left one of the projects during implementation. A skills vacuum was created, and cheques could not be signed.
- In some cases water committee members experienced problems collecting tariffs.

All Qoqodala villages have a water supply scheme which can provide them with at least 25 litres per capita per day. Members of each village, and in particular, a number of women, have been trained in the numerous skills required for the operation and maintenance of their schemes. Most families contribute about US \$1 per month to the O&M fund.

One scheme was out of order for a while because the pump attendant poured water instead of diesel into the engine's fuel tank. This problem was resolved and the scheme is now operational. During the last field visit, all but one scheme was operational. The one scheme which was not working supplies probably the wealthiest community in Qoqodala, namely Bowdeni. The reason why this scheme is not operational is because people are refusing to pay for the O&M costs. Those who do not pay, say that the government must pay for their water.

An interesting point is that in most cases, instead of the 25 litres per capita per day that could be pumped, the communities are only using about 5 litres per capita per day. People are generally not used to using "a lot" of water, and there is a clear understanding amongst most community members that consumption is related to costs.

References and relevant literature

Abrams, 1996. Africa Sector Review. United Nations Water Supply and Sanitation Collaborative Council. Working Group on Water Supply and Sanitation Development in Africa.

Bundy, C. 1988. The rise and fall of the South African peasantry. David Phillips, Cape Town.

Department of Water Affairs and Forestry, 1993. South African Water Quality Guidelines. Volume 1. Domestic Use.

Department of Water Affairs and Forestry, 1994. White Paper - Water Supply and Sanitation Policy.

Department of Water Affairs and Forestry, 1996. Water Law Principles.

Development Bank of Southern Africa, 1991. Southern African Population Projections: 1995 - 2005. DBSA., Halfway House, South Africa.

Steffen, Robertson & Kirsten, 1991. Northern Zone Village Water Supply Study. Report to the Department of Agriculture and Forestry, Transkei.

APPENDIX 1

Rural Support Service's Training Curriculum

Training programmes

The RSS training curriculum is designed to meet the needs of two key target groups through a two tiered programme.

- Level One:** To build capacity and develop skills within rural communities, by providing training directly to Water and Sanitation Committees, Technical Maintenance Teams and community members.
- Level Two:** To increase the capacity of other service providers and trainers, such as DWAF, Local Authorities, engineering and social consultants and other NGOs, by providing training in appropriate processes and methodologies to facilitate community engagement in the process of development and engender ownership of infrastructure.

Level One Training Programme

- 1. Development Awareness will be developed within communities and committees through workshops and training in the following topics.**
 - Dependence, Independence and Interdependence - Comparison of the development of a community with the development of an individual through infancy, adolescence and adulthood.
 - Concepts of freedom of community choice resulting in community responsibility.
 - Gender Awareness.
 - Identification and Prioritisation of Community Needs through Participatory Needs Analysis to establish the need and support for health awareness training and water and sanitation infrastructure.
 - Root cause analysis.
 - Assessment of skill levels in the community, particularly literacy and numeracy.
 - Planning community participation.
 - Linking planning to implementation, operation and maintenance.

- 2. Training communities in local governance procedures**
 - Purpose of a committee.
 - Community Mandate, democratic structures, accountability and responsibility.
 - Election of Office Bearers.
 - Roles and responsibilities of Office bearers.
 - Developing a constitution.
 - Meeting Procedures.
 - Leadership Skills.
 - Decision Making.

3. Community Based Project Management

- Planning.
- Implementing.
- Monitoring.
- Evaluation.

4. Financial Management

- Operating a Bank Account.
- Basic Book Keeping.
- Using a Cashbook.
- Completing a reconciliation.
- Reporting on finances.
- Fundraising.

5. Labour Policy

- Identifying Labour Needs.
- Developing a community based labour policy.

6. Supervision

- Maintaining Labour Records.
- Paying Wages.
- Allocating work.
- Monitoring performance.
- Giving Feedback.
- Resolving Conflicts.

7. Materials and Supplies

- The materials ordering process.
- Receiving goods.
- Paying for goods.

8. Health Awareness

- Water borne diseases and their transmission.
- Hygiene.
- Maintenance of water and sanitation facilities.

9. Technical training for Maintenance and Operation

- Using Tools.
- Safety on the job.

- Construction techniques in basic carpentry and masonry.
- Pipe laying and repairs.
- Tap repairs.
- Pump, Borehole/water source monitoring.

Level Two Training Programme

This programme is available to other organisations working in the sector as facilitators and trainers. Where participants have limited experience in a given topic they may be required to complete part of the Level One programme prior to attending these courses.

1. Community Based Development Principles and Processes

- Development Theory.
- Participatory Needs Analysis Techniques.
- Benefits and Challenges of Community Based Ownership.

2. Planning and Managing a Community Development Project

- The Project Management Cycle.
- Planning for integrated delivery of diverse project objectives:
 - Community Engagement.
 - Community Training and Support.
 - Physical implementation.
- Accountability and Control.
- Problem Solving.
- Evaluation.

3. Community Engagement

- Making First Contact.
- Identifying stakeholders and existing structures.
- Community Based Social Surveys.
- Applying a development methodology.
- Establishing communication channels.
- Community Motivation as an outcome of Participatory Needs Analysis.
- Role of the Community Development Facilitator.

4. Community Processes and Dynamics

- Plan, Act, Reflect.
- Problem Solving.
- Decision Making.
- Conflict Resolution.
- Gender Issues.
- Building a relationship with a community.

5. Training in Training Theory and Methodology

- Training Needs Analysis.
- Designing training to meet learners needs.
- Delivery techniques - interactive methods, facilitation skills, presentation skills.
- Evaluating training and learning.

APPENDIX 2

Rural Water Supply Development Process

The following development process is used by the development NGO, Rural Support Services.

- 1. Project request**
 - 1.1 A representative of the community makes initial request for domestic water.
 - 1.2 An official application form is completed with the assistance of a community development facilitator.
 - 1.3 Project is accepted by implementing agent.
- 2. Feasibility study and funding proposal**
 - 2.1 Community development facilitator contacts community to arrange a meeting.
 - 2.2 First meeting(s) with community to cover:
 - How the implementing agent was approached;
 - How the implementing agent operates;
 - Community needs/expectations form the project;
 - Assess support for the project and potential barriers to the project
 - Establish whether the community has applied for assistance from any other organisation;
 - Advise on the need for a committee to be elected;
 - Set date(s) for technical assessment;
 - Set date(s) for social survey;
 - Set date(s) for the development workshop(s);
 - Set date(s) for committee training.
 - 2.3 Committee training commences.
 - 2.4 Technical and social surveys
 - 2.4.1 Technical Assessment:
 - Undertake a desk study;
 - Carry out an environmental impacts assessment;
 - Establish existing water supply and electrification plans for the area;
 - Identify the technological options including pros and cons of each;
 - Develop technical feasibility report.
 - 2.4.2 Social Survey:
 - Undertake a demographic study;
 - Describe social location;
 - Summarise historic background;
 - Note previous development experience;
 - Identify existing social structures;
 - Assess standards of health and education;
 - Identify and assess economic indicators including ability and willingness to pay;
 - Assess likely social impacts of implementing the project;
 - Gather social information from external sources;

Assess demand for the project;
Prepare report on the social environment.

- 2.5 Identify existing skill levels and what training will be needed for the project to be sustainable;
Draft a training programme and estimate costs of this programme.
- 2.6 Community development facilitator arranges meeting with the water committee and community to present technical and social reports.
- 2.7 Contracts are drafted stating agreements between the implementing agent and the community.
- 2.8 Meet with the committee and the community:
Explain all findings;
Establish what option the community prefers;
Explain funding options and criteria to community;
Establish community's preferred funder;
Explain possible time frames and potential delays for project implementation;
Sign a contract between the implementing agent and the community;
- 2.9 Implementing agent's project team meets to confirm option selected by community;
Prepare and submit funding proposal.
- 2.10 Arrange for committee/community to visit implemented project of similar type.
- 2.11 Receive communication from funders, and forward a copy to the committee.
If the proposal requires amendments, consult with the community, make adjustments and resubmit.
If the proposal is rejected, meet with the community to discuss and consider alternatives.
If the proposal accepted, proceed with project implementation.
- 2.12 Implementing agent project team plan and identify indicators for monitoring and evaluation.

3. Implementation

- 3.1 Meet with the committee to review training needs analysis and set dates for the implementation programme.
- 3.2 Implementing agent's project team meets regularly for detailed planning and monitoring from this point to completion.
- 3.3 Water source assessment and detailed design completed.
- 3.4 Project team complete regular project progress reports.
- 3.5 Training programme developed.
- 3.6 Training for implementation provided, including site visits to similar projects.
- 3.7 Project implementation complete.

4. Evaluation and Final Report

- 4.1 Meet with committee/community to review the project and evaluate the implementing agent's performance.
- 4.2 Project coordinator completes Project Completion Report, including evaluation as per indicators set by project team, and feedback from the committee/community.
- 4.3 Implementing agent set a date for project review and evaluation in two years time.

Eco-Volunteers Project Report

Before presenting my case study, I would like to point out that; yesterday, we have been discussing the Eco-volunteers issue - so I am asking you not to concentrate on the definition of Eco-volunteers, but on the project itself, its concept, achievements and lessons learned.

Before going into details on our project, I would like to brief you on the background regarding water situation, regulation and policy that I think is crucial for it may differ than other countries:

① Though our project is implemented in a country that possesses the largest river in the world "the Nile river": 60% of the population have no access to clean, potable water - 35% is highly salinated and 25% possess unacceptable high percentage of iron and zinc. 30% have no access to water at all, leaving only the lucky 10% of the population who are considered accessible to clean potable water.

The Nile itself, is giving us hard time in convincing inhabitants all over Egypt to rationalize use of water, it was there since our grand grand fathers, and no one can ever believe that we will have a real problem of shortage in water in the very near future, According to census of UN and Unesco, Egypt is rated the 6th in countries facing serious problems of water in the year 2006.

② Privatization of domestic potable water is un-negotiable with the Government at present;

③ The system of water supply adopted by the government in rural areas is based on installation of a main pipe at the borders of the villages; It is up to people to re-extend pipes from the main to their houses; Usually it is the rich who can afford it, leaving the poor to borrow from the rich; or traveling to nearest place where they can find the only public tap installed by the government.

Should mention here - that the average population of Egyptian village varies from 10,000 - 20,000 inhabitants; distances are long between an area in the same village and another; On the other hand, because it is only one tap installed in each village, people are always crowded around it, women wait for hours till they can get their needs.

④ Fee or Tarrif of domestic water is set up by the Government,

⑤ Independent control of water/privatized is allowed only for irrigation water in the newly reclaimed lands, and it is up to agriculture associations to set up fees/tarrifs among the associations' member to allow them to cover costs of drilling wells which is usually established on personal efforts and private financing.

Waste water is also allowed to be privated managed, but unfortunately, neither the government nor the people are making use of waste water; I am sure we will realize our mistake in the very near future.

< - Briefing on project location and nature of people:

We are working in isolated areas of Upper Egypt; I don't mean isolation in the sense of being cut-out from transportation, but I mean long ignored and segregated regarding accessibility to services rendered by the Government (e.g. water, education...etc.) in comparison to that rendered to lower Egypt and big cities as Cairo and Alexandria.

Highest rate of poverty and illiteracy are the main characteristics of these areas, which on the other hand, represent highest population rate of Egypt's population around 42%.

< - People:

- Illiterate
- lowest income (average income per person monthly is between 7-10US\$)
- Conservative regarding traditions and role of women in the community;
- Unmotivated, uninnovative, and lack feeling of belonging to their community; Highest immigration rate to the city;
- Contradicting in a sense: They believe they are poor who should borrow water from the rich, believing it is a luxury, they can not afford, on the other hand, they would starve and borrow to buy a T.V. while they are living in slums, and though they are suffering for getting water from far places and their women are having problems in toileting in deserted areas at night so that no one would see them during day-light.
- Unaware of their rights;
- They fear the Government officials, and unable to reach their voices to them,
- On the other hand, if they have something to believe in, they would die for it.... May be this would explain the existense of fundmantalists in such area.

The project:

Initially the funds for this project was directed to one village, I am proud to say that with good planning and management of funds in addition to realization of our role as NGO: "Catalyst/mobilizers and not implementors" we have managed to direct the project to be implemented in 3 villages;

From this concept, the project objectives are:

- 1 - Establishing a skilled mixed team of local "Eco-volunteers" (men, women - Christians and Moslems);
- 2 - Establishing a second line of volunteers within each community;
- 3 - Community motivation and mobilization;
- 4 - Government officials Motivation and Participation;
- 5 - Raising awareness of communities regarding water; sanitation, environment; health and their own human rights;
- 6 - Maintaining a sustainable system that enhances and develop water and sanitation systems in the selected villages; that ensures integrated participation of community (men, women and children) in identifying problems and finding solutions, thus reaching independency in meeting their needs, by using local resources "whether human, or financial resources"

Activities reflecting set-up objectives:

Pre-implementation: Social and Technical Survey

- Intensive training and on-job long term training of Eco-volunteers and second line of volunteers.
- campaigns/ governorates officials and community members;
- local design of system of management, setting criteria of beneficiaries and "priorities" set by the volunteers and the communities.
- Raising awareness campaigns: "men, women and children.
- Technical aspects; latrines developing existing design - and introduction of new technology (specialist) most applicable regarding nature of soil and housing structure. taking in consideration social and religious ethics.
- Children Embassadors group formation;
- Women groups formation;
- men committees;
- girls group

All working and involved in the various aspects of the project.

CONTRIBUTION D'EAU VIVE AU DEVELOPPEMENT VILLAGEOIS

I/ QUEL EST L'ENGAGEMENT DE CHAQUE PARTIE ? (village et Eau Vive)

1/ Les conditions pour qu'Eau Vive s'engage :

- * le village présente collectivement une demande à Eau Vive
- * la personne qui représente le village est librement choisie par toute la population
- * le village a déjà réalisé plusieurs actions collectives au cours des années passées
- * le village accepte les règles de financement d'Eau Vive

2/ A la demande d'Eau Vive, le village remplit une fiche d'information qu'il retourne au bureau d'Eau Vive de son pays. Après réception de cette fiche, une personne d'Eau Vive rend visite au village pour discuter avec lui de sa situation et de ses projets.

3/ Si le village et EV tombent d'accord, un ou plusieurs contrats peuvent être signés pour la réalisation des actions du village. Si la réalisation de ces premières actions donne satisfaction aux deux parties, un contrat de développement à durée limitée (10 ans) peut être signé entre le village et Eau Vive.

II/ LES REGLES DE FINANCEMENT D'EAU VIVE

1/ Qu'est-ce que le village doit faire ? :

- * le village initie ses projets, choisit les actions prioritaires, tient des réunions de préparation
- * le village effectue les démarches administratives nécessaires (autorisation, plans, devis,.....)
- * le village mobilise ses ressources humaines, matérielles, financières,.....

2/ Qu'est-ce que Eau Vive fait ?

- * Eau Vive apporte au village un appui financier en complément des ressources du village
- * Eau Vive apporte conseils techniques au village dans le choix des partenaires techniques devant réaliser les actions
- * Eau Vive effectue des visites de suivi sur le terrain en appui au village dans la mise en oeuvre de ses actions

3/ Où le village et Eau Vive trouvent-ils l'argent nécessaire au financement des actions ?

- Pour le village :

- * il mène collectivement des actions génératrices de revenus (champs collectifs, embouche,.....)
- * il fait des cotisations individuelles, par famille ou par quartier
- * il fait appel à la contribution de ses ressortissants résidant en ville ou à l'étranger
- * il fait appel au budget local, régional ou national
- * il contracte un prêt auprès d'une banque, caisse populaire,.....

- Pour Eau Vive :

- * il fait appel à des dons individuels, à des collectivités, entreprises,.....
- * il fait appel à des cofinancements publics français et Européens

.L'appui financier d'Eau Vive ne peut dépasser 90% du coût monétaire de l'action en première année de collaboration avec un village

.L'engagement d'Eau Vive ne peut également dépasser 10 ans (durée limite d'un contrat de développement)

.Le taux de subvention d'Eau Vive diminue de 2% chaque année, ce qui implique une augmentation de 2% chaque année pour l'effort du village

.Sur 10 ans, le total de subvention d'Eau Vive ne peut dépasser 30.000 FCFA par habitant pour 1.500 habitants maximum pris en première année de collaboration avec un village.

4/ Eau Vive peut apporter son appui financier dans les domaines d'actions suivantes :

- L'eau, la santé, l'instruction, la production, l'organisation avec des taux de subvention variant de 30 à 95% (année 1) suivant que l'action est directement productive ou à caractère public et suivant aussi le niveau moyen de revenus des villages au Sahel.
- La subvention s'applique aux dépenses monétaires nécessaires (étude, réalisation, contrôle des travaux)

5/ Qui réalise l'action ?

- Le village lui-même s'il en a les compétences nécessaires
- Un partenaire technique qui peut être une entreprise, une ONG, un service public ou un artisan ayant les compétences nécessaires
- Dans tous les cas de figures, le village est considéré comme "principal client" et Eau Vive "Client associé"

6/ Comment se passent les paiements ?

- Après signature du ou des contrats, le village s'acquitte d'au moins 70% de sa part directement chez le partenaire technique (entreprise, artisan, ONG, ...) en charge de la réalisation de(s) action(s)
- Eau Vive par la suite fait des paiements successifs en fonction de l'avancement des travaux

7/ Si plusieurs villages s'associent, les règles de subvention sont les mêmes pour chacun des villages associés avec cependant la création d'un comité inter-villageois dont les membres sont librement choisis

8/ Dispositions diverses

- Les visites de donateurs (ceux qui donnent de l'argent à Eau Vive) au Sahel pour échanger avec les villages
- Les visites de sahéliens en France pour échanger avec les donateurs et voir dans quelles conditions l'argent est collecté pour les actions au Sahel
- Modifications VAP : des modifications régulières sont faites mais les dispositions en vigueur sont celles au moment de la signature du contrat

VAP : Vous Avez des Projets (document Eau Vive)

- Installation of latrines
- installation of water
- Women income generating projects, gurantee fund "group funding" - saving accounts
- girls income generating projects "handicrafts and dolls"
- formation of water committee: identifying inhabitants rights vs. government, solving problems, raising awareness and governorate contacts.

Achievements;

- 1- Promotion of change and innovation: (getting over conflicts of traditional vs. change and Modernity:

The project introduced new technology regarding sanitation systems; accepted and being implemented by community; who were originally resisting change; due to high costs regarding traditional systems.

Indicator: Target 80 house-hold over two villages
 Actual 190 beneficiary from project budget "credit basis" and 330 build new latrines and rennovated existing ones on their own expenses.

- 2- Cost recovery: Fully contribution of communities in service rendered "credit basis" based on criteria set up by the community and the volunteers.

- 3- Transperancy fully practiced:

Set up criteria by community all on credit basis depending on income level and priority identified by community; grace period and amount and duration of installment, and admin rate is set up.

- 4- Govrnorate officials participation: (conflict of public vs. government officials)

- Voluntary training by governorate officials;
- Governorate officials are among second line of volunteers
- Facilitating acquiring permissions for water installation
- Data and information accessible through government offices.
- supported by facilitating goverment trucks for removing of garbage accumlated in the entrance of the village.
- Government encouraging community participation in solving problems: donating 60 trees for the village, after succeeding in removing the garbage to have a garden instead.
- donated 1000 bricks for building a fence around the garden,
- facilitating registration of community based association "NGO" in one month it was registered. Usually it takes between 1- 2 years for registereing association in upper egypt due to situation.

- The project is fully managed by the local community, group participation and creation of team work;

neighbours collaborate together to build one latrine, sharing costs, effort, and keeping its operation and maintenance.

Community contribute in building latrines for widows, old women, paying installments of others if in problem;

collecting installments, supervise and participated in building of latrines.

contributed to build a simple telephone central "two big rooms" and main telephone line fee to be installed in the village.

Contribution of L.E.5 from rich families monthly and L.E.1 from others to pay for school fees for children for poor families.

On delay of project funds during Ramadan "fasting month" they collected "AlZakah" and directed it to installation of water, to keep the project going and to help people in such a month.

- Building on local traditions and practices:

- Same as Sasou groups in Ghana.
- Using "AlZakah" for projects funding.

- Information provided to local users and outside agencies:

- regular visits of other agencies to our project
- volunteers training other projects staff of four projects to be implemented in Minia villages "social fund" and 3 projects in Fayoum.

- Impact on policy:

Success in acquiring some rights:

- approval of government to allow villagers to install water without getting approval from "Land Authorities" "long bureaucratic procedures that may take 2-3 months"
 - Illiterate women were allowed to get an ID. enabling them to open bank accounts;
 - Succeeded in acquiring villagers right in preservice of underground water from pollution "case slaughter house"
- Sanitation prior to water, criteria set up by the people themselves.

- Change of negative attitude of men towards women's role:
indicator: women role activated: participation in meetings and training sessions, group gurantee fund, raising awareness among neighbours, formation of women group, most of all men allowing women, to go in picnic to Minia City with their children and the volunteers. Men are getting I.D. and execute all official procedures for them to have a bank account.

- Establishment of committees:

- Development Association "2 in 2 villages"
- Water committees "2"
- Women group "3"
- Girls groups "2"
- Environmental ambassadors group "1"

- Replication: the project being replicated by UNICEF, Social fund,

Lessons Learned:

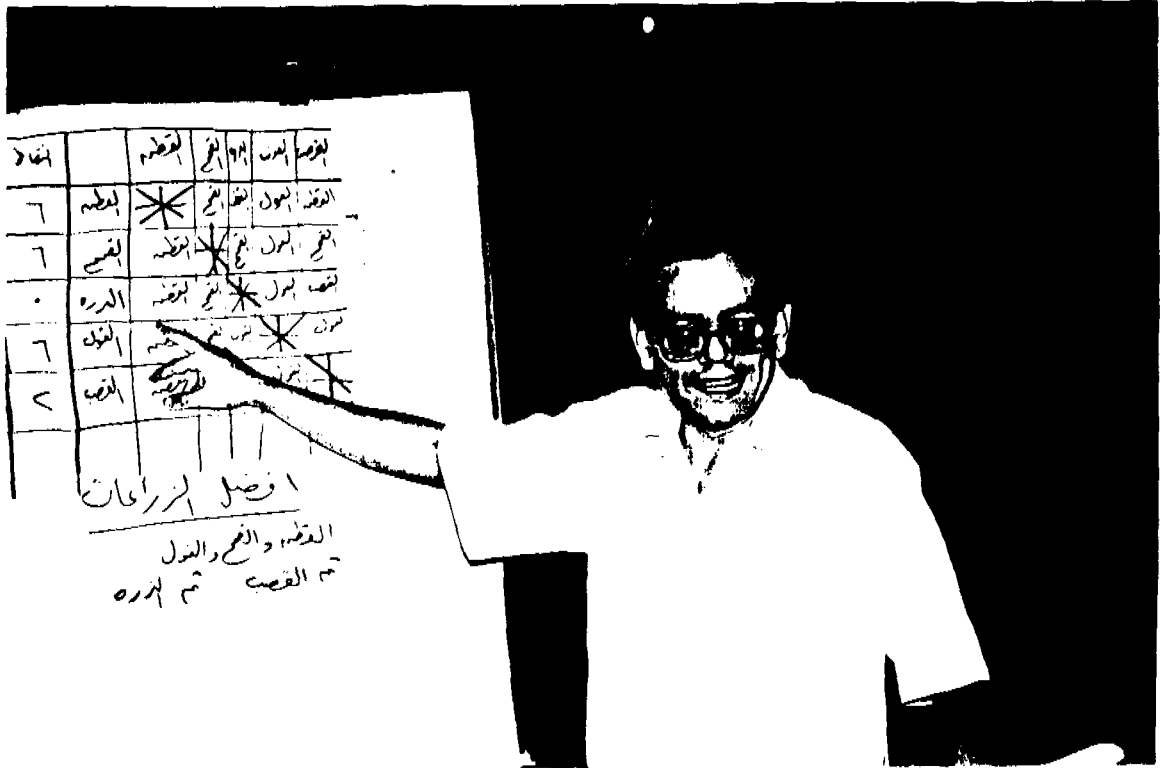
- Sustainability through belonging to committee and genuine involvement, not only through productive projects.
- Role of NGO as a catalyst.
- Fully transparency of project with the community and the government
- Introduction of systems, pioneer projects not full projects.
- Ethical and religious practices to be respected but work hard on resistance to change regarding modern technology, not all traditional systems are efficient.
- Before developing a technical system, build on human aspects.
- Fully management of project by local communities
- fully contribution of community in project cost
as ^{an} solidarity group, ^{grants} charity never created effective sustainable systems, but banks and money lending did.



The volunteers attending the environment and community motivation training program while Dr. Iskander is listening to a question from Magda "a women volunteer"



Dr. Iskander with the volunteers watching a role play



The National Volunteer "Maher Boshra" During the PRA Training explaining his case to the others



Marwan Mohamed one of the eco-volunteers explaining to the trainer the answers of their working group while Lamia and Khaled are listening



One day practical training - Field Visit to Mokattam Garbage Village - Cairo
The Trainer accompanying the volunteers and Minia Governor's Consultant and
Head of General Department for Development and Economic Affairs



Mokattam Garbage Village



The volunteers at the Mokatam Garbage village- Garbage Separation



After the visit, a friendly conversation with Minia Governor's Consultant on what is the future of Minia, with the efforts of the volunteers

Zawyet Sultan



Laila Mostafa Ahmed, a beneficiary from Zawyet Sultan is stamping her finger print as signature for the contract. She is a widow with 4 children her monthly income from the social affairs after the death of her husband is L.E.60/month (\$18), still with this low income she is insisting on paying the full installments to give others the chance to have the same service like her. Her neighbours and relatives helped her in digging relevant space for building the latrine. It was her dream to have water in her home and a latrine to "ensure safety for her children, who are what she owns in this life and save her pride from getting water from the rich" as she mentioned.

Zawyet Sultan

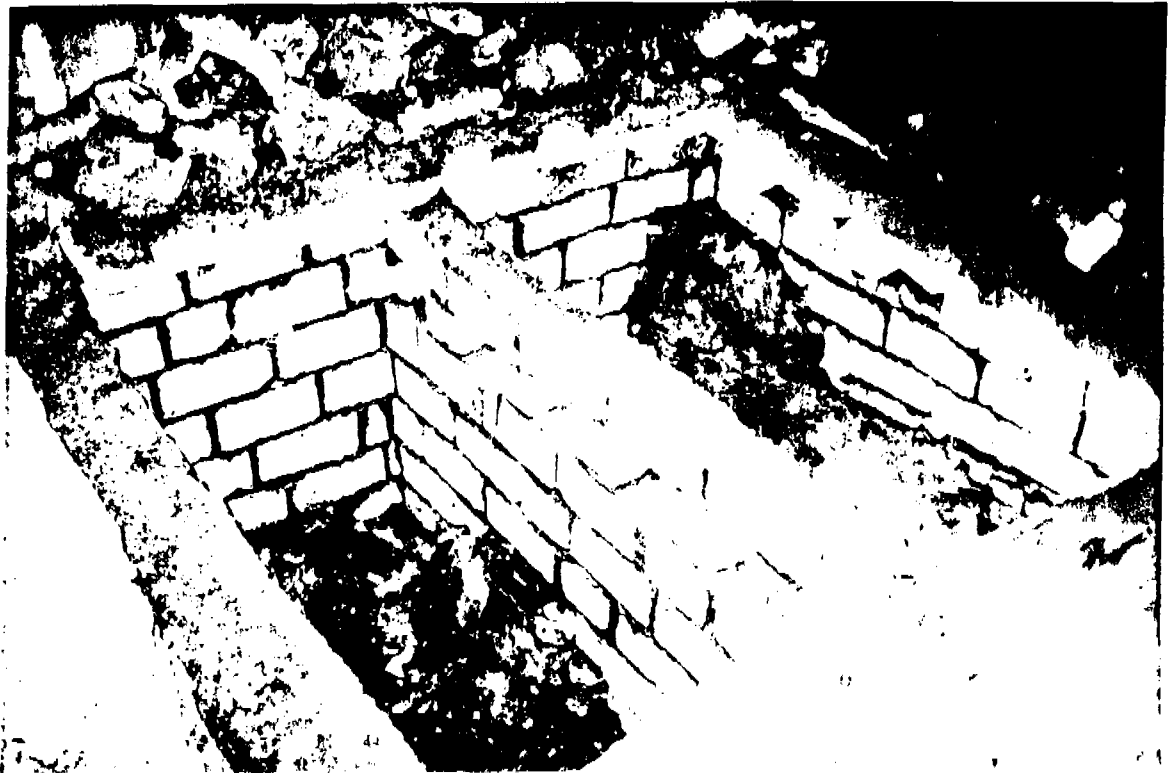
With our own hands we will dig our own latrines



Beneficiary Awad Abd Elhameed Morsi
a farmer who owns no land and have five children
his wage per day is L.E.4=\$1.2 (L.E. 100-120 Or \$30- 35/month)
Casual worker according to seasonal demand



After digging for the latrine "Awad Abd ElHameed Morsi"



Then building the septic tanks

Zawyet Sultan



Potable water is running at Abd ElHakeem Abd El Aal House.
A food vendor with a monthly income of around L.E. 170 or \$50/month
He has got 6 children.

"After 53 years my dream will come true, I will have potable water running in my house and my wife and my children will have their own toilet, thanks god I have lived to witness this day" is what Abd ElHakeem said to the volunteers.

Tehna ElGabl



At the house of Zidan Ali Mahrous, Zidan at the back, his mother and wife in front of him and his children and the neighbours children taking a photo with the volunteers after installing the latrine



Khaled a volunteer explaining after building the latrine at Zidan's house



The Volunteers filling the forms and taking the requests of the villagers in the Village's Youth Center in Tehna AlGabal. Mohsen is sitting on the desk beside a villager filling an application.



Beneficiary Ahmed Hafez, with his brother, wife and children happy carrying the materials for the latrine and water tap and going to their home with the volunteers. Ahmed is a casual worker "farmer" with 4 children and his wife, and a monthly income of L. E. 100-120 or \$30-35.

Nazlet Obied



A widow requesting funds for implementing her own income generating project she is asking for a capital of L.E. 150 (\$44) to start as street vendor for vegetables and fruits. Her monthly income is L.E. 60 (\$18) getting it from the social affairs after the death of her husband. She has got 3 children the youngest is carried in her hands.

1. Title Page

- 1.1. Name of Project : Minia E.V. Water Project
- 1.2. Sponsor : International Secretariat for Water
- Contact Persons : Mr. Raymond Jost
Mr. Gabriel Regallet
- 1.3. Member Organization : Module Development Services
- Contact Persons : Ms. Iman Youssef
Ms. Gehane Reyad
- 1.4. Reporting Period : December, 1995 - July, 1996



Orientation to Arab El Sheikh Mohamed

The village is located outside the main town of Minia, the residence are Bedouin. It is divided longitudinal to north, middle and south, and is situated under the foot of the mountain.

Villagers are governed by Arab traditions and live as one family. The economic level is very low as most people work in agriculture and the agricultural land is very limited. The second main activity of the villagers, is raising sheep/goats. Women are involved in the sheep rearing. The market of sheep and goats is in the village, and merchants pass by women to sell or buy goats. A minority work in stone cutting at the mountain or factories of powder.

The village is lacking governmental services. There is only a school of one class with only seven girls. No transportation facilities, health care or social services.

Most villagers, depend for their drinking and domestic water needs on a contaminated shallow well which has been in the village since the Pharoes time. They draw water by buckets, thus spreading communicable diseases. Unfortunately, there is no other alternative.



The only source of water in Arab El Sheikh is a contaminated well, which existed since the Pharoes time. MDS project officer with the E.V. Sami getting a sample from the water to be analyzed.



Mr. Regallet from the ISW with MDS President & the E.V. team in ElZawyn visiting the house of ElDemerdash, his mother and children meeting the group



The New N.V. in El Zawya sitting with Benef. Ibrahim Rashed and his sons celebrating the installation of water & latrine



The family of Benef. Ali Mahmoud, who was very thick, when he saw the team coming with relevant equipment to install, he was so happy that he shed tears & said I don't feel sick anymore.



The family of Reedy Mohamed another Benef. in ElZawya

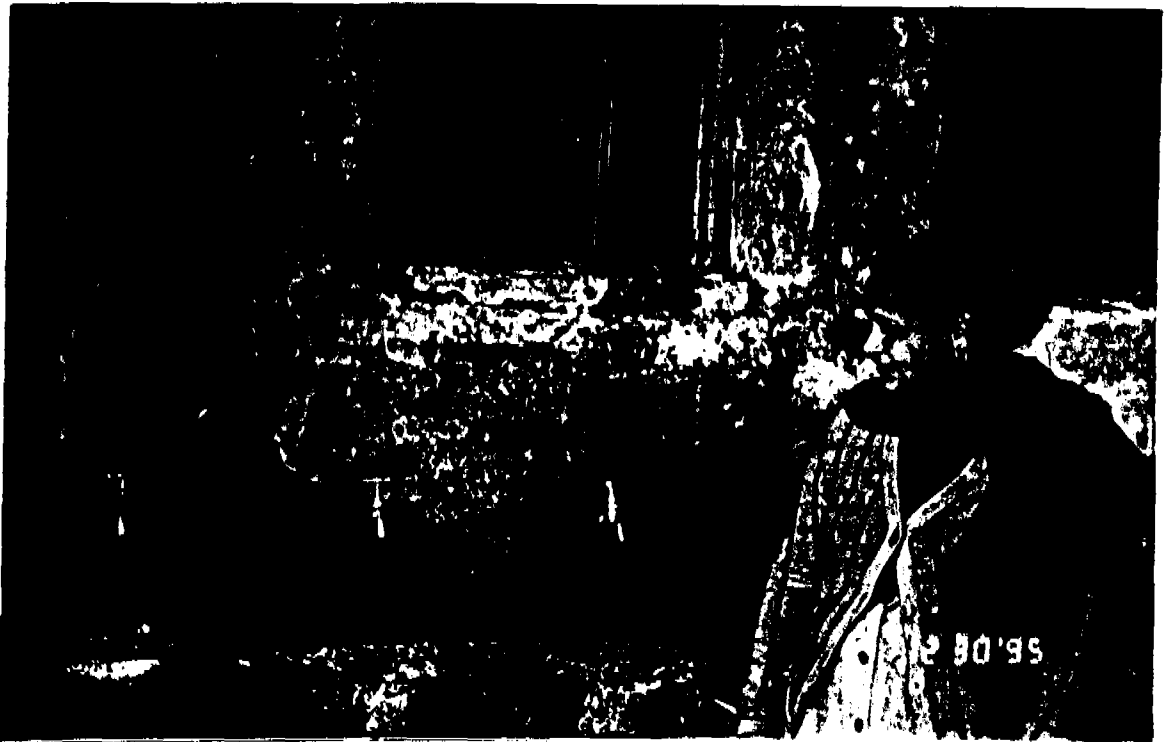


**Ezzat Mohamed and his family watching the installation of their
Intrine with the E.V. Samy Amir.**





Beneficiaries in Tehna receiving the equipment and material at the Youth Center



**Mona Abdou, E.V. in Tehna inspecting the taps of water in Tehna Primary school, where MDS has later contributed with the families of children who contributed also to repair the taps, as an example for the children.
(See appendix 2, Thanks letter from the School Head master**



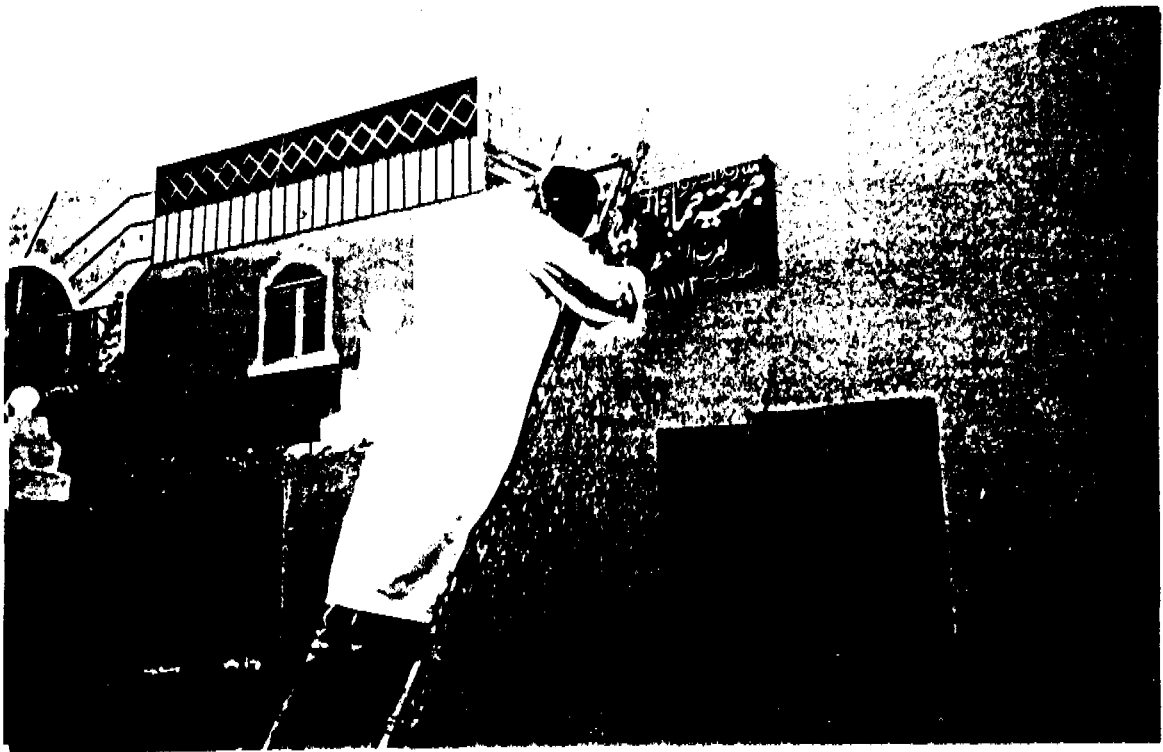
Mona Shokry, the New N.V. and Marwan the E.V. credit officer for Arab Village discussing the project with the villagers in their house.



The E.V. Marwan, taking the finger print of one of the beneficiaries as her sign on the contract



Mona and Lamia training the women beneficiaries at Hag Hamed's House



Hag Hamed, the community Leader and guarantor for recommending women hanging the name of the association on its premises..



Mona and Lamia with the benef. Etadal, her mother, and children with the goats



MDS President and Project officer talking with Nadia, the tailor about her project. Nadia is also selected as a second line volunteer, and is the secretary of her group.



Second line of women volunteers in Zawyet Sultan



Second line of Volunteers in Tehna with the E.Vs

III.3.b. Second Line of Volunteers in Arab ElShiekh Mohamed....continued

The second line of seven girls are very promising, they are the only literate girls in the whole village, and the E.Vs are concentrating the training with them as they are already transmitting information to other illiterate children from friends and relatives who look at them with all respect for being educated. They are also very keen to attend the training sessions, no one ever missed a session.

It was the first time for those girls to hear about environment issues, the first time to learn to use colors and express their feelings in drawing. The first time to communicate with the outside world represented by the E Vs.

Quote from a girl during a training session *"Yesterday, I found a dead chick in the garbage near our house, I felt two things were irrespected, the environment and the poor bird. I took the bird and buried it in the sand, to respect the dead bird, as we respect the dead people, and to keep the beauty of the environment."* It is a simple story, but means a lot to us, we have an impact on them.



MDS President talking with the second line volunteers of 7 girls, at the one class school

III.3.c. Second Line of Volunteers in Tehna

In Tehna, in addition to the selected community leaders of teachers, civil employees and villagers, the E.Vs are concentrating on the Children as second line volunteers and Environmental Ambassadors. They are training 80 children in the unit of Memorizing Qur'an and 20 students of the primary and preparatory schools. Out of which they have selected 10 children as Environmental Ambassadors.

The experience of this second line of volunteers is really interesting, they are organized now as if they are a real association. All management aspects of the association are being applied by this group of Ambassadors. They have a Goal, and objectives mainly targeting environment problems. They have a chairman, a depute, a secretary and an assistant secretary. Responsibilities were identified, keeping record of attendance and minutes of meetings.

Their agenda for the last month was to:

- motivate other children to volunteer with them;
- clean their schools yard
- Conducting personal visits to houses of other friends to raise their awareness towards environment
- they will also put the posters given to them by the E.Vs. on the walls all over the village.

They are so committed, interested and are keen to attend the training session of the E.Vs.

The E.Vs are stimulating the interest of the 100 children in the environment matters by conducting competitions among them in drawing , and distributing simple prizes.



Trained Children including the Selected Environmental Ambassadors second line of children volunteers



Magda The E.V. in ElZawya, pregnant in her ninth month, impressing for her devotion in the project with MDS President and the E.V. Samy who now left for Germany for studying a diploma in development



Dina Talaat, the new Eco Volunteer replacing Samy Amir, with the group in Arab El Sheikh Mohamed.



Three beneficiaries in El Zawya sharing together one latrine.



Mona N.V. of Arab happy with the renovation established at the association, floor tiles and painting With Hag Hamed and a member of the association



Representative from the Social Fund visiting the project in ElZawya, impressed and ready to cooperate with funding



Regarding raising awareness of children, intensive training was given to them by the E.Vs, Posters were distributed and the children put it all over the village

Appendix 1

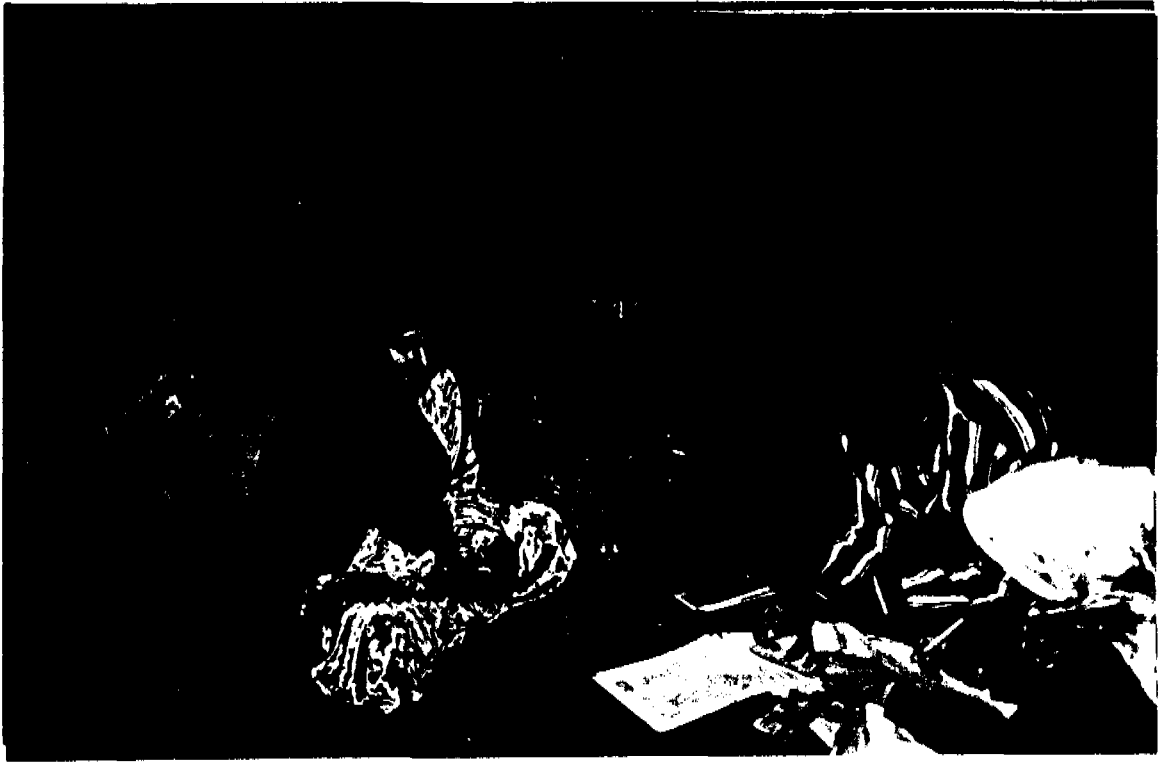


Appendix 2



MODUL *Development Services*

Appendix 3



MODUL *Development Services*

Appendix 4



Module Development Services



مركز موديلول لخدمات التنمية
مجموعة سفراء البيئة

السفير جرجس رزق نيز

Module Development Services



مركز موديلول لخدمات التنمية
مجموعة سفراء البيئة

السفير محمد علي بن الحسين

Module Development Services



مركز موديلول لخدمات التنمية
مجموعة سفراء البيئة

السفير مينا رزق نيز

Module Development Services



مركز موديلول لخدمات التنمية
مجموعة سفراء البيئة

السفير محمد عيسى مشرف

Module Development Services



مركز موديول لخدمات التنمية
مجموعة سفراء البيئة

السفير: محمود محمد ابو الحسن

Module Development Services



مركز موديول لخدمات التنمية
مجموعة سفراء البيئة

السفير: حجاج محمد عبد الهادي


Module Development Services



مركز موديول لخدمات التنمية
مجموعة سفراء البيئة

السفير: علاء محمد ابو الحسن

Module Development Services



مركز موديول لخدمات التنمية
مجموعة سفراء البيئة

السفير: نهد محمد فرحان

Module Development Services



مركز موديول لخدمات التنمية
مجموعة سفراء البيئة

السفير: بدوي موسى بدوي

Module Development Services



مركز موديول لخدمات التنمية
مجموعة سفراء البيئة

السفير: احمد عبد الله عبد الحافظ

Module Development Services



مركز موديول لخدمات التنمية
مجموعة سفراء البيئة

السفير: حمادة نقى كامل

Module Development Services



مركز موديول لخدمات التنمية
مجموعة سفراء البيئة

السفير: شاكر خليل شاكر

PAR PROJECT:

1. Role of community not addressed. Community verses consumers verses members.

2. Legal Issues:

Need for community constitution and legal status.

3. Institutional Aspect:

Need to understand the use the existing traditional systems as well

4. Financing

Funds to be set aside for community development.

5. Water Uses

Integrate all water uses e.g. irrigation etc.

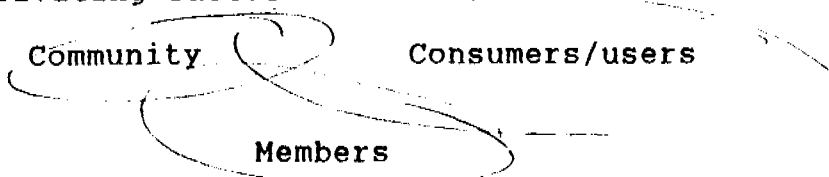
6. Tools

- Transect
- Rope exercise
- Exchange visit

The highlights of the PAR observations may be summarised as here below:

PAR works in 4 projects - 2 gravity
- 1 shallow well and 1 motorised borehole

1. Community Management must be viewed in the broader sense including the roles/impacts of ESA, NGO's governments and communities.
2. Community is loosely used to mean the locality within which the improved system is located. However "The Community"; "The Consumers/Users" and "The members" need to be identified and motivating factors for each of the sub-sets understood.



- (i) Members register and conditions to fulfil to be a member need to be clearly stipulated in the bylaws/constitution". These must be the owners of the system.
- (ii) Consumers - This maybe members or non-members. Rules for consumption need to be formulated in the community managed projects.
- (iii) Community - for various factors in may cases it is not possible for all community members to be members. While some consumers/users may be form outside locality in which the projected is located.

Note: Membership maybe household or by household head or in polygamous community per wife. Children are of necessity non-members, but are consumers but cannot be registered consumers. Other persons/households in the community maybe by physical limitations find it in expedient to register as members.

3. Legal issues: Community management of water supplies suffers from lack of clarity as to which ACT they subscribe eg. The water ACT, The Community Development/Social self help groups; The Societies ACT, The chiefs ACT as all these and these and other ACT's impact on the community roles in the management of improved water systems.

On the other hand all the other actors NGO's, ESA, Government Departments are backed by clearly defined constitutions and ACTS.

4. Institutional Aspects: Many improved rural water systems demand that "Committees" be formed making little attempt to understand,

existing institutional/organisational aspects within the community.

In the four communities, rules were formulated to govern the implementation. No or little thought was given to the post-implementation project requirements. In Sigomere, there exists a constitution and the management committee comprised of elected members.

5. Financing of Projects: Usually ESA have funds to implement their projects within communities. Communities have no access to funding sources to have their aspirations/improvements addressed. Eg. in Nyakerato, many people registered as members, however, the project was designed to cover a part of the community. Whereas, all members are contributing to extend the pipeline to cover those members further a field, they have little access to external support, as the taking into account the various interest groups eg. religious affiliations, traders, the common people, the local administration, the political leadership etc. ESA who assisted the earlier phase considers the project completed.

In Yanthooko, the shallow well dries up, it requires deepening and due to increase in population, a second well is reburied. Whereas the members are making contributions, they feel lonely as they have not attracted external funding.

Note: Some systematic sources of funding need to be availed to community initiatives.

6. The Project: The improved systems usually overshadows the traditional sources in the perceptions of the ESA's but communities usually do not give up their traditional sources.

The need for integrated management of the improved systems will enhance sustainability taking into account the existing traditional sources.

The issue of water shed management is a concern in those projects where the source is located outside the consumer community.

7. Water uses: Many projects give little consideration to other users other than drinking. Communities especially in gravity schemes devise other uses including small scale irrigation, usually negating the initial objectives/goals, thus leading to artificial shortages.

8. Some tools:

Transect is used as a decision making tool especially in the design of pipeline tools "Let's us what we are talking about". So communities walk on pipeline routes seeing why it has to take the profile it has to take, avoiding obstacles.

Rope exercise(see details in the attached sheet)

Exchange visits:

ROPE EXERCISE:

Theme: Community Management and Participation

Objectives: To understand and evaluate the importance of popular participation for community management of water supplies.

To become conscious of importance of flow of information between community members in order to prevent conflict of goals, and to look at the role of interventionists.

12 or 16 people are asked and divided in three or four groups. In each group one person is blinded, one person is hand-tied, and one person is foot-bound. Around the groups there is a rope connected with hand-bound tied persons. Observers are around the circle, four objects are placed outside the circle. Assignment for each group is to reach the object near to them. In first round of five minutes no talking is allowed. Second round with possibility of talking. Third round in which observers become interventionists to help... Eventually there can be a fourth round without interventionists and a fifth to deliberate participative intervention. Reflection in groups about meaning of exercise, How did they feel, how did each person feel, the blind men, hand-tied etc?; What did they do; what means did the blind men, hand-tied and feet-tied persons?; What is in relation with reality?; What lessons did you learn in relation to reality?; What did the interventionist do?; Evaluate their intervention in relation to peoples participation?; Different between the different round? Discussion on outcome. Lesson to be learned about the community, different interests, interventions, importance of floating of communication. Rounding of by coordinator.



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WATER RESOURCES CONSULTANCY SERVICES

P.O. BOX 4565
KISUMU.

Telephone: 42241/2
Telex: 31011 labda.

1). ESTABLISHMENT

Water Resources Consultancy Services (WARECS) is a division of the Lake Basin Development Company Limited. WARECS became operational in March 1990.

2). LOCATION

The Headquarters of the WARECS is situated in Kisumu, in the Republic of Kenya.

3). OPERATION

WARECS is managed by a team of professionally qualified Hydrogeologists, Engineers, Hydrologists, Hydrochemists, Computer Programmers, Sociologists, Administrative and Institutional Development experts.

For the last five years, WARECS has operated as a Rural Domestic Water Supply and Sanitation programme, gaining a wide range of experience in planning, surveys, implementation and management of both Rural and small Urban water supplies.



Geophysical exploration for Well sites in Western Kenya.

4). PURPOSE AND FUNCTIONS

The objectives of WARECS are to:-

- (a) provide consultancy services on collection and evaluation of hydrogeological data, report writing, Programme proposals on Rural and small Urban water supplies.
- (b) provide services on Geophysical/hydrogeological and socio-economic surveys.
- (c) provide supervision services on all drilling and hand digging works.
- (d) provide monitoring on use, quality, quantity and management of both urban and rural water supply systems.
- (e) provide services relating to surveying, Geological mapping, pump testing, designs, drilling methods, soil mapping, site investigations for dams and tunnels, environmental monitoring and hydrology.
- (f) provide consultancy services on Community Mobilisation, Institutional Development and training in relation to water and sanitation projects.



Supervision of Borehole drilling in Nyanza Province (Kenya)

5). RESOURCES

Equipments-

In addition to the manpower resources mentioned, the Company has Resistivity and Electromagnetic survey equipments, hand drilling equipment, levelling equipments and laboratory for water sample analysis.

6). MAJOR ACTIVITIES

(a) 1. Geophysical and hydrogeological surveys

- Actual site geophysical, hydrogeological surveys.

- Interpretation of data by use of computers and recommendations based on results.

2. Socio-economic Surveys/Institutional Development

- Collection, evaluation and analysis of data on socio-economic indicators of the community such as population, education, employment opportunities and income levels in relation to water supplies.

- Policy formulation, development of organizational systems, structures and management as an overall Institutional package that pays attention equally to manpower development.

(b) Design and construction guidance:

- Identification of the exact location of well, based on the results of geophysical, hydrogeological and socio-economic surveys.

- Determination of well type (Machine drilling; hand drilling or hand digging).

Machine drilling

- supervision of machine drilling operation and updating of drilling contracts.

- Drilling supervision and advice.

- Design and supervision of test pumping

- Certification of works done.

- Advising on local Institutional development.

Hand digging/drilling

- Design of wells and progressive technical advice.

- Design and supervision of the manufacture of culvert rings, well lining, well slab and pump installation.

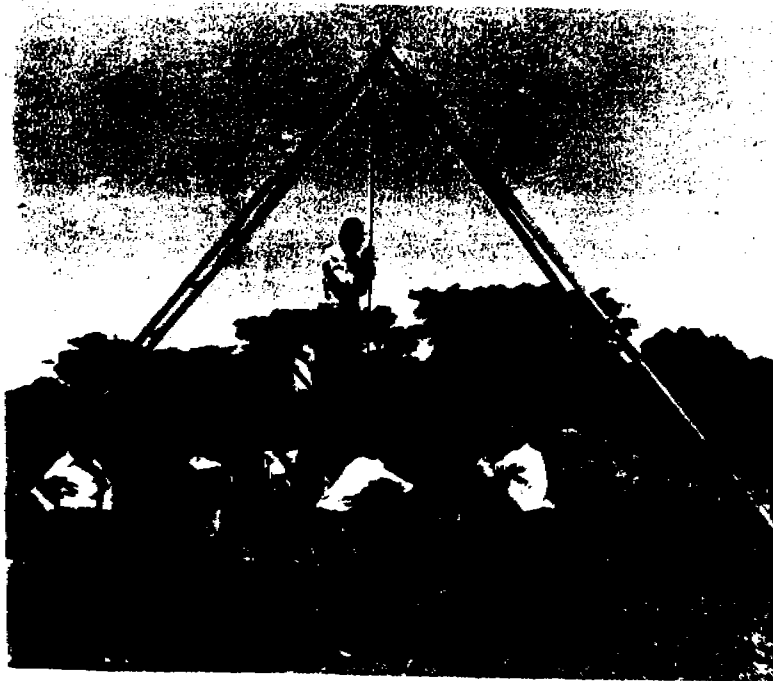
- Advising on local Institutional development.

c). Monitoring of existing systems.

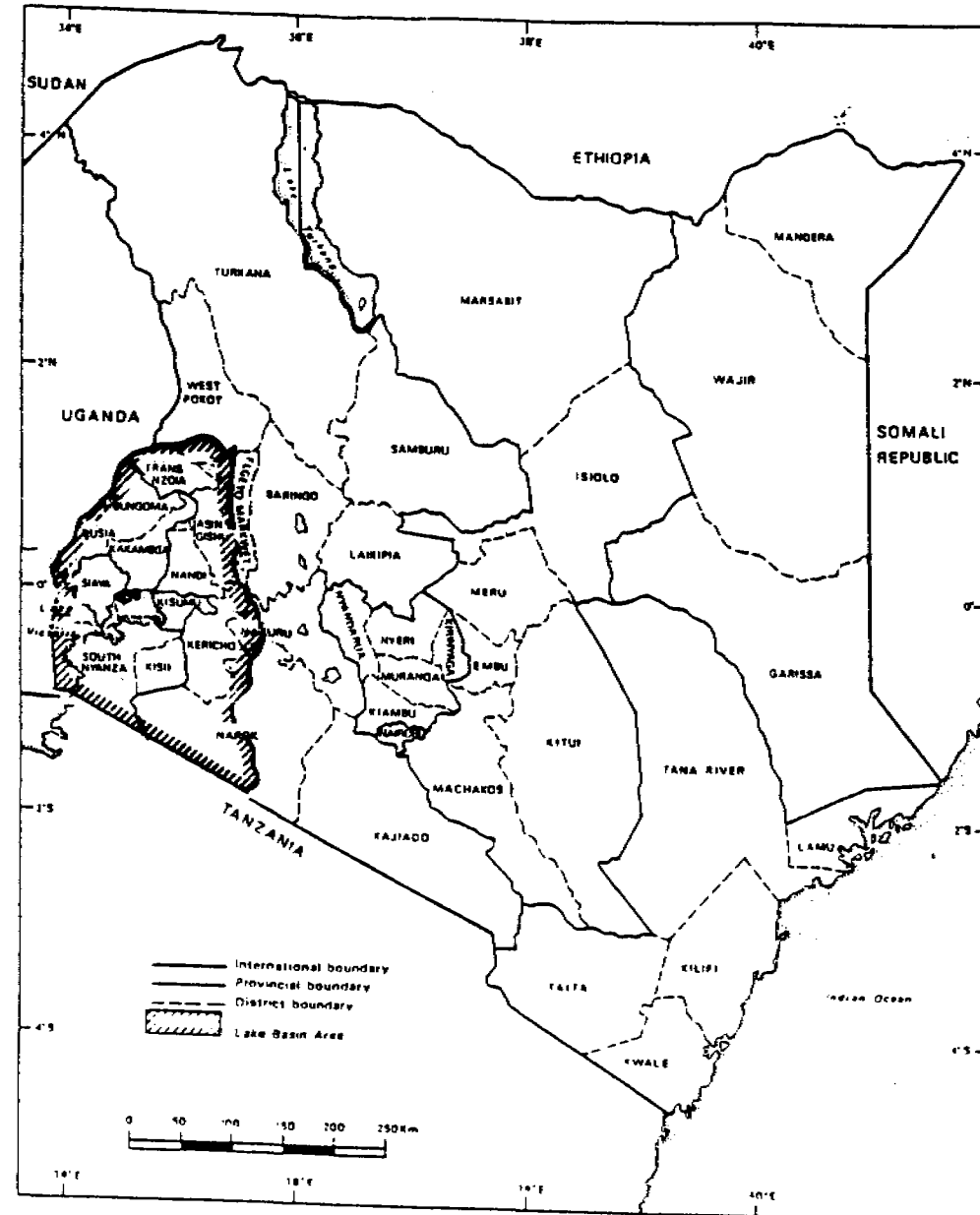
- Monitoring of water use, quality and quantity.
- Monitoring of the water sources, equipment and local management of water projects.

d). Water Projects Planning, Implementation and Appraisals

Preparation of Community Water Supply plans.



Hand drilling Survey in Kano Plains



Location of Lake Basin Area

SYSTEMS OF COMMUNITY MANAGEMENT OF WATER POINTS

A CASE STUDY OF RURAL BURKINA FASO

Secondly

Development can only be realised with time, continuity and perseverance. It is necessary to involve local actors who ought to be constant in their efforts and mobilisation. It is also necessary for 'Eau Vive' and other external actors to ensure constant technical and financial support.

It is for this reason that Eau Vive proposed to village communities, a collaboration running from 1-10 years during which Eau Vive will give financial and technical support to the projects of these communities.

Thirdly

Development is global necessity which takes into account all diverse needs of the population of what use is water if people cannot learn to use and manage it well?

Without 'global' development of community, basic needs to training animation, collective action, all evolution shall be lost in the sands of routine, inertia, palaver without concrete results of progress.

-
- the community has the initiative of its projects.
 - It identifies priorities
 - it mobilises its resources (human, material, financial)
 - it calls for the technical advice and financial support of Eau Vive.
 - together with Eau vive, the community calls for a partner (Enterprise, artisan, public services, NGO) component enough.

The case which we are presenting in this document, is on of a village community in Burkina Faso which has realised its water supply reject by sinking a borehole through the form of collaboration proposed by Eau Vive.

Equally, it is the bringing together of different ground operators (borehole enterprises, pump repairers,)

Lastly the reforms necessary to reinforce the acquired knowledge

2- GENERAL CONTEXT

Burkina Faso is a Sahelian country, situated in the heart of West Africa, with a surface area of 274,000km² and a population of approximately 9 million people.

The soil is desert soil and hydrogeological characterised by an irregular crystalline base making it difficult for village communities to have constant and at a low cost, water supply.

The Northern part of the country is most effected by this problem and the village of NARAD BAGANGA located in this zone does not escape this natural situation.

It is a village of 800 inhabitants living essentially on agriculture and rearing of small ruminants. the water needs are enormous and the first modern water point in the village operating until the second request was realised in 1985 with the help of Eau Vive.

3. ACTION - THE APPROACH

3.1 The Need

To increase the possibilities of water supply and permit as much as possible the starting up of market gardening activities, the village decided to start a project that will realise a second water point.

After several meetings on information and planning, this new need of the village was presented to Eau Vive in July 1993 and bore on the realisation village well (human needs).

32. PREPARATION

The written need reached the Eau Vive office at Ouagadougou by an intermediary of a local operator, technical partner of many villages in the Eau Vive' zone.

On its receipt, the need was subdued to a certain number of criteria.

- The need is situated i a country where Eau Vive works.
- The need is situated in a zone where Eau Vive works.
- the need concerns a rural project
- The need is collective
- The need is signed and presented by a village representative (village Chief or any other person chosen).
- The need does to present any religious or political character which is reserved for a certain part of the population.
- The village is clearly ad sufficiently seen as the initiator and beneficiary.
- the number of Eau Vive activities will determine the response to the demand.
- The village is not impermanent relation with exterior financial partners who create double employment.

After verifying these criteria, a courier is set to the village with the following documents:-

- 1 Eau Vive presentation document
- 1 Village development guide "You have Projects" (Proposal for collaboration).
- 1 Information sheet and census sheet of existing water points to be filled and returned by the village to Eau Vive.

At the return of the sheets to Eau Vive office, the study of the sheets is based on the following principle on points:-

- It clearly appears in the sheet, several collective activities realised by the village during the course of the last 5 years.
- The information sheet indicates collective characteristics of the need
- The sheet shows agreement by the village on the mode of collaboration proposed by Eau Vive.
- The information sheet is signed by the village representative (village chief or any other chosen person)
- Existing water points (type, depth, technical quality, quality of water) and their location in the village.

A first meeting is proposed to the village. A member of the Eau Vive team - technical advisor in charge of the needs goes there with the principle objectives:-

- to meet and know the village, its leaders, population
- to exchange with them o their situation, and solutions envisaged
- verify the creditability of the information contained in the information count and census sheet of the existing water points an of the needs to complete this information.
- explain to the village the type of collaboration proposed by 'Eau Vive' and to see if the village is in accord.
- together with the village choose the type of work adapted to physical conditions, financial capacity of the village and of Eau Vive, conditions of project realisation and taking charge.

The conclusions of this first meeting between Eau Vive and the village are pertinent:-

- water needs are enormous and the entire activity is justified.
- the creation of a water point is an initiative of the village in relation to its water needs; ownership is the village's
- voluntary enterprise really exists and the community accepts the form of collaboration proposed by Eau Vive.
- after community accord, choice of the type of work, diverse contacts to make in this effect (public service, enterprise) ad modalities of taking charge of the project proceed.

CHOICE OF TYPE OF WORK

The initial need of the village was on wells. In spite of the advantage of collective drawing, low cost of maintenance, and cultural factors that this project represents for the population, the definite choice was a borehole equipped with a manual pump and

Handwritten signature

→ borehole was proposed because they could not guarantee the amount of water needed on the proposed waterpoint of 1mm.

surface distribution even if it allows the supply of water to the village under dependence of the pump (low output, eventual breakdown).

- First the zone's hydrogeology, characterised by ancient schistogranite formations give very little chance for the success of a well but better chances for the success of a borehole of 50-60m depth.
- The technology for a borehole, well adapted in the hydrogeological context is abit costly ad rapid in relation to that of wells.
- The water from the pump is of good sanitary quality.

CHOICE OF TYPE OF PUMP

There exist more than 10 models of pumps in the Burkina Faso Market. the village and Eau Vive have weighed, the course of their meetings, the advantages and disadvantages of each model and placed first the following parameters:-

- availability of spare parts and popularity
- proximity of repair artisans
- the robustness of the pump ad cost of necessary repairs.

The choice made was on INDIA which is locally made with a depot of spares in Kalsaka.

ACCOMPANYING ACTIVITIES

A certain number of obligatory accompanying activities are stipulated with the village:-

- to form a water pints committee and training of members
- choice, training and equipping of a village pump repairer
- planting of 500 trees in the village
- sanitary education (information, sensitisation on drinking water and health, water posts in certain homes).

The village is free and independent in making its choice, it can refuse to enter into the contract of starting its project if it does to accept the above mentioned accompanying activities which make the water point a place essential in life and to the environmental equilibrium.

3.3 REALISATION OF ACTIVITIES

Several other successive visits ad meetings in the village and Eau Vive offices, consequently allowed the tow parties to finalise the dossier (charge book, choice of technical partners, contact with public services), sign several contracts of activities ad effecting the necessary payments for the water point.

After a consultation to curtailing the price, 4 technical partners (borehole enterprise, pump supplier) were retained by the village and Eau Vive in order to realise the project.

4 contracts were signed between the village, Eau Vive and the different technical partners. the village finance 10% of the project cost and Eau Vive 90%.

The first contract was signed in July 1994 a year after pressing the need to Eau Vive. the other contracts were signed one after the other and payment for each party was directly effected to the technical partner in charge of works.

3.4 TAKING CHARGE OF THE WATER POINT

- Water Points Committee (WPC)

A committee of 10 members was formed (1 president, 1 V.P, 1 Secretary incharge of infomation and his assistant, 1 treasurer and his assistant, 2 caretakers incharge of cleanliness and hygiene of the waterpoint, 1 accountant). Two women members have direct implication on the use and management of the waterpoints. The members of the committee were chosen in the General Assembly of the village supported by the technical partner and in the presence of the Eau Vive Technical Advisor. All members are volunteers.

- VILLAGE PUMP REPAIRER

A village youth i also appointed at the General Assembly as the pump repairer. He is trained and given tools to ensure proper running light repair of the pump (greasing, replacing of parts). For major breakdowns COFOMAYA (Cooperative of Water Artisans), competent operator and equipeld based at the Séguéneka 50km away, having supported the village in appointing the water points committee and training of the pump repairer.

It is now 2 year since the water point in Naradbaganga was installed. It is functioning normally ad in order to ensure maintenance, the village draws into the village account supplied by regular fund raising by adults ad groups and by revenue form collective farms.

After two years of functioning, !have been two interventions by the special operator to change some parts on the pump. This was put into account:-

- dynamism of the village and its representatiyes.
- proper functioning of the water pint committee
- proper sensitisation of the population on the proper use of the pump
- proper discipline of users near the pump
- proper training of the village pump repairer and seriousness in his work.

EAU VIVE

- It appeals to individual donors, enterprises
 - It appeals to public co-financiers (French & European)
 - Financial aid for Eau Vive can not exceed 90% of the total cost of the project during the first year of financing a project.
 - Eau Vive involvement can not surpass 10 years.
 - The grant rate of Eau Vive diminishes by 2% each year this means that an augmentation of 2% each year to the village for its efforts in 10 years. the total grant per each inhabitant should not exceed 30000FCFA for 1500 inhabitants.
4. Eau Vive can give financial support in the following areas:-
- Water, health, Instruction, production, organisation with the grant rate varying from 30-95% (in the first year) on condition that the project is directly productive which has a public component and has a means of raising revenue or the Sahel villages.
 - Grants are applied to deserving causes (study, realisation, management).
5. Who realises the project?
- the village itself - if it has the required competence.
 - a technical partner - an enterprise, NGO, Public Service, a competent enough artisan.
 - in all these cases the village is seen as the principle client and Eau Vive as 'Associate Client'
6. HOW ARE PAYMENTS MADE
- After signing of the contract/s the village pays less than 70% of its part directly to the technical partner in charge of projects(s) realisation.
 - Eau Vive makes its payment successively when work is advancing.
7. If many villages are involved, rules for grants are the same for each village with the creation of an inter-village committee whose members are freely chosen.
8. Other Arrangements?
- Visits from donors (those who fund Eau Vive) to the Sahel for exchanges with the villages.
 - Visits by Sahelians to France to exchange with donors and to see how many is collected for Sahel projects.
 - VAP¹ Modifications: some regular modifications are made.

¹VAP-Vous Avez des Projets = Do you have project (Eau Vive Documents)

The annual cost of maintenance of this pump is 30000CFA; this is within the reach of the villagers who annually raise 250,000 CFA.

Nevertheless, this charge ought to be weighed down upto the ageing of the pump and its renewal.

To reinforce the acquired knowledge, Eau Vive proposed to the village of Norad Banganga, a odel opeaiton and maintenance contract (annexed) with the local operator. This annual contract based on the principle of paying the operator an annual fixed sum of 50000CFA with an additional payment of the costs of each repair. this system ensurers regular operation of the water point and prolonged life of equipment.

This methodology is o loner operational but ought to give a better guarantee of operation of the village water supply.

4. IMPROVING THE MANAGEMENT OF EQUIPMENT

Beyond the maintenance of the pump, is the problem of organising the water sector in the rural sector in the rural setting.

4.1 INSTITUTIONAL REFORM WITH IN THE VILLAGE

The alienation of many village water points is due to the absence of proper appropriation. Majority of these water pints are 'dropped' on the villages bilateral and multilateral cooperation programmes without involving local actors and the principle beneficiaries.

To solve this problem, its important that water services as well as others, be transferee progressively from the state to the village communities: This will permit the regularisation and officialisation of approriatiation of water points by the community.

Nevertheless, this transfer necessitates the establishing of a local representative structure within the village e.g. village Development Board (VDB), permanent ad endowed by the village budget.

In order to accomplish the local development management mission (water, health, education, production, organisation), the VDB will work with sector commissions. It s in this way that it can place itself in the village and under the VDB, a Water Commission (WC) not tied to only one water point but on all water resources, their exploitation and the problems of sanitation in the village.

- evaluation of the village's water (resources/needs)
- management of existing patrimony
- managers for the establishing of new water projects.
- a bridge between users and village Development Board

The members of this commission (6-12 people chosen during the Village General Assembly) are unpaid volunteers except the village water agents (drawer and repairer) who are of exterior subsidy for a limited duration). The Water Commission Approved by the Village General Assembly.

MAINTENANCE OF PUMPS

The security of the water supply is upto the villagers, to be able to ensure maintenance of pumping equipment and distribution of water. For this the village can endow itself with its won maintenance service or call on external operator.

LOCAL MAINTENANCE SERVICE

To complement the Village Water Agent, can endow itself with a proper technical service for maintenance and repair, working under the supervision and authority of the Village Development Board and within the village budget.

REPAIR ARTISAN

In most of the villages repair of the pumps is done by a repair artisan. These artisans are not well equipped and receive 5000-6000FCFA (50-60FF) for dismantling and reassembling of the INDIA pump o a borehole 50m deep.

This activity shall develop, in the same way as the growth of pumps and equipment supply market.

PUMP MAINTENANCE CONTRACTS

Many types of relations or contracts with a repair artisan or enterprise can be envisaged:

Straight Contract

If several repair artisan are working in the same region, the village can make the choice, by calling an offer restricted consultation, depending on the type of repair.

Reciprocal Agreement

Depending on the situation of each village, its distance from the supply centres and financial capacity, it can chose a well known pump repairer, and enter into a contract on his training and equipment in exchange the artisan maintains and repairs the village pumps.

AN ANNUAL MAINTENANCE AND REPAIR CONTRACT (Example of the annexed contract)

This option consists of the community entering into a contract (with an fixed annual fee) with a repair artisan competent enough and well equipped. The contract forecasts the type of repair that can be made, the cost of each repair, delays in repair, with the annual cost difference, the contract can forecast the operation and renewal of the pump. It is sort of an assurance polity that contracts the village get its equipment.

In order to sustain this initiative and on the base o knowing he frequency and costs of repair, an external partner can envisage the subsidising and/or guaranteeing of the type of contract.

5. ACCOMPANYING OF THIS INSTITUTIONAL REFORM

5.1 AT NATIONAL LEVEL

In order to make villagers competent in the management of water and sanitation, one or more training centres can be created for:-

- Training the water commissions - training on management of village water, choice of the the types of water points and equipment to be used, regulation of water services, training and sensitisation of users.'
- Training of Village Water Agents:- surveillance, proper running/operation of village water points, maintenance of equipment, recovering payments for water services, book keeping, training on treatment of water and sanitation.

The training succeeds if the water commission and agents in the village can constitute one of the elements - the capacity of the community to mange the different composants of a water service.

5.2 External Support Level

It is a battery of measures that are necessary and the propositions of Eau Vive in this case, summarises what support to sahelian village communities.

In so far as an NGO, Eau Vive activities in the Sahel in organising the water sector are limited for instance the following 4 complementary support domains

- training and organising villages
- training and organising of artisans
- improving relations between villages and artisans
- improving relations between villages and public services

I this 4 domains, Eau Vive supports a certain number of village or professional projects in Burkina Faso and the Sahelian Zone.

Presentation of each activity is accompanied by a reference:-

- (1) Current activity
- (2) Activity in preparation
- (3) Activity envisaged in the long term

VILLAGE TRAINING AND ORGANISATION

Support can be given by Eau Vive in the following ways

- Training and support in establishing Village Development Committee, an organised village structure and representative (1)
- Training and support in establishing a Water Commission (1) in the village within or more Water Agents (2)
- Support in financing of equipment (1)
- Technical support on choice of equipment, selection of enterprises contractualisation between the village and enterprise (1)
- Support in the establishment of a local budget and access to credit for the water commission and village water agents (3)

TRAINING AND ORGANISATION OF ARTISANS

Support can be given by Eau Vive in the following ways:-

- Professional training, organisation of professional workshops, (1)
- Support in equipment, in a equipment account (1)
- Constitute professional year books (1)
- Participation in establishing a training centre, for the youth and rural artisans (3)

IMPROVEMENT OF RELATIONSHIPS BETWEEN VILLAGES, ARTISANS AND OTHER TECHNICAL OPERATORS

Support can be given by Eau Vive in the following ways:-

- establish relationship between the village and public services for the preparation of village activities (Authority, confirmation of the preparation of village activities (Authority, confirmation of technical prescriptions) (1)
- Support of contracts linking public services and village activities (1)
- Support in the organisation of meetings/workshops between villages and public services in order to discuss themes such as decentralisation, hydraulic reform (1)

Planning with all actors concerned and with the means of necessary finances for the many operations, Eau Vive is ready to reinforce its contribution to the organisation and structuring in the water sector in particular:-

- to reinforce the activities taking place (1)

- to study with all other interested partners, establishing new tools complementary tools to support (2 and 3) ad for improving the exploitation ad maintenance of equipment in rural areas.

CONCLUSION

Inspite of the tens of thousands water points realised bring the IDWSD (1980-1990) of which the aim was to place safe water at the disposal of all, the question of water still preoccupies rural Sahelian populations.

- preoccupation in terms of need for new water points
- preoccupation in terms of effective management of existing projects.

Facing this situation, institutional reforms which impose on village level but also and principally, state authority on global policies at national level, if we know that water supply will become a priority for international funders.

The stake of this reform are enormous against political, economic and social plans but village communities with the support of external supporter will be able to take up the responsibilities of a water services, a factor that improves the living conditions of man.

Abbreviations

VDG	-	Village Development Board
WC	-	Water Commission
GA	-	General Assembly
VWA	-	Village Water Agent
TA	-	Technical Advisor
WPC	-	Water Point Committee
MEA	-	Mutual Equipment Account
MRA	-	Mutual Repair Account
IDWSD	-	International Drinking Water and Sanitation Decade

HAND PUMP MAINTENANCE AND REPAIR CONTRACT

Between

CLIENT:

The Village of:

Department of:

Province:

Presented by:

and

COFOMAYA:

Yatenga Manual Boreholes Cooperative

P.O. Box 24

Ouahigouya

Province of Yatenga, Burkina Faso

Telephone: 552222

Offices located at Seguenega

represented by: Mr. BELEM Amadé

President

It is agreed that:-

1. AIM OF CONTRACT

- 1.1 This contract has the aim of specifying responsibilities and obligations of each contracted in the effort to improve the water supply of villages.
- 1.2 On the request of the client, it is agreed that COFOMAYA ensures the repair of the handpump following:-
- a) Identification of the water point
 - no. of borehole or wells.
 - Situation in the village
 - Usual name of the water point
 - b) Identification of the pump
 - make
 - type
 - year of installation
 - depth of the body of the pump
 - name of the installer
 - existing guarantees

2. CLIENT OBLIGATIONS

- 2.1 On the day of signing of the contract, the client will pay an annual sum of 50,000 FCFA to COFOMAYA.
- 2.2 In addition to this annual sum, the client shall pay, with each COFOMAYA displacement a sum of 5,000 FCFA which ought to be handed over with the repair sheet (see ahead).

- 2.3 The client will undertake too use the pump is a normal way. the pump will age due to use by all.
- 2.4 The client shall undertake to ensure maintenance of the pump-greasing tightening of nuts.
- 2.5 The client shall undertake to inform COFOMAYA of any anomaly or breakdown of the pump.
- 2.6 The client shall maintain cleanliness around the water point.
- 2.7 The client shall ensure proper auctioning of the Water Point Committee.

3. COFOMAYA OBLIGATIONS

- 3.1 COFOMAYA shall ensure, during the contract period, all necessary repairs with the exception of replacement of pipe works and wiring which shall be necessary due to rust. This replacement shall be done by the village.
- 3.2 These repairs spare parts, and labour are free.
- 3.3 COFOMAYA shall make available personnel an spare parts, within 7 days of the client reporting malfunctioning or breakdown of the pump.
- 3.4 .COFOMAYA shall send by courier a reminder of the end of the contract 1 month in advance.

4. DIVERSE CLAUSES

- 4.1 The contracts lasts one year
- 4.2 If many breakdowns occur during this period Eau Vive shall do all repairs will be free, if o breakdown occurs during the period payment will still be made to COFOMAYA.
- 4.3 The contract only refers to one pump. If the client has many pumps its necessary of him to enter as may contracts as are necessary.
- 4.4 The contract shall not be valid if the client does not pay or does not respect the client obligations. COFOMAYA can then demand the annulation of the contract. No refunds will be made.
- 4.5 the contract shall not be valid if COFOMAYA does to respect the 'COFOMAYA OBUGATIONS! The client can then demand the annulation of the contract the client shall be reimbursed.
- 4.6 If any dispute should arise between the two parties, it should be solved amicably if a solution is not fund, the dispute can be forwarded to the authorities.

5. SPECIAL CLAUSES

Eau Vive, an NGO, P.O. Box 2512 Ouagadougou, Telephone 30 75 52, guarantees COFOMAYA, in particular if COFOMAYA finds it impossible to fulfil its obligations.

Eau Vive shall do all necessary repairs, free of charge and at the least delay:

CLIENT:

Name:

Occupation:

Date:

COFOMAYA:

Name:

Occupation:

Date:

Eau Vivè

Name:

Occupation:

Date:

EAU VIVE CONTRIBUTION TO COMMUNITY DEVELOPMENT

1. WHAT ARE THE RESPONSIBILITIES OF EACH PARTY (VILLAGE AND EAU VIVE)

1. CONDITIONS FOR EAU VIVE PARTICIPATION

- The village presents a collective need to Eau Vive
 - The village representative to be freely chosen by the entire village
 - The village should have realised several projects during the past years.
 - The village should accept conditions for financing set by Eau Vive.
2. On the request of Eau Vive, the village should fill up an information sheet and return to Eau Vive offices. After receipt of this sheet a person from Eau Vive visits the village to discuss the situation and the village's projects.
3. If the village and Eau Vive agree, one or more contracts shall be signed in order to realise village activities. If realisation of these first projects satisfies both parties, a 10 year development contract can be signed between the village and Eau Vive.

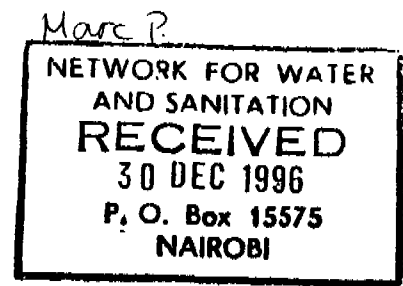
11. CONDITIONS FOR EAU VIVE FUNDING

1. What must the village do?
- the village has to initiate its projects, choose its priorities, hold preparatory meetings
 - the village has to effect the necessary administrative steps
 - the village mobilises its human, material and financial resources
2. What does Eau Vive do?
- Eau Vive give financial support to the village in order to complement its resources
 - Eau Vive gives technical support to the village in choosing its technical partners before starting work
 - Eau Vive conducts field visits to help the village set up the project.
3. Where does the village and Eau Vive get money for financing projects:-
- the village
 - Carry out collective income generating activities
 - Individual contributions by families or household
 - Call for funds from village residents or those abroad
 - Local, regional, national budgets
 - Loan from the bank



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Dakar, December 13th 1996

Mr Patrick M.N. Nginya
Programme Officer, CSR
NETWAS International
Magadi Rd., off Langata Rd.,
P.O Box 15614, Nairobi

KENYA

N/Réf: EV/RU/16238
Objet: Sending on case study

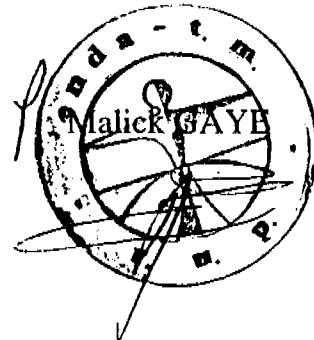
Dear Patrick,

I send you the case study for the meeting of Nairobi. I think also that you have received our two fax.

I wish you good reception.

Best regards.

P
The Coordinator of Enda Rup



PROGRAMME D'ECONOMIE ENVIRONNEMENTALE URBAINE ET POPULAIRE

(Popular Urban Environmental Economy Programme)

PRECEUP

**Recycling of domestic waste water in Castors/SOCOCIM and Diokoul-Rufisque,
Dakar, Senegal**

Case Study

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Summary

Rapid urbanisation, fuelled mainly by rural depopulation, is creating serious social and environmental problems in Senegal. Urban areas suffer from a shortage, and in some cases a complete absence, of systems for waste water disposal and rain water drainage. The country's physical conditions are hostile to human settlement: the ground water is virtually at surface level and imporous rocks, such as clay, dominate (see map and topographical data in appendices).

The Rufisque district is victim to all of these environmental problems. In an effort to resolve them, the RUP team of ENDA Third World piloted a project called PADE (*Programme d'Assainissement de Diokoul et Environs*/ Sanitation Programme for Diokoul and its Environs). Initially, individual sanitation systems were installed in the district of Diokoul, later on, Castors and Diokoul were equipped with sewers and a purification plant.

To maximise the effect of the activities, ENDA worked hand-in-hand with the local population and decentralised State services. Youths from the neighbourhood and local government workers completed a practical training course in technologies for collecting and making use of liquid and solid waste.

The beneficiaries of the system contribute to a fund which will be used to replicate it in Rufisque as well as in other cities. The project has demonstrated that in Senegal, it is feasible to collect refuse with carts and to treat waste water with new technologies.

a) Location



figure 1: Senegal in Africa

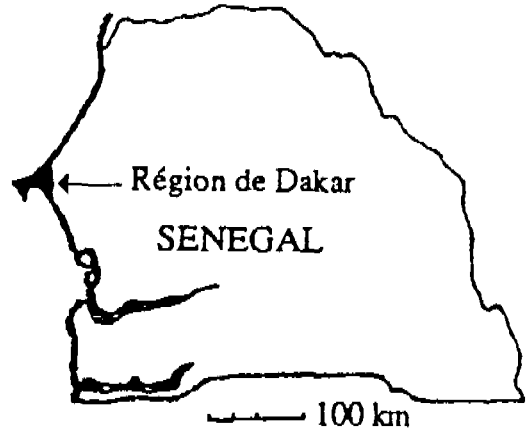


figure 2: The Dakar region

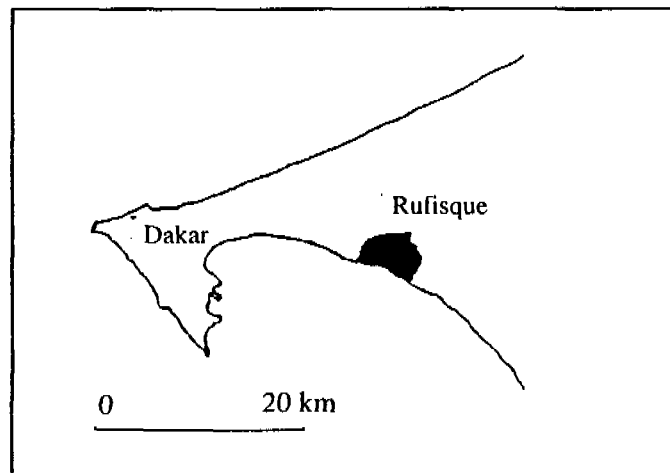


figure 3: Rufisque in the Dakar region

b) Beneficiary population

Characteristics of the population:

Castors and Arafat are neighbourhoods in Rufisque. Castors is a residential area for the workers from the SOCOCIM factory, this is why it is known as Castors/SOCOCIM. 88.7% of householders are the owners of their homes, therefore expenditure on accommodation is low - 70.3% do not have to pay anything at all, 18.8% pay between 20,000 and 30,000 CFA Francs and 10% pay between 30,000 and 50,000 CFA Francs. The neighbourhood of Arafat has the highest population of rent-payers (79%), surveys show that most of these are teachers.

The vast majority of the population is Muslim. 62.9% of married men have more than one wife.

Many different ethnic groups populate Castors and Arafat: 45% of the population is Lebou, they have been steadily arriving here since 1971, with a particularly heavy influx in 1980. Wolof (20%), Fulani (10%) and Serer (8%) also feature significantly. In Arafat, there is a sizeable Soninké presence. Most of these had lived in the Colobane neighbourhood where the frequent flooding prompted them to move.

The ethnic make-up of Rufisque

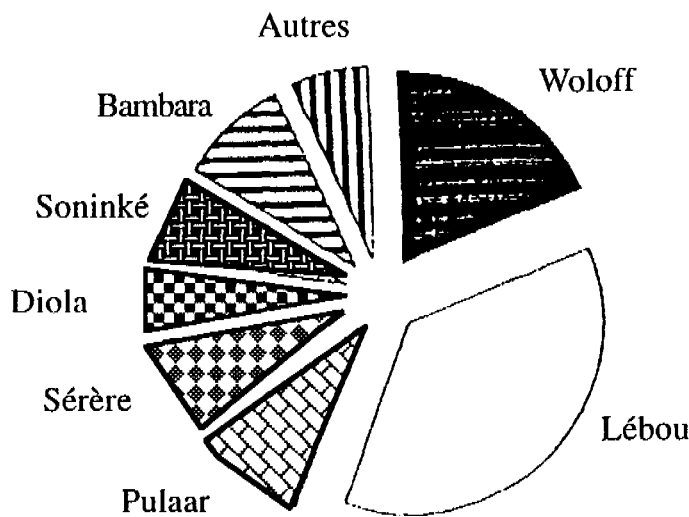


figure 4: the ethnic make-up of Rufisque

The population is very young: 65.8% of residents are less than 25 years old. These are poorly educated, more than half (66.8%) never progressed to secondary school. Some of them get day work in the SOCOCIM factory, the others perform no productive activity. Retired people comprise 4% of the population, although some of these continue to work in the factory.

1-The objectives of the project

Ecological : Reduce the presence of flies and mosquitoes by cleaning up faecal matter, household rubbish and stagnant water.

Economic: Create employment.

Stop the frequent emptying of pits which are so burdensome for the population (costing up to 15,000 CFAF. every two weeks).

Social: Reduce women's workload,

Eliminate disputes caused by the throwing of domestic waste water into the streets,
Improve the quality of life.

Sanitary: Reduce incidence of diseases caused by a dirty environment.

Technological: Promote the use of cheap and appropriate technology.

Community and Institutional: Organise regular meetings between the various groups around a common goal,
Strengthen local neighbourhood authorities (neighbourhood committees)

2- Description of the beneficiary population

Poverty indicators:

The area is very densely populated, mainly by unemployed youths. Income is low.

79.3% of the residents of Arafat, Castors and Dioukoul have no income. This figure includes unemployed people, students, housewives and retired people. Only 20.7% earn money. The average income per household is 80,000 CFA Francs. Surveys indicate that all household income is spent on electricity, water and food. This is 'a real headache' according to the people surveyed (see following table).

Table 1: Monthly expenditure on water

Expenditure on water (CFAF.)	% of household
0	2.9
750 - 2,000	30.3
2,000 - 5,000	47
5,000 - 10,000	16
10,000 +	3.8
Total	100

Source: ENDA RUP, Socio-economic survey, April 1995.

Table 2: Monthly expenditure on electricity

Expenditure on electricity (CFAF.)	% of households
0	3.8
900 - 4,500	18.1
4,500 - 9,000	40
9,000 - 15,000	18.1
15,000 - 50,000	20

Source: ENDA RUP, Socio-economic survey, April 1995

Table 3: Daily expenditure on food

Daily Expenditure on food (CFAF.)	% of households
500 - 1,500	53.9
1,500 - 2,500	41.3
2,500 - 3,500	4.8

Source: ENDA RUP, Socio-economic survey, April 1995

The last table shows that the daily expenditure on food for more than half of the households (53.9%) is between 500 and 1,500 CFAF.

41.3% of households spend between 1,500 and 2,500 CFAF. per day on food.

Only 4.8% spend between 2,500 and 3,500 CFAF. per day.

The figure for the average monthly revenue of households (80,000 CFAF.) is not definitive since the people surveyed refused to divulge how much they earn. Therefore the figure was calculated by adding up all the expenditure in one month.

Average monthly income per household

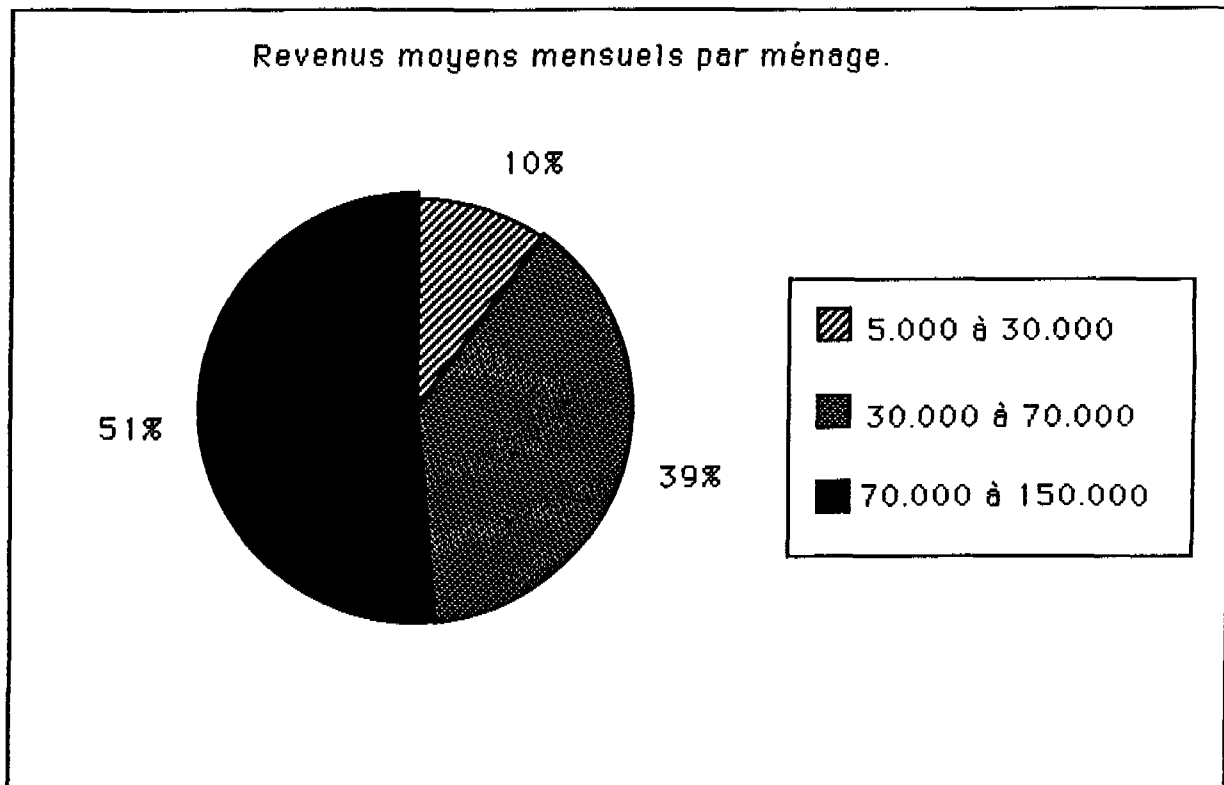


Figure 4: Average monthly income

4. Description of project's activities

Level of human development:

By poverty we mean all deprivations that effect the Senegalese population, mainly:

Low literacy: The example of Rufisque is representative of much of Senegal - more than half of youths have had no secondary schooling.

Low access to urban services: For example, in 1991, only 33% of households in Castors and Arafat were connected to a water supply system. 58% use electricity. Few have access to a sewage system yet due to demographic growth there is more waste water and therefore an increase in pollution levels (from 100 litres per resident per day in 1993 to 160 litres per resident per day in 2010 according to a study on sanitation in Dakar and its environs carried out in 1994).

3 Actors involved in the project

ENDA collaborated with a wide range of partners during the course of this programme, especially with the local government which facilitated contacts and co-operation between ENDA RUP and community and departmental services. It also combined with youth

representatives, the neighbourhood delegates nominated to represent the beneficiaries, representatives of municipal technical services, the financial backers (*Fonds de Contrepartie Canado-Sénégalais*) and the private sector (SOCOCIM).

All of these partners were grouped into a management committee which was based in the medical centres in each neighbourhood. ENDA performs the role of facilitator in this body. Further partners include the Board for Urban Waterworks and Sanitation, SONED-Africa and ONAS. Agreements were signed (see appendices) between Rufisque Commune and ENDA RUP and between the *Commune Urbaine de Dakar* and ENDA Third World.

The participation of the population is obligatory. They have been involved in all the meetings organised by ENDA and took part in the physical construction of the network. It was often women who persuaded men to connect their houses to the network. The population also participates in raising awareness of the importance of good hygiene (see photos).

Popular manifestation of awareness



day of awareness

Mural paint for awareness



photo of awareness

a) Presentation of activities carried out

The plants are equipped with the following:

A chute with filter to stop sand, fat and solids from passing and blocking the pipes

A canal system transporting the waste water to a pit situated in front of the houses

2 sewage networks which, with their accessories, extend over 4,000 meters 2 plants for lagooning by macrophytes, this purifies the waste water coming from the houses (see photo in appendices). The one in Castors covers an area of 0.5 hectares; the Dioukoul one covers 0.7 hectares and includes: a main decanter, 1.85 meters deep. This collects and breaks down through anaerobic fermentation the organic matter in the waste water. A phenomenon of decantation then takes place. When it emerges from this main decanter, the water (now devoid of solid matter) flows down a 1% slope into 6 basins in the case of Castors and 4 in Dioukoul. Floating on the surface of these basins is water lettuce which has fibrous roots which absorb the nutrients in the entire mass of water. When it rains, a by-pass system prevents the basins from overflowing - the water is transported directly from the main decanter to a surplus container. The basins have a total volume of 798 m³ and retain the water for 8 days.

b) Standards and regulations

According to French recommendations, SM, BOD⁵ and COD levels should be around the following:

- Suspended matter (SM) should be approximately 100 mg/l. This figure gauges the quantity of solids in water,
- Biochemical Oxygen Demand over 5 days (BOD⁵) should be 43 mg/l. This measures biochemical pollution,
- Chemical Oxygen Demand should be 120 mg/l. This measures the mineral content in waste water.

Analysis prove that the quantity of pollutants (faecal matter, urine and household water) decreases as it proceeds from one basin to the next. The water is so pure that fish are bred in it. There are also many toads there.

Table 4: Progression of treated water

Quantity mg/l	Before filtering	After filtering	Norms
SM	138	79	100
BOD ⁵	38	34	43
COD	56	48	120

Source: Analysis performed in the Chemistry Laboratory of Dakar University, July 1995.

In Castors/Arafat, heavy rain fall during the wet season often damaged the water lettuce. In Dioukoul the presence of salt in the basins has restricted its growth. But in both cases, the water is purified by macrophytes.

c) Difficulties encountered

Institutional obstacles

The Board for Urban Waterworks and Sanitation expressed reservations about the technique adopted by ENDA, it considers it informal.

Obstacles within the community

These obstacles are mainly due to a mis-understanding by some residents of the word 'project'. In one interview, a local youth said " it's this word 'project' that's causing all the problems, for most people here it means money given freely to the population by donors ". Some residents refuse to make even the slightest financial, and sometimes even physical, contribution to the carrying out of the projects activities. Because of this, RUP has now

→ not setting the standards

substituted the word 'programme' for 'project' - 'programme' better reflects the objectives of the PADE. Although the 'hand-out' mentality persists in some minds, in general, the population has created an atmosphere of solidarity to fight against bad hygiene in their neighbourhood.

Cultural obstacles

Working with rubbish is not something that the population of Rufisque accepts easily. The workers at the plant are often referred to as 'scavengers'. Hence, some people are reluctant to sort rubbish.

Misunderstanding between partners

One adviser from DUA/GTZ said that NGOs in general are viewed as "facilitating services who fraternise too much with the population". The population expects NGOs to continually distribute money and pay for everything, ENDA does not do this. For this reason, some members of the population are unsatisfied and un-co-operative.

5 The impact of the project

60% of Castors residents are now equipped with a collective waste water disposal system. Only 6.7% of these are connected to SONEES's system which leads to the main canal.

Social and environmental impact

Improvement of living conditions

60% of residents say that there is no longer any stagnant water in the neighbourhood. Only 23.6% said that stagnant water still causes them problems.

Occasional bad smells and blockages were caused by poor maintenance of the system. This maintenance is the responsibility of the beneficiary householders (see details of maintaining disposal chute in appendices).

Lightening of women's workload

Before the implementation of the project, women carried waste water on their heads over long distances to pour it directly into the canal or empty land. Often they were told by the authorities that they were not allowed to do this and so they were turned back, their journeys in vain. Sometimes they had to pay taxes to the Hygiene Board. The table shows that the vast majority of residents are content with the system.

Table 5: Residents verdict of the plant

Judgement of the plant	% of Heads of Households
Very useful	79.1
Quite Useful	15.2
A little useful	5.7%

Source: ENDA RUP, socio-economic survey, April 1995.

Table 6: Social advantages of the system

Social Advantage	% of Household
Don't Know	13.3
None	11
Lightening of women's workload	6.7
Improvement of living conditions	32.9
Peace of mind	17.9
Equipment cleared of waste water	1
Decrease in diseases	4.8
Automatic disposal of waste water	12.4
TOTAL	100

impact on the community

Since the installation of the system, awareness has been raised in Castors and the population now works collectively.

economic impact

75% of household heads said that the connection to the network has enabled them to save the money previously spent on disposal.

The decline in diseases has meant that families have had to spend less on medicine which is often very expensive.

For these reasons, 96.2% of the people surveyed, including those not connected to the network, consider sanitation a priority for the area.

6 Management, follow-up and appropriateness

Sustainability

A Community Fund for Sanitation in Poor Urban Neighbourhoods (FOCAUP) has been set up to perpetuate the system. It must recover the costs of the programme by gathering contributions from the beneficiary population. This will allow for the private sanitation system to be extended to other poor neighbourhoods. Initially, only 33% of the total cost had to be paid back by the population, now 67% is demanded. Soon, this will increase to 108%, of which 5% will go to the FOCAUP and 3% for administrative costs.

Innovativeness of the project

social innovation

The approach chosen was designed to harness popular participation and stimulate a spirit of partnership between the various actors. The programme is located in an arid zone, therefore waste water is considered a resource. It is completely re-used: for watering cooking vegetables, fruit trees and flowers, and for making compost. Youths earn some income for themselves by selling the products from the plant.

Technological innovation

The lagoons for purification by microphytes or macrophytes are much cheaper to build than conventional plants.

The running of the system does not require highly trained personnel nor any heavy technology nor any electro-mechanical equipment. Operating costs are cheaper and maintenance is easier.

When the system is well designed, the yield from the purified water can be good and the local environment can be improved.

The narrow sewage pipes are appropriate for the socio-economic reality of the area (use less water).

Conclusion

This programme for recycling domestic waste water began in September 1994, the survey conducted in April 1995 indicated that there has already been a definite improvement in environmental conditions. As the programme is extended, stagnant water will be completely eliminated and the incidence of certain diseases will consequently drop. However, the rapid population growth in the area means that it may be necessary to increase the size of the basins, which currently have a capacity of 105 m³, in order to avoid overflowing the system.

If it is well managed, the sale of the goods produced at the plant could guarantee an income for all the youths who work there.

The use of narrow pipes and lagoons for purification by macrophytes represent alternative solutions that are appropriate for developing countries.

The population quickly realised that " the collection, disposal and elimination of liquid waste is indispensable for keeping an acceptable environment and protecting public health " (*Commune Urbaine de Dakar, 1990*).

BIBLIOGRAPHY

1. Gaye, M. & Diallo F. - Programme d'assainissement de Diokoul et quartiers environnants Rufisque, ENDA RUP, Dakar, 1994, 33 pages.
2. Toure, C. - Technologies appropriées d'assainissements dans les pays en voie de développement, Dakar, 1986.
3. Direction de la Planification, National Programme for Fighting Poverty (PNLP), Ministry of Finance, Planning and the Economy, June 1995, 60 pages.
4. Gaye, M. - Case study on the implementation of the National Agenda 21 Action Plan, August 1995, 28 pages.
5. Etude de l'Assainissements de Dakar et ses Environnants (JICA), Abridged Report, October 1994, 23 pages.

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ANNEXES

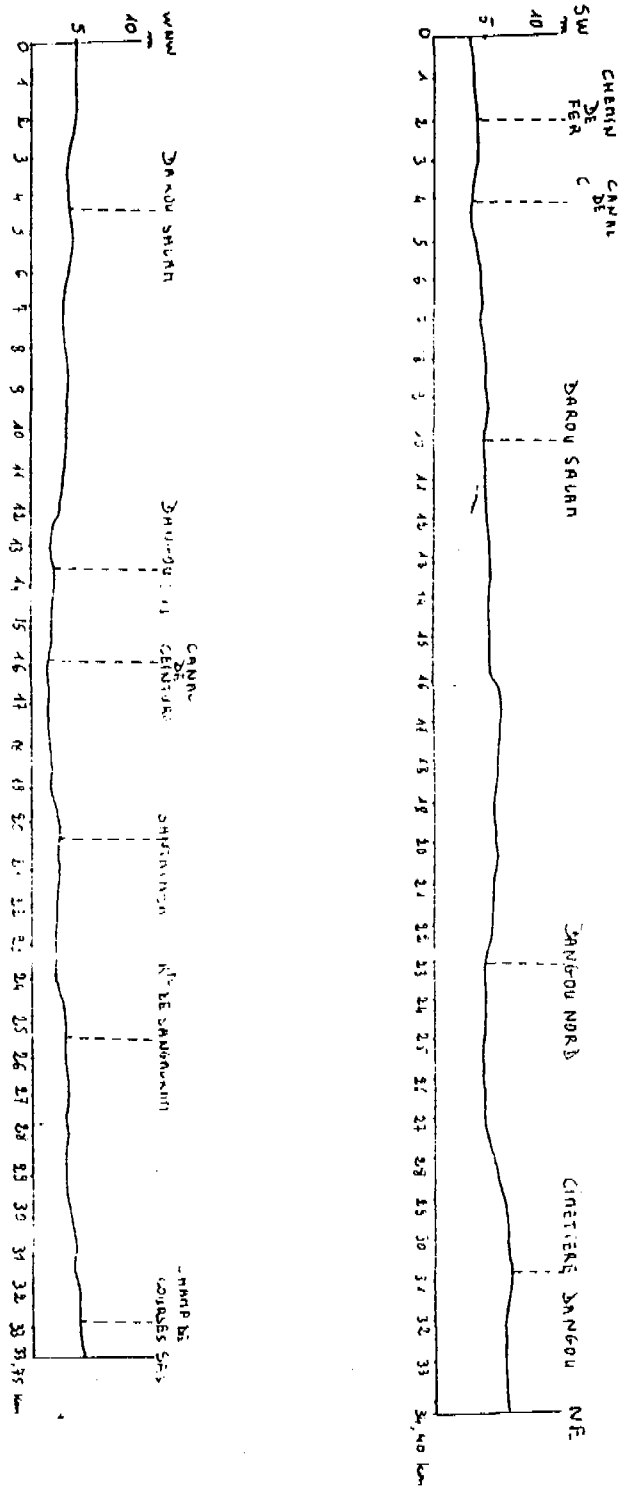


- Photo de la station de traitement des eaux à Rufisque



- Entretien d'un vidoir à Castors (Arafat)

RUFISQUE : Coupes topographiques SW-NE et WNW-SES



Echelle
 Longueur : 1 : 1000
 Largeur : 1 : 1000

COUPE GEOLOGIQUE

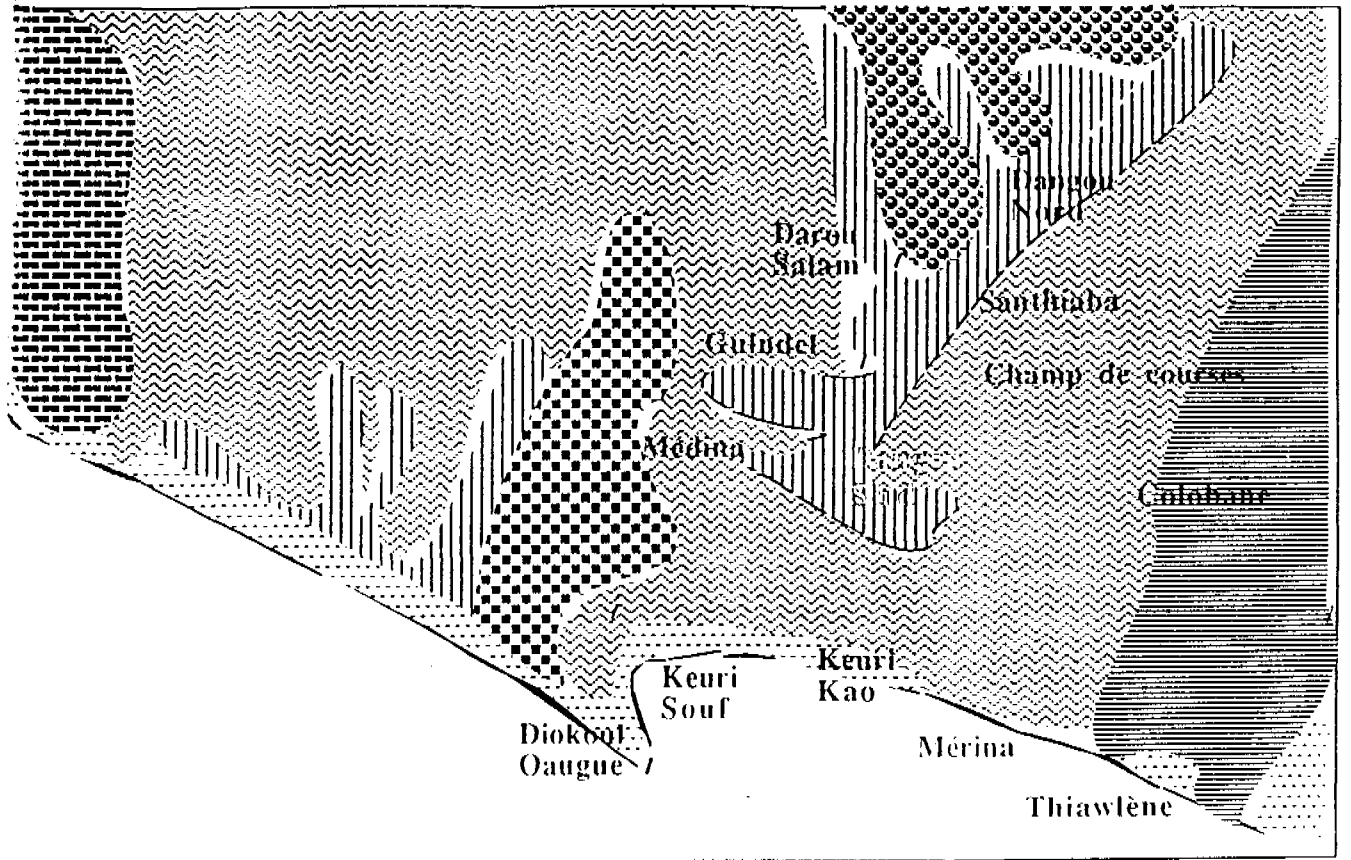









figure 3

Légende

-  Mames grises - calcaires argileux
-  Mames et calcaires argileux
-  Dunes continentales
-  Cordon littoral sableux
-  Vallées d'argiles et de mames
-  Calcaires argileux à lits de mames
-  Basanites et dolérites

Echelle

0 5 10 km

Case Study III

REPUBLIC OF GUINEA

BUREAU OF LAFORET STUDIES

**Community participation in Village Water
Programmes in the Republic of Guinea.**

Presented by Amadou Diallo.

COMMUNITY PARTICIPATION IN VILLAGE WATER PROGRAMMES IN THE REPUBLIC OF GUINEA.

1. GENERAL CONTEXT.

The Republic of Guinea covers a surface area of 250,000 Km² between latitudes of 7 and 12.4° north and longitudes 8 and 15° west. The population in 1995 was estimated at 7 million people of whom 75% were in the rural areas.

A rainfall varying between 3,000 mm/year in the south and 1,200 mm/year in the north, and abundant surface waters. Guinea has a dry season lasting sometimes for 7 months in the north.

1.1 Institutional Setting.

In Guinea, water supply is assured by two different departments: Ministry of Natural Resources (MNR) and the Ministry of Agriculture, Water and Forestry (MAWF).

The MNR which is in charge of the urban sector has two intermediary services:-

1.1.1 Guinea National Water Association (GNWA) which is endowed with individual rights and is financially autonomous, is charged with investing in, financing and starting projects as well as the use and operation of all projects installed so as to ensure a steady supply of portable water throughout the urban centres.

1.1.2 Guinea Association for Water Exploitation (GAWB) which ensures the exploitation of portable water distribution services in urban centres under contract of the Guinea National Water Society

The MAWF ensures supply of portable water to dessert and rural areas through the National Water Harnessing Service (NWHS), a public establishment with a technical and social component, having administrative, financial and management autonomy.

Working in the chief areas of the prefectures, GNWA has set up a decentralised supply network with centralised and individual management. On the contrary, NWHS has resorted to water points (wells or boreholes equipped with manual pumps, spring catchments) and small decentralised networks. Places not considered under the prefecture areas and secondary centres are under the responsibility of NWHS whereas peri-urban areas fall under GNWA.

In collaboration with GNWA, NWHS can intervene in the former's areas when urgent needs arise or in the case of absence of water supply projects but only for a short term. Perfect harmony exists between these three services of which statutes have been elaborated.

1.2 VILLAGE WATER SITUATION IN GUINEA.

It was in 1978 that the republic of Guinea took interest in the problems associated with supply of portable water to rural populations by starting a well project. This project expanded from 1980 through the creation of the National Water Harnessing Service (NWHS) whose overall mission was:-

- the study and evaluation of underground water levels
- the study of and realisation of water points
- the control of installation work, maintenance of works and installations and education of users

NWHS which was transformed in 1990 into a public establishment with a technical and social component enjoying financial and management autonomy, has rapidly, thanks to it's performance, won users' and funders' confidence.

A study carried out during the International Drinking Water and Sanitation Decade evaluated the rural water needs in Guinea as 12,000 water points on the basis of 10 litres/day/person and fixed it's first objectives at 6,100 water points by 1995 for 55% of the rural population.

With the assistance of donors who intervened in the sector, NWHS realised many water programmes in the dessert which saw it achieve it's target of 6,100 water points in 1993. Among these, is the Village Hydraulic Programme which is financed by the French Fund for Development and is spread out in four phases of which the third has just been completed in the prefectures of Gaoual and Koundara and is the purpose of this study.

2. PROJECT DESCRIPTION.

The third phase of the programme saw the realisation of 403 boreholes of which 400 were equipped with handpumps (Vegnet type) and 3 with solar pumps.

The project covers the areas of Gaoual and Koundara with a population of 288,000 people. Their principal activities are agriculture, livestock rearing, craftsmanship, and small business.

The three solar pumps were installed at Koumbia (Gaoual prefecture), Sambaillo and Saréboido (Koundara prefecture).

The solar stations initially planned for use in the dessert for water supply, are being used for the first time to charge batteries which supply the village with electricity.

	No. of solar units	No. of water fountains	No. of handpumps	No. of energy units	No. of members
Koumbia	24	3		10	900
Sambaillo	24	4		5	850
Saréboido	24	4	1	10	1200

An energy unit comprises:-

- a battery
- a regulator
- a converter
- assorted electrical accessories

The batteries are topped up using rain water trapped in 20 litres plastic cans.

The demand for energy is so high that balloting is used to allot the available units, while awaiting expansion which shall be made possible by future income. The batteries last 15 days.

In general 8 units are disconnect during the day in order to allow the recharging of the batteries. This causes a conflict with the water users who experience difficulties in filling their reservoirs when the batteries are being recharged. This conflict was solved by introducing fixed times when water can be drawn (7.00 - 11.00 a.m and 5.00 p.m. - 7.00 p.m).

In addition to water and electricity the project mobilises a number of animators (both men and women) to train users on all aspects of hygiene and sanitation.

3. COMMUNITY MOBILISATION.

3.1 Principle Stages in Project Programming.

The beneficiary communities were involved in all stages of the project:- choice of sites, installation of works, participation in the work, management and maintenance of works.

3.1.2 Programme Objectives

All community water programmes in Guinea are social programmes targeted toward the rural poor, contrary to GAWE programmes which are economic and destined for the elite in urban centres. These programmes essentially for domestic water supply, have often allowed in the case of spring water catchment for irrigation of small fields downstream using the excess waters. All the programmes have a hygiene and sanitation component.

3.1.3 The Role of Animation.

The realisation of a water point in the village is accepted by NWHS after a series of meetings on information exchange and maintenance with the villagers and endorsed by signing a contract.

During the first meeting, the local authorities (chiefs, village elders) are acquainted with the needs of borehole (finance, equipment, labour, accessibility) and the list of villages selected by NWHS. The list can be expanded or modified during this meeting.

During the second meeting which is for sensitisation, and held in the village, NWHS animators give leaders (village) and villagers all the necessary elements for decision making and eventual realisation of the borehole.

The animators indicate clearly to the villages that they are the owners of the borehole and that they ought to organise themselves in order to participate in it's realisation and to take charge of it's maintenance. Some time is allowed for the villagers to consult among themselves.

During the third meeting, the village gives it's final decision and if favourable, a Water Points Committee (WPC) comprising 7 members:- President, Treasurer, Secretary, 2 Repair Artisans (villagers), 2 Women (for cleanliness and hygiene) is formed.

The animator returns a few days after the meeting with the contract which is signed by the president of the Water Points Committee WPC and NWHS animator only after consent from the village chief .

The two repair artisans will be appointed when installation of the pump is being done. The two women are charged with organising fellow women to ensure cleanliness of the water point.

After sinking of the borehole is done by the Hydrogeologist and in agreement with the village, the borehole will be realised if the terms of the contract are respected.

The installation of the pump is a good occasion to mobilise villagers, form the WPC and give a demonstration of how the pump works.

Regular contact with the community is made until the end of the project by :-

- a session of training of the hygiene women and repair artisans
- rounds on how to connect the pump
- sessions on control and training
- disinfection of the boreholes
- surveys and evaluation of the sanitation situation.
- animation in schools

The whole system rests on decentralisation and under the responsibility of the beneficiaries. The state installs the project and the community takes charge of it's operation and maintenance.

The installation of an individual distribution circuit with detached components and the training of repair artisans remunerated by the village, frees the state which no longer has a role to play.

Management is entirely by the community through it intermediary, WPC or User Associations.

The number of water points in a village depends on one part the needs arising from the surveys carried out by NWHS in the village and the possibilities of funding from the government (supply) and on the other part , from the needs the villagers (demand)

In addition to modern water points installed by the government and NGOs, we note the presence of traditional wells which often dry up during the dry season. Always, villagers prefer modern water points. Rain water catchment using tanks is in experimentation in areas where saline intrusion in the water table is common e.g islands and at the coast.

3.2 URGENCY AND PROGRAMMING.

The national policy on community water supply is clearly defined in the Policy Paper on Agricultural Development by the government and donors.

The needs are classified according to urgency 1, 2, 3 and 4.

Urgency 1. absence of water during the dry season less than 1 Km

- Urgency 2. presence of water but of bad quality and of insufficient quantity within a radius of 1 Km
- Urgency 3. presence of bad quality water within a radius of 1 Km
- Urgency 4. presence of good quality water within a radius of 1 Km

A modern water point (modern wells with handpumps, boreholes, protected springs) is estimated as serving 400 people on the pretext of 10 litres/day/person. Servicing of all the villages having less than 100 inhabitants is programmed for the year 2005. The Administration recommends the communities to prioritise the use of modern boreholes for consumption purposes, the traditional water points (village wells, unprotected springs) can serve washing of clothes and other domestic uses. Unfortunately, due to diverse reasons (modern water points are far, high prices of water at the pump, long queues at boreholes, fixed times for fetching water), villagers sometimes use water from their traditional water points for drinking and cooking. Thanks to sensitisation and animation sessions on "Water Health" these practices have a tendency to disappear.

3.3 MANAGEMENT OF WATER SYSTEMS.

The management and maintenance of equipment is solely the responsibility of the village. The administration has the role of follow up which involves verifying that all mechanisms are working properly.

The two hygiene women are charged with organising fellow women to sweep around the water point which is fenced for protection. They also have to organise the space around the water point i.e areas for washing drying clothes and feeding animals.

In case of breakdowns, repair work is done by the two artisans who are directly remunerated by the village. In other respects the suppliers of the pumps are responsible for making available a large stock of spare parts, of which prices are fixed.

With regard to efficiency of the system, the pumps are standardised and limited to two types throughout the country : the Vegnet pump for Lower and Central Guinea and the Kardia for Upper Guinea and forest areas.

The costs of these investments which is entirely met by the government are not reimbursable. On the contrary, the costs of maintenance are entirely upon the users.

In order to take up these functions, the beneficiaries are organised into Water Points Committees or User Associations according to the nature of equipment.

In the villages with boreholes equipped with handpumps, the Water Points Committee comprises seven members - the President, Treasurer, Secretary, 2 Repair Artisans, 2 Women responsible for cleanliness and hygiene.

The management of solar stations is done by the "Water and Solar Electricity Association". It is administered by an Executive Board run by a technical office. This board comprises the following members:-

- 2 representatives from a water point (a man and woman)
- a local administration representative
- a NWHS representative
- the Technical Director and Accountant

The Executive Board holds elections annually to appoint the President and Secretary. The technical office comprises a Technical Director and an Accountant.

Tables A, B and C show income generated by the projects and the different charges. Projects supported by the government are not included. The cost of accommodation and meals of workers and unskilled labourers have been added.

A INSTALLATION COSTS.

	Costs of participation (GF)	Operation costs (GF)	Installation of handpumps (GF)	Installation of water fountains (GF)	Installation of an energy unit (GF)
Water Points Committee	150,000	111,000	24,500	-	-
User Associations	600,000	-	-	50,000	3,000

B. INCOME

	Location of energy unit	Recharge of batteries	Price of a 20 l jerrycan of water	Savings
Water Points Committee	-	-	25	Optional
User Association	5,000	500	25	Mandatory

The 150,000 Guinea Francs paid by the Water Points Committee to NWHS for the installation of a handpump, serves as connection fees. As concerns the solar units, the amount of 600,000 Guinea Francs paid to "Rural Credit" by the Water and Solar Electricity Association (WSEA) is an integral part of it's account for running the station.

C. SERVICE ALLOWANCE.

	Technical Director GF/month	Accountant GF/month	Well-sinker GF/month	Repair artisans GF/month
Water Points Committee	-	-	-	1,500
WSEA	10,000	10,000	30,000 or 30% of total income	-

The Water Points Committee and Technical unit of WSEA are regularly controlled partly by the Rural Development Committee (RDC) and the chiefs on one part and by NWHS agents on the other. In the cause of this control, accounts and payments made to "Rural Credit" are verified.

The savings paid to "Rural Credit" will serve future renovations and extension work. In accordance with WSEA and the administration these funds are destined for their initial objectives:- financing all social development activities of the village (school, dispensary, mosque).

The relationship between the administration (NWHS) and the community (RDC, Districts, Water Points Committee, WSEA) are clear to all and formalised by contracts signed between the different parties

- borehole realisation contract (NWHS/Water Points committee, District)
- Contract regarding use of energy units (NWHS/WSEA)
- Service contract (community/WSEA)

1 US\$ = 1000 Fg⁸

4. CONCLUSION.

With the three components of water, sanitation and rural electrification, the third phase of the Village Hydraulic Programme financed by the French Fund for Development in the prefectures of Gaoual and Koundara, is an example of the success of the rural development programme.

For the first time in Guinea, solar pumping stations initially envisioned for use in the dessert, have been used to charge batteries for electricity supply in the village (2 bulbs/ battery)

The community through their Water and Solar Electricity Associations which directly manage income generated from the sale of water (25 GF/25 litre Jerrycan) and electricity (5,000 GF/Month/energy unit). After deducting all running costs, the WSEA manager deposits the balance into a savings account at "Rural Credit."

Funds meant for future renovations and extension work can serve to develop the area, with the approval of the village association. The water point thus become a genuine backbone for development. The introduction of the solar energy component in the Village Hydraulic Programme, is an innovation which bears great hopes in the area of rural electrification.

The emergence of competent locals capable of making essential decisions (costing of water) and adapting management techniques and financing of equipment, is a major achievement for rural development.

The villagers, because they are closely associated with the choice and management of their infrastructure are highly motivated. In future projects, it will just be a question of going a little further by allowing communities to identify for themselves their needs and prioritise them. It is they who will choose henceforth, the place to administer the infrastructure they need. This is a new approach that has totally changed the mentality of all actors of development in the rural areas.

A 4th phase of 350 water points within the same project has just been launched in the prefectures of Coyah, Fria and Dubreka in Lower Guinea, and another similar programme of 700 water points financed by KFW in the prefectures of Mali, Lelouma and Koubia in Central Guinea.

