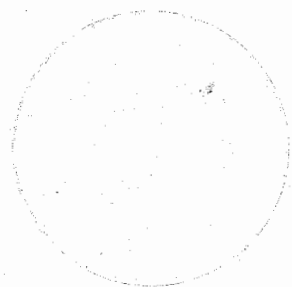


COMMUNITY MANAGEMENT OF RURAL WATER SUPPLY

A STUDY OF SEVEN PROJECTS IN FRANCOPHONE WEST AFRICA



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BACKGROUND

This report is part of the overall strategy of the UNDP/World Bank Water Supply and Sanitation Program to document community management approaches world-wide and to refine models for community management of water and sanitation services through demonstration projects.

With water supply coverage in rural areas of developing countries currently estimated at 40% and sanitation lagging far behind this, there is growing concern that goals of the Water Supply and Sanitation Decade are not yet in reach. This is both because of the high cost of water supplies and because those systems that have been installed have often required continued external (donor) support to maintain, reducing effective investment in new facilities.

Over the last twenty years, community management of water supplies has been promoted in many Francophone West African Countries. In view of the importance of communities taking responsibility for the long term maintenance of their water supplies, it was felt that many useful lessons could be learned from the experience of projects that had successfully involved communities in the management of their water supplies.

The following seven projects were chosen: Mouhoun and Yatenga in Burkina Faso; Aqua Viva, Mali Sud and Kita in Mali; and Plateau-Savane and Maritime in Togo. They were selected on the basis of an initial review of project documents, progress reports, and evaluations. In addition, discussions were held with persons familiar with rural water supply projects in Francophone West Africa. Some of these projects have been completed and others are still in the process of implementation, but all projects had a duration of 6 to 12 years.

Field work was conducted in October and November 1988 and the results are summarized in the report. The study methodology, described in detail in Annex 1, includes a description of the approach, a list of the people interviewed, and the types of questions asked. The methodology describes the basic approach of interviewing project staff, community members, area mechanics, artisans, water point committee members, etc. Each project was visited for about three days.

A questionnaire was completed for each project based on the interviews conducted at each project site and these were then used as a basis for the report. A sample blank questionnaire is provided in Annex II and the seven questionnaires which were completed are included as Annex III. The questionnaires were used to obtain the following information on the projects: background on the projects and beneficiaries; water resource information; financing; construction; extension; water committees; maintenance and spare parts distribution; and other project activities.

A list of persons met and project documents consulted during the study can be found in Annexes IV and V respectively.

ORGANIZATION OF THE REPORT

The report does not attempt to present a thesis on the subject nor is it intended as an evaluation or a criticism of the projects studied. Rather, it presents a summary of some of the components that are key to establishing community management of water supply. At the beginning of the report, a section on lessons learned summarizes factors that are believed to have been most responsible for the success of the projects in establishing community management of the water points.

The components discussed are:

- project management
- community organization
- extension services
- maintenance and spare parts distribution

The main focus of the report is water supply, however, sections are also included on hygiene education, latrines and training.

Each section of the report is in general, made up of the following: a discussion of the component in question, a comment highlighting the aspects which contribute to the effectiveness of the approaches used, and tables with specific information on the component. The reader can also review the questionnaires (Annex III) which provide more background detail on each project.

It is hoped that the information provided will give insight and ideas to project staff responsible for preparing and implementing such projects as well as to others working in this sector.

1. LESSONS LEARNED

Perhaps the single most important lesson learned from these case studies was that all that is really needed to enhance system sustainability is enabling communities to keep their pumps in operation themselves. The details of water point management are really worked out by the individual communities themselves.

There are various other lessons to be learned from the projects visited during the study. These are presented below.

Project Management

- Effective project management requires dedicated staff who will implement the various activities planned.
- National staff get experience in supervising water supply projects, but not in their management. Projects can pay more attention to developing the management capabilities of the nationals and this can best be done by limiting the time expatriates work on the project as well as including national management as a project objective.
- The average cost of \$18,500 per well precludes large scale replication, therefore ways must be found to reduce construction costs and expensive expatriate inputs.

Community Management

- Community management of a water point is sustainable and replicable. The main elements of the management system are:
 - An effective extension service supportive of community capacity.
 - The willingness of the community to have an improved water supply (possibly exhibited by up-front financial commitment).
 - The establishment of a representative water committee and community fund for management of repairs and maintenance of the pump surrounds.
 - A good maintenance system which uses trained local artisans and which is as autonomous as possible from the project and/or government.
 - An effective spare parts distribution system.

Extension Service

- Projects are likely to be a success in areas where there is a high demand for water, especially in the dry season. Consequently, the approaches used by the projects in mobilizing communities to establish community management of water supplies may not be replicable in areas where alternate water sources are readily available.
- Hygiene education can only be effectively implemented by EAs involved in mobilizing and training communities if they are given the mandate, resources and time to do so.
- The willingness of the communities to manage their water points is the critical factor of sustainability; extension services only serve to support that willingness and build internal capacity.

Maintenance and Spare Parts Distribution

- Area mechanics are capable of maintaining VLOM pumps without central back-up.
- Community mechanics can maintain the Volanta pump with minimal support from area mechanics. Community mechanics could also undertake more responsibility for repairing VLOM pumps, if given the tools and training.
- Private spare parts distribution is important, as exhibited by the fact that all the projects already have or are in the process of establishing distribution through local retailers.

2. DESCRIPTION OF PROJECTS

The areas covered by the projects visited ranged from 8,500 km² for the smallest project to 80,000 km² for the largest, and the number of people served ranged from 65,000 to 600,000. The systems studied were handpump-based water supply projects although in some of the projects open wells and motorized pumps were also used. The costs per person served ranged from \$24 to \$128 and the cost per water point ranged from \$14,000 to \$27,000. Table 1 provides background information on each of the projects.

The projects were located in similar environmental conditions, characterized by a lack of surface and shallow well water in the dry season but more readily available water in the rainy season. In all the projects the demand for water in the dry season was high, as traditional sources were generally 1 to 15 kilometers away. This no doubt had a strong influence on the willingness of communities to participate in the projects and contributed much to their success. It was also clear in all cases that, to the people, water quantity was far more important than water quality. Most communities visited had alternate sources of water (eg. traditional wells) which were polluted, but they were very happy to have them as supplements to their handpump water.

TABLE 1
COMMUNITY MANAGEMENT OF RURAL WATER SUPPLY

PROJECT NAME	MOUHOUN	YATENGA	AQUA VIVA	MALISUD	KITA	MARITIME	PLATEAU-SAVANE
Location	Mouhoun Region, Burkina Faso	Ouahigouya Region, Burkina Faso	San Region, Mali	Bougouni Region, Mali	Kita, Bafoulabe and Keniebe Regions, Mali	Maritime Region, Togo	Plateaux and Savane Regions, Togo
Principal Donor	The Netherlands	EDF	France	Switzerland	IDA/World Bank	Canada	USA
Project Duration	1979-1991	1981-87	1975-81 as NGO; 1981-89	1977-89	1984-89	1985-89	1979-87
Project Area	80,000 km ²	12,300 km ²	70,650 km ²	39,100 km ²	35,250 km ²	6,900 km ²	17,000 km ² and 8,470 km ²
Communities Served	600	479	500	487	294	240	850
People Served	390,000	331,000	158,000	292,000	160,000	65,000	600,000
Project Profile	<ul style="list-style-type: none"> ■ Initial focus on hand-dug, open wells. ■ Formation of water committees. ■ Shift to drilled wells with Volanta handpumps. ■ Development of effective extension activities. ■ Establishment of maintenance system. ■ Development and improvement of Volanta handpumps. ■ Rehabilitation of pre-project water points. ■ Pilot activities in latrine and health education. 	<ul style="list-style-type: none"> ■ Provision of boreholes with Vergnet pumps. ■ Some hand dug, open wells and well/borehole combinations. ■ Project transfer to national staff. ■ Formation of water committees. ■ Establishment of maintenance system. 	<ul style="list-style-type: none"> ■ Drilled boreholes selected by local government. ■ Installation of Vergnet handpumps. ■ Formation of water committees. ■ In some cases, 2 pumps are installed per borehole. ■ Installation of solar pumps. ■ Maintenance system (since 1987). 	<ul style="list-style-type: none"> ■ Project executed by national staff. ■ Upon community request, boreholes and Vergnet pumps installed and project provides maintenance for 1 year. ■ Since 1984, decentralized maintenance unit. ■ Formation of water committees. 	<ul style="list-style-type: none"> ■ Drilled boreholes. IMII/Mali pump installation and maintenance training contracted to national company. ■ Establishment of maintenance system. ■ Formation of water committees (by agents from an associated health project). 	<ul style="list-style-type: none"> ■ Formation of Village Development Committees. ■ Opening of Community Bank Accounts. ■ Drilled boreholes equipped with IMII/Togo pumps. ■ Coordinated planning with national institutions. ■ Development of effective extension and maintenance systems. ■ Community income-generating micro-projects. ■ Household and community latrines. ■ Hygiene education. 	<ul style="list-style-type: none"> ■ Drilled boreholes with Vergnet and UPM handpumps. ■ Formation of Village Development Committees. ■ Opening of Community Bank Accounts. ■ Development of extension system using government agents. ■ Health education (especially ORT). ■ Rainwater catchments with cisterns. ■ Household and community latrines.
Systems Installed	<ul style="list-style-type: none"> ■ 503 open wells, 277 boreholes. 	<ul style="list-style-type: none"> ■ 443 boreholes, 13 well/borehole combinations, 88 rehabilitated wells, 126 open wells. 	<ul style="list-style-type: none"> ■ 1,185 boreholes, 51 open wells, 60 solar pumps. 	<ul style="list-style-type: none"> ■ 740 boreholes. 	<ul style="list-style-type: none"> ■ 478 boreholes. 	<ul style="list-style-type: none"> ■ 200 boreholes, 104 rehabilitated wells. 	<ul style="list-style-type: none"> ■ 1,048 boreholes, 59 rainwater catchment systems.

COMMUNITY MANAGEMENT OF RURAL WATER SUPPLY (CONTINUED)

PROJECT NAME	MOUHOUN	YATENGA	AQUA VIVA	MALI-SUD	KITA	MARITIME	PLATEAU-SAVANE
Total cost, US\$	\$13 M	\$14.5 M	\$4 M in phase II	until 12/89: \$17.5 M	up to 1988: \$10.8 M	\$8.3 M	\$17.2 M
Cost Per Person Served	\$33	\$44	\$51	\$48	\$68	\$128	\$24
Cost per Water Point	\$16,500	\$21,500	\$14,000	\$23,500	\$22,500	\$27,000	\$15,500
Initial Community Contribution	<ul style="list-style-type: none"> ■ \$167 paid for slab construction, training and tools prior to pump installation. 	<ul style="list-style-type: none"> ■ \$167 paid for construction, training and installation. 	<ul style="list-style-type: none"> ■ Since 1985: \$167 paid prior to drilling, \$167 prior to pump installation and \$700 to be repaid over next 2 years. 	<ul style="list-style-type: none"> ■ Since 1987: \$400 collected prior to pump installation. 	<ul style="list-style-type: none"> ■ \$450 collected prior to drilling. 	<ul style="list-style-type: none"> ■ \$117 in bank account prior to pump installation. 	<ul style="list-style-type: none"> ■ \$167 supposed to be in bank account prior to pump installation.
Extension Service	<ul style="list-style-type: none"> ■ There are 3 groups of EAs. One group is responsible for mobilization, (8-10 communities per EA), the second for training the water committees (8-10 communities per EA), and the third for monitoring community progress (30-40 communities per EA). ■ Campaigns last 9 months. 	<ul style="list-style-type: none"> ■ Each EA works with a group of 10 communities during campaigns which last 6 months each. ■ The water committees are trained during this time and monitoring follows the training. 	<ul style="list-style-type: none"> ■ Each EA lives within a central community during a campaign and works with a group of 6 communities. ■ After a year, committees are formed. ■ The committees are trained during this time and their activities monitored. 	<ul style="list-style-type: none"> ■ There are three types of EA (community development workers, health technicians). ■ EAs live in central community and work in 20 of them at a time. 	<ul style="list-style-type: none"> ■ The EAs conduct the mobilization during a 2 month period in which each EA works with 4-8 communities. ■ Training of committees and community monitoring follows. 	<ul style="list-style-type: none"> ■ EAs are grouped in teams of 3 or 4. Each team of EAs works with 30 communities and visits each one at least once a month throughout the project period. 	
Maintenance System	<ul style="list-style-type: none"> ■ Community Mechanic. Area Mechanic. 	<ul style="list-style-type: none"> ■ Community Mechanic. Area Mechanic. 	<ul style="list-style-type: none"> ■ Community Mechanic. Area Mechanic. Project backup. 	<ul style="list-style-type: none"> ■ Community Mechanic. Area Mechanic. Project backup. 	<ul style="list-style-type: none"> ■ Community Mechanic. Project supervision and back-up. 	<ul style="list-style-type: none"> ■ Community Mechanic. Central Mechanic with government maintenance. 	
Spare Parts Distribution Network	<ul style="list-style-type: none"> ■ Project stocks and sells parts through EAs. Local distribution to be established. 	<ul style="list-style-type: none"> ■ Local distributor stocks and sells spares. 	<ul style="list-style-type: none"> ■ Project now stocks and sells spares through area mechanics. Local distribution to be established. 	<ul style="list-style-type: none"> ■ Project stocks and sells spares through area mechanics or agriculture agents. 	<ul style="list-style-type: none"> ■ Project stocks and sells spares and is go-between for local distributor of IMIII/Togo parts. 	<ul style="list-style-type: none"> ■ Local distributor stocks and sells Vergnet parts. Project provides spares for UPM. 	

3. PROJECT MANAGEMENT

The projects have been managed by expatriates with national counterparts or by nationals with expatriate advisors. Nationals have been most actively involved in the supervision of extension and construction activities and to varying extent in planning and reporting on them. Administrative experience, particularly in budgeting, has been limited.

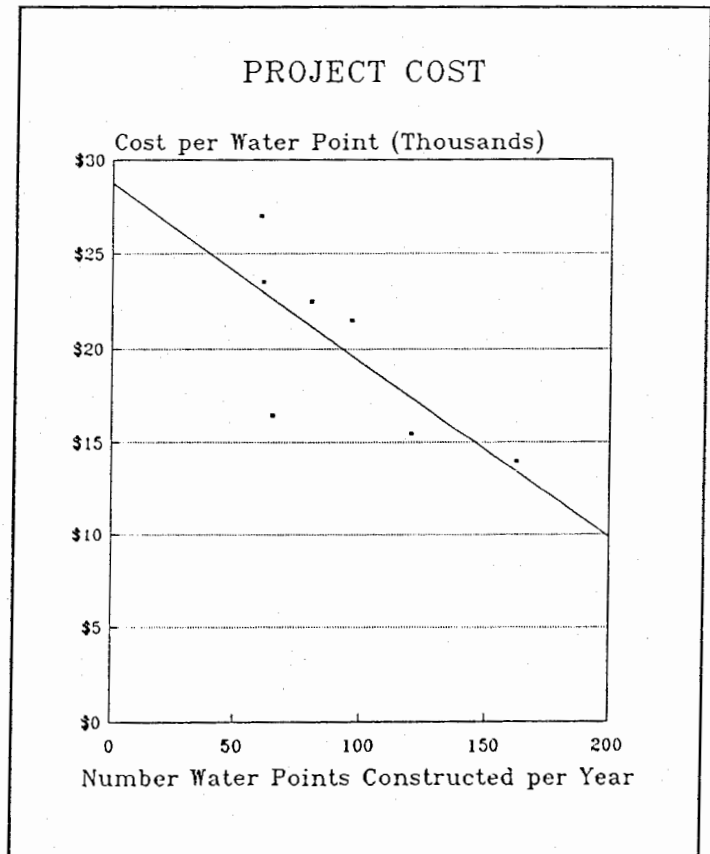
All the projects took a "cookbook" approach to project implementation in which the mobilization activities and conditions for community participation were pre-specified by a project document. They differed, however, in terms of the involvement of national staff in project planning, as some project teams were simply presented with an implementation recipe that they were to carry out, while others were involved in developing and modifying it. Those projects that involved staff in planning tended to be more flexible and refined their implementation strategy over time.

Most projects had 2 to 6 international staff who remained throughout the project either as advisors or managers. However, one of the projects never employed international staff but had external consultants and another eliminated their positions after a few years. The necessity of retaining international staff for an extended period of time was not demonstrated in any of the projects. It appears that the projects would have benefited from a strategy to turn over full management responsibility of the project to national staff in a predetermined time period.

On average, projects constructed 100 boreholes per year at a cost of \$18,500 each (\$14,000 to \$27,000). 80% of this cost was directly related to well construction and pump installation, 15 percent to management and administration and 5 percent to extension service. For an individual pump this works out to \$14,500 for construction, \$3,000 for management (administrative overheads) and \$1,000 for extension. Expatriate inputs to management averaged about 3.5 staff years per 100 pumps installed or about \$3,000 per pump.

It is clear that construction dominates project costs and that expatriate labor adds substantially to costs. As indicated in Figure 1, economies of scale also are a determining factor. For example, project costs per borehole were about \$25,000 if 50 wells per year were constructed and half that if 150 per year were constructed.

This study did not investigate the reasons for well construction being so high. It is clear, however, that while the maintenance systems appear to be both replicable and sustainable, the extremely high construction costs, preclude replicability. Ways of reducing construction costs must be found if widespread coverage is to be attained.



4. COMMUNITY MANAGEMENT

Community mobilization and organization were important components of all the projects, and even though different approaches were taken, it is interesting that all communities ended up with very similar management systems.

The process of selecting communities as beneficiaries of the water points varied among the different projects. In some cases, a survey was used to help with selection of communities, in others, a request for a new water supply was made by the communities. The communities all had strong leadership structures, elected officials sometimes existing alongside the traditional leadership groups. All the communities had other existing community organizations and therefore the formation of water committees was not new to them.

4.1 Water Committees

Table 2 presents information on the water committees (or development committees, as they were called in some project areas) established by the communities. All projects took the approach of establishing water committees for the management of the water points, although in one or two cases, the committees were established retrospectively after the water points had been installed. In all cases, project staff, usually the extension agents, described the requisite roles to be played by members of the committee. Subsequently, the committee members were chosen by the communities or selected by the traditional leaders. Committee members who did not perform satisfactorily were replaced. In some projects, community leaders also became committee members. Projects did not, as a rule have a role in the committee selection process. Occasionally, in response to complaints, extension agents would intervene to confirm that the committee members were acceptable to all community members. It appears that on the whole, communities readily established their water committees.

There was usually one water committee per pump. Sometimes, therefore, a community had more than one committee. The water committees all comprised the following basic members: president, treasurer, secretary/accountant, community mechanic and a woman responsible for cleaning the pump surrounds. In all the projects an effort seemed to have been made to ensure that women were part of the committees but usually only as "les femmes responsables" that is the person responsible for keeping the pump area clean but with no decision making power. In two projects however, efforts were made to ensure that there was greater participation of the women in other committee roles, either through a quota system or other means, although none of the committees visited had women mechanics. Committees sometimes had two people per job in order to reduce the possibility that the job would not be done because the person responsible was not available.

Criteria for selection of committee members by the communities included the following characteristics: a respected member of the community, married and literate (for secretaries/accountants). It is clear that each community established its own criteria for selection of committee members. Committee members were not paid for their services and some had been members for quite some time. It was clear from interviews with committee members, that most of them took their jobs very seriously. The most important thing was that the committee members volunteered their services to the community and were trusted by their fellow community members.

4.2 Responsibilities of the Water Committee Members

Committee members each had specific roles and responsibilities. As a team, they were responsible for ensuring that the community provided funds for maintenance and for settling disputes

about the water point. They were assisted in this by the community leaders. They were supported in the maintenance of the water points by area mechanics and in one case by central mechanics.

Individual responsibilities included the following:

- president - to chair meetings and lead the committee
- treasurer - to collect and keep funds
- secretary/
accountant - to keep a record of meetings, accounts, pump repairs, and spare parts used
- community
mechanic - to make repairs on pump and do preventive maintenance
- woman
responsible - to supervise pump users and keep pump surrounds clean

4.3 Training of Water Committee Members

Once committee members were chosen, they were trained by members of the project team, usually the extension workers. Those who received the best training were usually the community mechanics, the secretary/accountants and the treasurers. However in almost all cases, this training was very limited, although it was sufficient to enable the committee members to carry out their various duties adequately. The community mechanics typically received at least one day followed by on-the-job training. The details of their training are presented in Section 6. The secretary/accountants received instruction on how to take minutes of meetings, and how to keep a simple record of the community accounts, noting funds received, disbursed and balances. They were also shown how to keep a record of repairs made on the pump or at the water point. Where bank accounts were opened by the communities, the treasurers and secretary/accountants received special training to help them manage the bank accounts. Other committee members such as the women responsible for the pump surrounds were usually just given basic instructions and advice on how to avoid and control conflicts at the water point and on how to promote cleanliness at the pump site. They were instructed for example to make sure that footwear was not worn at the water point site and that children did not play there. More extensive training especially of these women would have enabled the communities to better address issues which impinge on the quality of the water supply, such as environmental sanitation and hygiene.

4.4 Collection of Funds

One of the main jobs of the water committees in all the projects was to collect funds initially for the installation of the pump and subsequently for the purchase of spare parts and payment of area mechanics. In all the projects, sums of money to be collected by communities before they could receive their water points were determined by the project. These ranged from 50,000 CFA to 300,000 CFA. Table 3 describes how funds were collected and used in the different projects. All communities were able to collect the amounts requested of them. Several communities had previous experience in fund raising as they had collected or borrowed (from banks or loan agencies) much larger sums for the purchasing of mills, motors etc. The communities established set dues for each community member or household and monitored/policed the collection process with various types of penalties required of defaulters. Some communities had regular monthly dues, and others only called for funds when a repair had to be carried out.

In most of the projects, the funds were used for maintenance of the water point and its surrounds. Some communities used some of these funds for other community development activities. The funds once collected were in all cases, except for the two projects in Togo, kept within the community, usually with the treasurer. In Togo, the majority of the funds were put in a bank with small amounts kept in the community coffers.

4.5 Income Generating Activities

Several of the communities that were visited had been in the past or were currently involved in some income generating activity but not necessarily for water supply activities. Agricultural and women's groups were usually very active in this area.

4.6 Comment

One of the keys to community management is the establishment of a functioning water committee. Some projects established water committees after pump installation and as the project evolved. For the majority however, the establishment of the water point committee was the initiation of management of the water point. Once the communities had got their committees organized and trained, they functioned with little input from the project. Training, although limited, provided the necessary skills for each committee member to fulfil his or her role and responsibility. The collection of funds was a responsibility which was willingly carried out by the communities, who were determined to keep their water points in operation. Furthermore, sustainability of the committee was facilitated by the fact that the entire community had a role in electing and replacing committee members and that the traditional leaders usually had a good relationship with them.

TABLE 2

COMMUNITY MANAGEMENT: COMMUNITY WATER COMMITTEE

PROJECT/ ELEMENT	MOUHOUN Burkina Faso (NETHERLANDS)	YATENGA Burkina Faso (EDF)	AQUA VIVA Mali (FRANCE)	MALI SUD Mali (Switzerland)	KITA Mali (IDA)	MARITIME Togo (CANADA)	PLATEAU- SAVANE Togo (USA)
Traditional decision makers/leaders.	<ul style="list-style-type: none"> ■ Revolutionary committee (CDR) leader has ultimate authority. ■ Traditional leaders accept this. 	<ul style="list-style-type: none"> ■ Revolutionary committee in charge ■ Chiefs and CDR coexist. 	<ul style="list-style-type: none"> ■ Community chiefs have strong authority. 	<ul style="list-style-type: none"> ■ Tradition still has strong influence. ■ Area chief has ultimate power. 	<ul style="list-style-type: none"> ■ Chief and elders. 	<ul style="list-style-type: none"> ■ Hierarchy of chiefs in charge. 	<ul style="list-style-type: none"> ■ Strong traditional chiefly structure.
Existing community organizations	<ul style="list-style-type: none"> ■ Many committees representing different interest groups. 	<ul style="list-style-type: none"> ■ Women's groups. ■ Agricultural groups. 	<ul style="list-style-type: none"> ■ Collective farm work. 	<ul style="list-style-type: none"> ■ Agricultural groups. 	<ul style="list-style-type: none"> ■ Development groups. ■ Agricultural groups (women only and mixed). 	<ul style="list-style-type: none"> ■ Women's groups. ■ Cotton committees. 	<ul style="list-style-type: none"> ■ Women's groups. ■ ORT committees.
Criteria for committee member selection	<ul style="list-style-type: none"> ■ Members live in community. ■ Members have family. ■ Accountant speaks French and is literate. ■ Representatives of young, old and women. ■ Treasurer is wealthy. 	<ul style="list-style-type: none"> ■ Communities choose members after project explains roles. ■ Accountant must be literate. 	<ul style="list-style-type: none"> ■ Secretary must be literate in French/Bambara. ■ Committee members must be married and respected by villagers. 	<ul style="list-style-type: none"> ■ People who take initiative are chosen. ■ All must be married. ■ Secretary must be literate. 	<ul style="list-style-type: none"> ■ Treasurer must be literate. ■ Members must be reliable. 	<ul style="list-style-type: none"> ■ Members must be respected by community. ■ 30% women quota. ■ Secretary must be literate in French. 	<ul style="list-style-type: none"> ■ Members must be dynamic. ■ Members must be respected residents. ■ Women are encouraged. ■ Secretary must be literate.
Member selection process and number of members	<ul style="list-style-type: none"> ■ Traditional leaders and elders select members. ■ There are least 7 members. 	<ul style="list-style-type: none"> ■ Community votes for nominees. ■ Each part of the community is represented on the committee. ■ There are 7 members. 	<ul style="list-style-type: none"> ■ Members are assigned by elders ■ There are at least 7 members. 	<ul style="list-style-type: none"> ■ Members are chosen by village council. ■ There are 3 members. 	<ul style="list-style-type: none"> ■ Members are nominated in open meeting. ■ There are at least 8 members. 	<ul style="list-style-type: none"> ■ Choice is left up to community. ■ There are 5 members. ■ There is an associated women's ORT committee. 	

COMMUNITY MANAGEMENT: COMMUNITY WATER COMMITTEE (CONTINUED)

PROJECT/ ELEMENT	MOUHOUN Burkina Faso (NETHERLANDS)	YATENGA Burkina Faso (EDF)	AQUA VIVA Mali (FRANCE)	MALI SUD Mali (Switzerland)	KITA Mali (IDA)	MARITIME Togo (CANADA)	PLATEAU- SAVANE Togo (USA)
Roles and Responsibilities.	<ul style="list-style-type: none"> President chairs meetings. Treasurer keeps money and receipts. Secretary/accountant writes minutes of meetings. Mechanics do preventive maintenance and all repairs except on rising main. Women keep pump area clean. 	<ul style="list-style-type: none"> President leads committee. Treasurer keeps and disburses funds. Secretary/accountant keeps minutes of meetings and accounts. Community mechanics do preventive work and repair above ground parts only. Women keep pump area clean, prevent fighting. 	<ul style="list-style-type: none"> President calls meetings. Treasurer keeps money. Secretary accounts for and keeps funds. Women caretakers clean pump area. Mechanics prime pump and change above ground parts. 	<ul style="list-style-type: none"> President leads committee, honorary position. Treasurer keeps and collects funds. Secretary maintains records. Caretakers (man and woman) keep pump area clean. Mechanic primes pump, repairs above ground parts. 	<ul style="list-style-type: none"> Treasurer keeps funds. Secretary accounts for funds and keeps records. Pump repairer repairs pumps. 	<ul style="list-style-type: none"> President chairs meetings has deputy. Secretary keeps records has deputy. Treasurer does collection, accounting, banking, has deputy. Pump caretakers Optional members: health and micro-project advisors. 	<ul style="list-style-type: none"> President calls/presides over meetings. Secretary keeps minutes and documents. Treasurer collects and banks money. Mechanics repair above ground parts and buy spare parts. Woman caretaker keeps pump area clean.
Training	<ul style="list-style-type: none"> Committee training is in groups of 6 to 10 during a one week period. The president and treasurer each receive 2 days training, the women one day, the secretary 4 days and the mechanics 2 days plus on the job training. 	<ul style="list-style-type: none"> The committees are trained in groups during a one week period. All the members except the mechanics receive a total of 2 days training. The mechanics receive 3 days training. 	<ul style="list-style-type: none"> 80 committee members are trained at one time. All receive training during 4 day period. This is partly paid for by the communities. 	<ul style="list-style-type: none"> Only the mechanic receives a special 4 day training. 	<ul style="list-style-type: none"> Individual committees are trained by the EAs. 	<ul style="list-style-type: none"> Committees are each trained separately on the job. 	<ul style="list-style-type: none"> Committees are each trained separately on the job.
Methods for conflict resolution	<ul style="list-style-type: none"> Peer pressure. Take goods to pay dues. Refuse access to water point. 	<ul style="list-style-type: none"> Older men settle disputes. Offenders fined. Peer pressure. Verbal warning. 		<ul style="list-style-type: none"> Use traditional village court. Fines for offenders. 	<ul style="list-style-type: none"> Meetings 	<ul style="list-style-type: none"> Leaders resolve conflicts. 	<ul style="list-style-type: none"> Chief arbitrates. Prefect arbitrates.

TABLE 3

COMMUNITY FUNDS

PROJECT/ ELEMENT	MOUHOUN Burkina Faso NETHERLANDS)	YATENGA Burkina Faso (EDF)	AQUA VIVA Mali (FRANCE)	MALI SUD Mali (SWITZERLAND)	KITA Mali (IDA)	MARITIME Togo (CANADA)	PLATEAU- SAVANE Togo (USA)
How much collected (FCFA)?	75,000/pump	50,000/pump	300,000/pump	120,000/pump	135,000/pump	35,000/pump	50,000/pump
How are funds collected?	<ul style="list-style-type: none"> Community decides. Community members sometimes pay in groups. 	<ul style="list-style-type: none"> Each adult gives a fixed amount each month. 	<ul style="list-style-type: none"> Traditional methods. Fines. 	<ul style="list-style-type: none"> Each community member pays something. Revenue from hiring out a work group. Wealthy relatives help. 	<ul style="list-style-type: none"> Community decides on a sum to be contributed by each member. 	<ul style="list-style-type: none"> Community decides. Committee encouraged to collect 2000/month. 	<ul style="list-style-type: none"> Door to door collection. Collective farms.
Who keeps and accounts for funds?	<ul style="list-style-type: none"> Treasurer keeps funds. Secretary/accountant keeps records. 	<ul style="list-style-type: none"> Treasurer keeps funds. Secretary/accountant keeps records. 	<ul style="list-style-type: none"> Treasurer supposed to keep often with chief. Secretary keeps records. 	<ul style="list-style-type: none"> Treasurer keeps funds. Sometimes funds taken out of community account held by chief. 	<ul style="list-style-type: none"> Treasurer keeps funds. Secretary accounts for funds. 	<ul style="list-style-type: none"> Funds kept in Bank. Small amounts kept in community with treasurer. 	<ul style="list-style-type: none"> Majority of funds are kept in bank. Small amounts kept in community.
Who establishes rates (FCFA)?	<ul style="list-style-type: none"> The water committee and the village elders establish rates. Usually 100-150 is collected per adult. 	<ul style="list-style-type: none"> Community determines rates. 25 per man and 15 per woman each month. 	<ul style="list-style-type: none"> Water committee informs heads of households when additional funds are needed. 	<ul style="list-style-type: none"> Rates are established by community. 	<ul style="list-style-type: none"> The village council. 	<ul style="list-style-type: none"> Community. 	<ul style="list-style-type: none"> Treasurer and president.
What regulations are put on money use?	<ul style="list-style-type: none"> Village water committee decides. Usually only used for pump repairs, purchase of cement etc. 	<ul style="list-style-type: none"> Community urged to use money for water point related activities only, but not enforced. 	<p>-----</p>	<p>-----</p>	<p>-----</p>	<ul style="list-style-type: none"> Money can only be withdrawn from bank with 2 of 3 signatures. 1/3 funds used for micro projects, 1/3 for other activities and 1/3 for pump repairs. 	<ul style="list-style-type: none"> 2 out of 3 committee members need to be present for withdrawal of funds. Extension agent has to co-sign Money usually used for pump repairs.

5. EXTENSION SERVICE

Extension Agents (EAs) involved in the projects were responsible for mobilizing and organizing the communities, training water committee members, and ensuring the establishment of community management of the water supplies. Extension agents were each responsible for approximately 15 water points per year. There appears to be little difference among the approaches used by the seven projects to provide an effective extension service. It must be noted that on the whole, financial resources put into extension services were limited. In all the projects except for one, extension staff were recruited specially by the project. In the one exception, extension was made the responsibility of health workers working in the region as an addition to their other activities. The number of EAs employed on the different projects ranged from 3 to 120. There are however, slight variations in the way in which extension was carried out in the projects. These will be presented below. Table 4 summarizes various aspects of the extension in the projects visited. It presents among other things, recruitment methods, selection criteria, the responsibilities and the reporting procedures for the extension agents and process of extension within the project.

5.1 Selection and Training of Extension Agents

All the EAs had a minimum of 6 years of school. They came either from ministries associated with development/health work or were specifically hired by the project. Those hired by the projects, were often community or agricultural development agents (or occasionally health workers). They were usually given a written or oral test prior to recruitment. Language skills and willingness to work in the communities were also taken into account. The EAs received monthly salaries comprising a minimum of 30,000 CFA and supplemented by various benefits for health care, field trips etc. A key characteristic of the more dynamic extension agents interviewed, was their dedication to their work. Most of the extension agents were male. Project staff (male) felt that this was in part because the need to travel across harsh terrain on mopeds discouraged many women from considering the job. However, the few female extension agents interviewed were just as effective and efficient as their male colleagues.

All the projects provided training for their EAs and followed up with refresher courses or additional courses as required. Some EAs were trained at schools specializing in extension work and others were trained by the projects. There were basically two variations on the approaches used by the projects in preparing their EAs for their work:

- a) In the first, EAs were given intensive training on a very well defined system and procedure (cookbook) for extension, and then left to implement it without much deviation from the planned procedure. They received some follow-up training or refresher courses at various times during the implementation of the project.
- b) In the second, EAs were given general training on the project and then they developed messages and the procedure for the extension work themselves together with their supervisors. There was follow-up training or a refresher course provided at various times during the implementation process and there were also opportunities to try out new ideas. Periodic work planning meetings which all the EAs attended also provided an opportunity for further training.

5.2 Interaction with Communities

One or more meetings were held with the communities who were to receive the water points. Various messages were conveyed to them. These included information on the project, what it was offering and what was expected of them. The communities were required to establish water committees,

take certain decisions, and collect money and materials before the construction of the water point. EAs provided a good liaison between the construction teams and the committees. Members of the water committees were trained, and community performance was monitored after installation of the water points. The following steps were taken in establishing community management:

- a) Communities were identified either through a socio-economic survey or a community request to the project.
- b) A series of meetings were then held to mobilize the communities. Often, a contract would be signed either at the beginning of the mobilization process, or at the end when the installation was complete to signify that the water point now belonged to the community. Not all projects had a contract signing ceremony. The members of the water committees were then trained by the EAs.
- c) Some form of commitment was sought from the communities prior to beginning construction activities (financial outlay, formation of committees etc.)

The timing between the different meetings depended on the number of EAs, the number of communities they had to work in, the speed with which the communities did what was expected of them and the availability of the drilling teams (there was no point in preparing the people and then letting them wait for several months before they received their water point). In some projects, the mobilization process occurred within a one to two month period. In others, it took several months. Also in one project, there was a 1 year long period after the initial community mobilization prior to the identification and training of committees.

5.3 Meetings with the Communities

Each project determined its own unique process of extension. The number of meetings however ranged from a total of 3 to a meeting once a month for the duration of the project. Where there were fewer EAs, the project usually followed a campaign type of approach, rapidly mobilizing the communities within a short period to prepare them for the construction activities and then moving on to a new area. The subject matter usually covered included the following:

- a) First meeting: general presentation of the project, the proposed activities and inputs to be made by all, (ie. the community/community representatives, the project staff and local government). Often this meeting was held at a district/regional level, bringing together only community elders and leaders.
- b) Second meeting: more detailed discussion of various aspects of the project with the entire community, for example choice of water point (handpump or open well), reiteration of the need to collect funds and provide construction materials, water point siting, and selection of committee.
- c) Third meeting: discussions with committee members, if open well construction was part of the project, this meeting might be used to ensure that all the labor input required by project from the community had been provided.
- d) Additional Meetings: these were held for the resolution of conflicts, or to organize specific activities such as construction of animal watering troughs, or to run special campaigns such as for ORT training.
- e) Training of Committees: individuals of the water committees received appropriate

training for their different duties. (This has already been discussed in Section 4).

- f) Monitoring of progress: each project established a system for monitoring community progress in establishing management of the water points. Sometimes monitoring would continue for up to one year after installation of the water point. Discussions on progress with the establishment of committees, maintenance of water points, collection of funds etc., would be held during these meetings.

5.4 Transport/Housing

Availability of transport also played a role in the efficiency of service and all the projects ensured that the EAs had access to some form of transport. EAs were given mopeds, or motorbikes and occasionally project vehicles to assist them in doing their work. In some projects EAs had motorbikes and stayed with the communities for the duration of the project whereas in others they moved from one area to another. The transport and fuel were provided by the projects. EAs were expected to find their own housing. Some had to stay in central communities during campaigns and work in the surrounding area, others lived in the project area, whilst others lived and worked out of nearby towns.

5.5 Monitoring

Monitoring of the activities of the extension workers, was an integral part of the implementation of the service. There was usually provision for the exchange of ideas and discussion of problems/issues between EAs and their supervisors, as well as among themselves. Weekly, fortnightly, monthly, quarterly and annual reports prepared by the EAs and their supervisors were useful tools for monitoring their activities. In addition, the EAs held regular review and discussion meetings to discuss progress and solve problems.

5.6 Comment

An effective extension system will ensure that community management of a water point can occur. The keys to this effectiveness are:

- good communication between the extension agent and the community,
- a desire/mandate to transfer management responsibility to the community and away from the project,
- a willingness to work together and,
- mobilization prior to construction (good timing).

Projects either brought EAs in from outside the project area, or used those who already worked within the area either for government or for other agencies. Using locally based agents was advantageous in that they would already be familiar with the communities. Also, it would be of benefit to recruit extension agents from ministries already working in the area, because they could remain after the project was completed to provide follow-up and support (if funds were available).

Where extension agents lived within the communities, they were more obliged to use a less rigid approach because they were very much a part of community life. On the other hand, where the contact with the communities was only during specified campaigns, it was simpler to have a set or "cookbook" approach.

Some EAs received training which enabled them to provide a broad range of messages to the communities including the specific ones related to receiving the water point. However, in most cases, the EAs were ill equipped to address issues such as environmental sanitation, albeit this was not within their terms of reference. The training that they were able to provide to the committee members was also limited to the specific goals of the projects.

The number of EAs working on a project also affected the emphasis of the different projects on mobilization activities, environmental sanitation and health education. Because mobilization was a relatively short term activity in which EAs focused on about 15 communities each year and then moved on to the next group of communities, it was cost effective to provide them with transport. However, had the projects been designed to also provide long term environmental sanitation and health education support, this would have meant that EAs would have had to remain working within a group of communities for a much longer period of time and the transport issue would have had to be handled differently.

The extension systems used by the projects were on the whole effective in establishing community management of the water points in the areas where the projects were active. The two main approaches used to communicate with the communities and establish management both had their merits and disadvantages. The approach of giving the EAs flexibility in the field, to modify and adapt to suit community pace and needs helps make the service work. However using a "cookbook" approach also has its merits. In both cases, however, it was the willingness of the communities to participate which made it possible for the interaction to take place and the management system to be established.

TABLE 4

EXTENSION SERVICE

PROJECT/ ELEMENT	MOUHOUN Burkina Faso (NETHERLANDS)	YATENGA Burkina Faso (EDF)	AQUA VIVA Mali (FRANCE)	MALI SUD Mali (SWITZERLAND)	KITA Mali (IDA)	MARITIME Togo (CANADA)	PLATEAU- SAVANE Togo (USA)
Recruitment	<ul style="list-style-type: none"> Recruitment is from private sector. Job advertised through media. 	<ul style="list-style-type: none"> Recruited by various means from public and private sector. 	<ul style="list-style-type: none"> Recruitment is from private sector. Recruited by the project. 	<ul style="list-style-type: none"> Recruitment is from private sector. Recruited by the project. 	<ul style="list-style-type: none"> Agents engaged in other development projects in the region. Agents of public sector working within the scope of other projects. 	<ul style="list-style-type: none"> Extension agents in public sector in the region and new recruits by project. 	<ul style="list-style-type: none"> Extension agents of that zone belonging to the public sector.
Number of Extension Agents (EAs)	<ul style="list-style-type: none"> A total of 19 EAs and 4 supervisors. 	<ul style="list-style-type: none"> A total of 3 EAs and 1 supervisor. 	<ul style="list-style-type: none"> A total of 4 EAs. 	<ul style="list-style-type: none"> A total of 5 EAs and 6 masons. 	<ul style="list-style-type: none"> A total of 22 EAs. 	<ul style="list-style-type: none"> A total of 45 EAs and 1 supervisor per 6-8 EAs. 	<ul style="list-style-type: none"> A total of 120 EAs, 1 supervisor per 12 EAs.
Employer	<ul style="list-style-type: none"> Project and ONPF. 	<ul style="list-style-type: none"> Project and ONPF. 	<ul style="list-style-type: none"> Public service. Project. 	<ul style="list-style-type: none"> Public service. Project. 	<ul style="list-style-type: none"> Public service. Health project. 	<ul style="list-style-type: none"> Public service. Project. 	<ul style="list-style-type: none"> Public service.
Selection Criteria	<ul style="list-style-type: none"> 8 years of school required. Speaks Dioula. Written test and interview. 	<ul style="list-style-type: none"> A minimum of 6 years school required. Recruited through interview. 	<ul style="list-style-type: none"> Local language skills required. Willingness to work in the community. 	<ul style="list-style-type: none"> 6 to 9 years schooling required. 4 years work as Community Development Technician (CDT). 	<ul style="list-style-type: none"> CDT with 9 years schooling. 4 years training or 6 years schooling and in Bambara. Health workers - 9 years schooling and 3 years at health school. Technician - 4 years training at college and experience. 	<ul style="list-style-type: none"> More than 2 years training in social affairs required. Many have university degrees. Written test and interview. Women preferred. 	<ul style="list-style-type: none"> 6 to 9 years schooling. 3 years technical training. Some university degrees.
Training for Project	<ul style="list-style-type: none"> 2 months training by project. Refresher course at the start of the campaign. 	<ul style="list-style-type: none"> 15 days at CESAO (Burkina Faso). 	<ul style="list-style-type: none"> 1 week with follow-up after 1 month. New EAs get on the job training. Some go to CESAO. 	<ul style="list-style-type: none"> 10 days training at Kita and 5 day refresher course. 	<ul style="list-style-type: none"> 5 days information on project for orientation; 5 days motorcycle training; 5 days planning of village meetings. Periodic training on campaign themes. Day of reflection. 	<ul style="list-style-type: none"> 5 days information on project for orientation; 3 day regional seminar on next campaign themes. 2 weeks training latrine and cistern construction. Training assured by USAID or national supervisor 	<ul style="list-style-type: none"> 1 week seminar at the beginning of project. 3 day regional seminar on next campaign themes. 2 weeks training latrine and cistern construction. Training assured by USAID or national supervisor

EXTENSION SERVICE (CONTINUED)

PROJECT/ ELEMENT	MOUHOUN Burkina Faso (NETHERLANDS)	YATENGA Burkina Faso (EDF)	AQUA VIVA Mali (FRANCE)	MALI SUD Mali (SWITZERLAND)	KITA Mali (IDA)	MARITIME Togo (CANADA)	PLATEAU- SAVANE Togo (USA)
Responsibilities	<ul style="list-style-type: none"> There are 3 groups of EA; 9 EAs for mobilization of 8-10 communities each per 9 month campaign; 4 EAs for water committee training, each with 8-10 communities; 6 EAs for monitoring and follow up, each with 30-40 communities during year. 	<ul style="list-style-type: none"> The EAs mobilize the communities, train the water committees and monitor progress after water point is in operation. Each EA works with 10 villages during campaign. 	<ul style="list-style-type: none"> Each EA has 20 communities per campaign. Activities include: <ul style="list-style-type: none"> 1 meeting per district, 2 meetings per community; signing of contract with community; 4 days training of water committee; evaluating community borehole needs; settling of community and drilling team disputes; EAs do three campaigns a year. 	<ul style="list-style-type: none"> Provide information to communities, 2 days for each one. 1 EA based in "center" village during 20 days and serves 6 villages. Activities include: health education; treasurer training; and monitoring after pump is in place. 	<ul style="list-style-type: none"> Hold community meetings: <ul style="list-style-type: none"> 1 meeting/district and 1 meeting/Village. Research existing structures for the management of the water point. Training of the treasurer and secretaries. 1 EA lives throughout the year in one village and serves 20 villages. 	<ul style="list-style-type: none"> Conduct socio-economic and sanitation survey. Provide community information for contracts signing. Train water committee. Help committee open bank account. Give technical advice on guiding new activities. Lead 3 health education campaigns. Lead latrine construction. 1 EA works with 4 to 8 communities. 	<ul style="list-style-type: none"> EAs conduct 1 visit per month to community during installation. Train committee members chosen by community. Help open bank account. Health campaigns (ORT, latrines, rainwater catchments). Inform water supply service in case of break-down. A team of 3 to 4 EAs serve 30 villages.
Sequence of Community Mobilization and Committee Training	<ul style="list-style-type: none"> Each campaign lasts 9 months. There are three meetings for mobilization after which contract is signed. Other meetings for slab construction etc. Selection and training of committee. Monitoring 6 - 12 months after pump is installed. 	<ul style="list-style-type: none"> Each campaign lasts 6 weeks. There are 5 meetings in all for mobilization. The first has an audio-visual show and the other 4 are used to organize and select the committees. Training of committee. Monitoring. 	<ul style="list-style-type: none"> Each campaign lasts three months. Mobilization started late in the project. There are three meetings for information, committee formation and contract signing. Training of committees. 	<ul style="list-style-type: none"> There is a 2 day mobilization using a slide show. A contract is signed and a site is chosen. Other mobilization activities occur. 1 year later, there is a 3 day training session using a flannelograph (GRAAP method) in which a water committee is formed. During the year before this happens, the community manages on its own. 	<ul style="list-style-type: none"> The campaign continues throughout the year. Meetings are held with family heads to take decisions. The committees are chosen and trained. 	<ul style="list-style-type: none"> There are 8 meetings per community and campaign which result in the formation of a committee and signing of the contract. There are education campaigns on health etc. The committees are trained. 	<ul style="list-style-type: none"> There are three meetings per community and campaign followed by the signing of contracts. The committees are trained.

EXTENSION SERVICE (CONTINUED)

PROJECT ELEMENT	MOUHOUN Burkina Faso (NETHERLANDS)	YATENGA Burkina Faso (EDF)	AQUA VIVA Mali (FRANCE)	MALI SUD Mali (SWITZERLAND)	KITA Mali (IDA)	MARITIME Togo (CANADA)	PLATEAU-SAVANE Togo (USA)
Average No. of Meetings with each Community	<ul style="list-style-type: none"> ■ About 8 meetings and 2 monitoring meetings after 1 year. 	<ul style="list-style-type: none"> ■ 5 community meetings. 	<ul style="list-style-type: none"> ■ 3 meetings. 	<ul style="list-style-type: none"> ■ 4 meetings plus 1 follow-up. 	<ul style="list-style-type: none"> ■ Three 1 hour sessions per community. 	<ul style="list-style-type: none"> ■ Every 2 weeks, for 4 years (ongoing). 	<ul style="list-style-type: none"> ■ Once every month for project duration.
Reporting by EAs	<ul style="list-style-type: none"> ■ Each group of EAs: weekly reporting on activities. ■ Bi-weekly workplanning sessions for each group. ■ Monthly meetings for all. ■ 3 day semi-annual meetings. ■ Annual self evaluations. 	<ul style="list-style-type: none"> ■ Weekly meetings with reports by EA or supervisor. ■ Monthly and quarterly reports by supervisor to project director. ■ Annual reports by supervisors. 	<ul style="list-style-type: none"> ■ Annual report by EAs to chief hydrogeologist. 	<ul style="list-style-type: none"> ■ Monthly reports by the EAs. ■ Reports by EAs after each village meeting. ■ Semi-annual evaluation with project director. 	<ul style="list-style-type: none"> ■ Monthly meeting with project director. ■ Project report at end of annual campaigns. ■ Quarterly reports by supervisor. 	<ul style="list-style-type: none"> ■ Weekly meeting with supervisors. ■ Meetings every two weeks with regional head of social affairs department. 	<ul style="list-style-type: none"> ■ Monthly meeting at regional headquarters. ■ Seminar with unit head.
Transport	<ul style="list-style-type: none"> ■ Project provides motorbike (Honda), renewed every 3 years. 	<ul style="list-style-type: none"> ■ Project provides motor scooter. 	<ul style="list-style-type: none"> ■ Project provides 1 vehicle for 3 of EAs and a motorcycle to the fourth. 	<ul style="list-style-type: none"> ■ Project transports EAs to central village and provides motor scooter with fuel. 	<ul style="list-style-type: none"> ■ Project provides motorcycle on a hire-purchase basis with fuel allowance. 	<ul style="list-style-type: none"> ■ Project provides motorcycle with fuel allowance. 	<ul style="list-style-type: none"> ■ Project provides a motorcycle.
Accommodation	<ul style="list-style-type: none"> ■ None provided by project. ■ 3,000 FCFA/month allowance for EAs who sell spare parts. 	<ul style="list-style-type: none"> ■ None provided by project. ■ Lodged by village during project. 	<ul style="list-style-type: none"> ■ None provided by project. ■ Lodged by village during the project. 	<ul style="list-style-type: none"> ■ None provided by project. ■ Lodged by central village. 	<ul style="list-style-type: none"> ■ None provided by project. ■ Lodged by central village. 	<ul style="list-style-type: none"> ■ None provided by project. 	<ul style="list-style-type: none"> ■ None provided by project.
Payment per EA (FCFA)	<ul style="list-style-type: none"> ■ Monthly salary: 60,000. ■ Health insurance 80%. 	<ul style="list-style-type: none"> ■ Monthly salary: 35,000. ■ 6% risk, 25% work, and 5% bonus are added. ■ 10,000 per month for transportation. ■ Free medical consultation. 	<ul style="list-style-type: none"> ■ Monthly salary: 45,000. ■ 1,000 bonus per work day. ■ 50 kg of rice ■ 4 liters of kerosene. 	<ul style="list-style-type: none"> ■ Monthly salary: 30,000. ■ 1,250 allowance per day and 2,000 per night spent in field. 	<ul style="list-style-type: none"> ■ Monthly Salary: 31,000. ■ 15,000 bonus. ■ Fuel. ■ Per diem for training: 2,000 per day and for refresher course 1,000 per day. 	<ul style="list-style-type: none"> ■ Monthly salary (public): 47,000. ■ Project bonus 8,000. ■ Monthly salary of project staff: 60,000 to 88,000. ■ Per diem for training. 	<ul style="list-style-type: none"> ■ Monthly salary 50,000. ■ Per diem for training: 2,100 per day.

6. MAINTENANCE AND SPARE PARTS DISTRIBUTION SYSTEM

The key to effective management of a water supply system is sound maintenance and a sustainable spare parts distribution system. Even if a community is willing to pay for its water supply and manage it, nothing will be achieved unless there is a means of ensuring adequate maintenance and spare parts distribution. All but one of the projects employed a tiered maintenance system comprising combinations of community mechanics, area mechanics and project back-up with area mechanics being relied upon for below ground repairs.

6.1 Community Mechanics

Each community selected its own community mechanics as part of the water committee. In Table 5, the process of selecting community mechanics, their responsibilities and the training they received are presented. Like other water committee members selection was based on various criteria. In most cases their selection was based on the nominees having mechanical ability. Community mechanics were not paid for their services but in some projects they were reimbursed for travel to purchase spares.

There were two community mechanics per pump. One project specified that these both had to be men, and another encouraged selection of a woman as one of the mechanics. All received a small number of tools (mainly wrenches and spanners), to help them carry out the repairs. These mechanics were trained by the project in the repair of the above ground parts of their pumps. The training took the form of a specific course of one or more days and on the job training. Additional duties included preventive maintenance, acquisition of spare parts from the project or a retail outlet and monitoring of pump use. The community mechanics were only allowed to repair the above grounds parts of the pumps installed. There was one exception to this where they were allowed to repair specific below ground parts of the Volanta pump.

6.2 Area Mechanics

All but one of the projects had area mechanics (AMs) who were available to repair the pumps when requested by the communities. Some of the AMs had their own jobs and therefore did not have to depend on pump repair for their livelihood. The number of pumps served by the area mechanics ranged from 5 to 40. Criteria for their selection included, mechanical ability, literacy, stability in community, interest in job, and availability. Other details of their selection and responsibilities are presented in Table 6. They were trained to install new pumps, and, if they were part of the project team, to train community mechanics and occasionally to sell spare parts. Training courses ranged from a period of five days to one month. Both theory on pump components and operation as well as practical skills in installation and repair were taught.

The area mechanics were responsible for the repair of the pumps as requested by the communities, and as already stated, this usually involved all below ground repairs. Some stocked and sold spare parts and others were required to train the community mechanics. In all cases, they were given tools. These tools were either paid for by the community in which the AM lived or were paid for in part by the AMs over a period of time. Transport to and from the water point was the responsibility of the AM. They carried out repairs in response to community request and were paid for their pump repair services by the communities. In some cases the transport of the AMs was paid for as part of the repair. Some of the AMs were reasonably autonomous from the projects and others were an integral part of the project teams.

6.3 Centralized Maintenance

Only one project had centralized maintenance support to the community mechanics. There were no area mechanics. Central mechanics were assigned from the parent Ministry to the project area provided project vehicles to repair pumps as requested by the community or extension agents. They received a monthly salary for their services. Table 7 describes the roles of central mechanics in the project.

6.4 Back-up Support

With four of the projects, there was either project back-up or ministry support to the AMs to help with difficult repairs, use of tripods, distribution of spares and monitoring of pumps. Support to the communities was therefore provided by a combination of AMs and the project/Government. With the other two projects, this type of back-up had been or was being phased out, and as already stated one project had central maintenance and no area mechanics to back up. The support provided to communities served by this system, was therefore fully provided by the area mechanics. The need for extensive back-up support depended also on the type of pump being provided to the communities, this was largely because of the lifting tackle required by the India Mark II. Both the Vergnet and Volanta were well suited to a combination of community and area mechanic service.

6.5 Pumps

The pumps used by the projects were the Volanta, the Vergnet, the India Mark II (including local versions), and the UPM (see Table 8). The Vergnet and UPM were the only ones solely manufactured overseas. For all these pumps with the exception of the Volanta, the community mechanics were only allowed to repair above ground parts. This was mainly because government/projects considered that below ground repairs would be beyond the capability of community mechanics. For the Volanta the community mechanics were able to make below ground repairs also, except for work on the rising main for which the area mechanic was the only one trained.

6.6 Spare Parts Supply

The distribution systems used by the different projects have been alluded to in the sections above. Table 8 describes each one in greater detail. In three of the cases, the projects had control of the spare parts distribution and would procure the parts and sell them through the EAs or the area mechanics. In the four other cases, local distributors sold the spare parts to the communities. In two projects, agricultural outlets were involved in the distribution process. Those projects which had not yet done so planned to get out of the loop of spare parts distribution as soon as they could find suitable distributors. Sometimes communities bought and kept a small stock of the parts in order to reduce the visits into town. The projects all tried to ensure that the spare parts were readily available otherwise the maintenance system could not function. Occasionally when spare parts were not available locally, enterprising distributors would get them directly from the manufacturers overseas. Prices for the spares were controlled by the projects, manufacturers, distributors or the Government.

6.7 Comment

The ultimate aim of all the projects was to put in place a working maintenance system. Those systems which had a combination of community maintenance and area mechanics with minimal or no back-up from the project would stand a better chance for sustainability once the project was complete than those which had a large dependence on the projects for management of their systems.

Furthermore having AMs for whom this was not the sole source of income, was beneficial to the system. Those with a centralized maintenance system would always depend on the project or government for maintaining their system and at the end of the projects when there were no more external funds to support the centralized system problems would arise. The most suitable maintenance systems were those that were truly community managed: where there were choices for methods of fund-raising, accounting, selecting those who would repair and maintain the pump, and having spare parts available on the local market.

Only one project encouraged women to be one of the community mechanics. This was apparently not a consideration for the other projects, although it has been demonstrated in many elsewhere in the world that because of the vested interest and the key roles played by women in acquiring water it is advantageous to have them participate as community mechanics. The ease with which this is done also depends on the type of pump, and the prevailing socio-cultural conditions.

In all cases the communities paid for their spare parts. In the four projects where the sale of spare parts was established with local retailers, the system functioned independently as long as they received the parts from the manufacturers or their representatives (together with approved price lists). Price control was necessary since there was usually only one distributor. In a situation where parts are readily available such control would not be necessary.

Problems arising with availability of spare parts in the remote, rural areas seemed linked to the distribution system for the capital city to the retail outlet and not to the non-availability of parts from the (international) manufacturer to the whole-sellers in the capital.

The use of independent distributors instead of the project as a distributor provides an autonomy which is desirable since the distribution system must continue after the project is completed. It was clear from the projects visited, that for a maintenance and spare parts distribution system to be sustainable, it was necessary to ensure as much autonomy from the project as possible.

TABLE 5

MAINTENANCE: COMMUNITY MECHANICS

PROJECT/ ELEMENT	MOUHOUN Burkina Faso (NETHERLANDS)	YATENGA Burkina Faso (EDF)	AQUA VIVA Mali (FRANCE)	MALI SUD Mali (SWITZERLAND)	KITA Mali (IDA)	MARITIME Togo (CANADA)	PLATEAU- SAVANE Togo (USA)
Selection Process	<ul style="list-style-type: none"> By elders, community representatives and Village Water Committee. 	<ul style="list-style-type: none"> By community. 	<ul style="list-style-type: none"> By chiefs and elders. 	<ul style="list-style-type: none"> By chiefs and elders. 	<ul style="list-style-type: none"> By community. 	<ul style="list-style-type: none"> By community. 	<ul style="list-style-type: none"> By community.
Selection criteria	<ul style="list-style-type: none"> Two mechanics. Mechanical ability. Family in community. 	<ul style="list-style-type: none"> Two mechanics. Bicycle or motor bike mechanic. 	<ul style="list-style-type: none"> Mechanical ability. 	<ul style="list-style-type: none"> Two men. 	<ul style="list-style-type: none"> 1 mechanic per pump. 	<ul style="list-style-type: none"> Two mechanics. One woman encouraged. Active in community. Interested in job. 	<ul style="list-style-type: none"> Bicycle mechanic Young and dynamic. Available to do work.
Responsibilities	<ul style="list-style-type: none"> Carry out all repairs on Volanta that they can. This includes work on all but rising main. 	<ul style="list-style-type: none"> Repair above ground components on Vergnet. Preventive maintenance. 	<ul style="list-style-type: none"> Prime pump. Repair above ground components. 	<ul style="list-style-type: none"> During first year inform AM of problems. Thereafter, make above ground repairs on the Vergnet. 	<ul style="list-style-type: none"> Transmit training messages on pump maintenance. Lubricate pump each week and help area mechanics. 	<ul style="list-style-type: none"> Check pump discharge. Repair above ground components on Vergnet. Preventive maintenance only on India Mark II. Report problems to area mechanic. Get spare parts. Keep surroundings clean. 	<ul style="list-style-type: none"> Repair above ground component on Vergnet when requested by water committee member. Give worn parts treasurer.
Training	<ul style="list-style-type: none"> 1 day training by EA when pump installed and periodic review sessions. Training done by AM at new sites. 	<ul style="list-style-type: none"> Each given three days of training by EA and AM. 	<ul style="list-style-type: none"> Trained with village water committee. 	<ul style="list-style-type: none"> After one year each given 4 days of training in groups of 40. Village pays 5000 FCFA for this. 	<ul style="list-style-type: none"> On job training in pump installation 2-3 hours training. 	<ul style="list-style-type: none"> Half day by EAs in groups of 12 persons. 	<ul style="list-style-type: none"> Two 1/2 day sessions with EA hydraulics person Periodic refresh sessions.
Payment	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> 2,000 for training. May get in-kind help. 	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Reimbursed for travel. 	<ul style="list-style-type: none"> Reimbursed for travel.
Tools	<ul style="list-style-type: none"> Short chain for removing the pump rod. 	<ul style="list-style-type: none"> Spanner for pedal. 	<ul style="list-style-type: none"> Spanner for pedal 	<ul style="list-style-type: none"> Spanner for pedal 	<ul style="list-style-type: none"> 2 spanners, 2 screwdrivers, 2 pipe wrenches, 1 metallic brush, 1 flat file. 	<ul style="list-style-type: none"> Two spanners. 	<ul style="list-style-type: none"> Two spanners.
Transport	<ul style="list-style-type: none"> None provided. 	<ul style="list-style-type: none"> None provided. 	<ul style="list-style-type: none"> None provided. 	<ul style="list-style-type: none"> None provided. 	<ul style="list-style-type: none"> None provided. 	<ul style="list-style-type: none"> None provided. 	<ul style="list-style-type: none"> None provided.

TABLE 6

MAINTENANCE: AREA MECHANICS

PROJECT/ ELEMENT	MOUHOUN Burtina Faso (NETHERLANDS)	YATENGA Burtina Faso (EDF)	AQUA VIVA Mali (FRANCE)	MALI SUD Mali (SWITZERLAND)	KITA Mali (IDA)	MARITIME Togo (CANADA)	PLATEAU- SAVANE Togo (USA)
Selection Process	<ul style="list-style-type: none"> Community mechanics given practical test by project to assess their mechanical ability. 	<ul style="list-style-type: none"> Each community nominates 5 local mechanics, those mentioned most often are interviewed. 	<ul style="list-style-type: none"> EA asks communities for recommendation. Often selected because of previous training on other projects. 	<ul style="list-style-type: none"> Selected by training unit following village mechanic training course. 	<ul style="list-style-type: none"> Blacksmiths. Motorcycle repairers. 	<ul style="list-style-type: none"> Nominated by EAs. Initial screening based on ability to select tools and repair a simple mechanical device. 	<ul style="list-style-type: none"> No area mechanics.
Selection Criteria	<ul style="list-style-type: none"> Mechanical ability. 	<ul style="list-style-type: none"> Mechanical ability. Interest in the job. 	<ul style="list-style-type: none"> Literate. 	<ul style="list-style-type: none"> Best pump caretaker. 	<ul style="list-style-type: none"> Stability in village. 	<ul style="list-style-type: none"> Mechanical ability. Permanent resident. Married. Available to do work. 	
Responsibilities	<ul style="list-style-type: none"> Carry out all repairs in their area when requested by water committee. Contract with project to install new pumps and train community mechanics. 	<ul style="list-style-type: none"> Repair below ground components and any above ground that community mechanic cannot make. Install pumps and train community mechanics. 	<ul style="list-style-type: none"> Repair pumps on request. Plans are for AMs to install new pumps. Some stock and sell spare parts. 	<ul style="list-style-type: none"> Repair pumps when requested by community. Sell spare parts to community. 	<ul style="list-style-type: none"> Repair pumps. 	<ul style="list-style-type: none"> Inspect pump when requested by community and repair it after community obtains required spare parts. 	
Training	<ul style="list-style-type: none"> One month training at project headquarters, half theory and half practical. Refresher course given after two years. 	<ul style="list-style-type: none"> 5 days of training provided by Centre National de Promotion d'Artisan Ruraux. Receive certificate. 	<ul style="list-style-type: none"> 5 to 10 days training in groups of 10 to 15 given by project pump technician. 	<ul style="list-style-type: none"> 1 or 2 AMs join project team for 3 to 4 weeks for on the job training in installation and repair of pumps. 	<ul style="list-style-type: none"> 5 days training in theory and 5 days practical training. 	<ul style="list-style-type: none"> Two week course (theory and practical) given by central mechanic and project technical advisor. 	

MAINTENANCE: AREA MECHANICS (CONTINUED)

PROJECT/ ELEMENT	MOUHOUN Burkina Faso (NETHERLANDS)	YATENGA Burkina Faso (EDF)	AQUA VIVA Mali (FRANCE)	MALI SUD Mali (SWITZERLAND)	KITA Mali (IDA)	MARITIME Togo (CANADA)	PLATEAU- SAVANE Togo (USA)
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Payment (FCFA)

- 25 for transport and 400 per hour plus 1,500 per 9 meters of rising main removed (3 x 3m sections).
- 10,000 for pump installation and training of community mechanic.
- Small per diem given during initial training course.

- 1,500 to 10,000 per repair. ■ Community pays 6,000 to AM to install their pump.

- 2,500 per repair plus parts cost. Transport included.

- Payment set by considering distance travelled to repair site.

- 1,000 for Vergnet.
- 1,000 plus 200 per pipe length after first 5m for India Mark II.

Tools

- Tools purchased by community in which AM lives on condition that he repairs pumps in his community for free.
- Project subsidizes portion of the cost.

- Tools cost 55,000 FCFA (1981).
- Money earned during installation used to repay cost of tools

- Presently loaned by project to AM on an as needed basis.

- Tool set provided by project, 60% of cost repaid over two year period.

- 30,000 to 50,000 FCFA (half price of tools) repaid by AM over a three year period on monthly basis.

Transport

- Own arrangements. Usually by bicycle or public transport.

- Own arrangements: usually motorbike.

- Own arrangements.

- Bicycle provided by project, 60% of cost repaid over two years. 60,000 FCFA paid by AM for bicycle and tools.

- Own arrangements. Usually private motorcycle or taxi.

Communities served

- 5 to 10 pumps per AM. Distances up to 25 km.

- At least 10 communities per AM. Community can call on any AM to make repair.

- 10 pumps per AM.

- 15 to 40 pumps per AM.

- 30 pumps per AM. Distances up to 60 km.

TABLE 7

MAINTENANCE: CENTRAL MECHANICS

PROJECT ELEMENT	MOUHOUN Burkina Faso (NETHERLANDS)	YATENGA Burkina Faso (EDF)	AQUA VIVA Mali (FRANCE)	MALI SUD Mali (SWITZERLAND)	KITA Mali (IDA)	MARITIME Togo (CANADA)	PLATEAU-SAVANE Togo (USA)
Selection Process	<ul style="list-style-type: none"> Central mechanics not needed. Little project back-up. 	<ul style="list-style-type: none"> Central mechanics have been phased out. No project back-up. 	<ul style="list-style-type: none"> Shift to area mechanic system. Project back-up. 	<ul style="list-style-type: none"> No central mechanics. Project back-up team is provided. 	<ul style="list-style-type: none"> No central mechanics. Project provides back-up. 	<ul style="list-style-type: none"> Ministry of Hydraulics provides back-up. 	<ul style="list-style-type: none"> Central mechanics assigned by Ministry of Hydraulics.
Selection Criteria	-----	-----	-----	<ul style="list-style-type: none"> Section head, Accountant, stockroom clerk, repairer and driver. 	-----	<ul style="list-style-type: none"> 2 staff of the Ministry of Hydraulics work 5 years on project. 	<ul style="list-style-type: none"> Two mechanics per region. Four in total.
Responsibilities	<ul style="list-style-type: none"> After training of area mechanics in 1985, central mechanics available for back-up but not needed. Now doing experimental work such as installing motors on Volanta pumps and handpumps in hand dug wells. 	-----	-----	<ul style="list-style-type: none"> Install and repair pumps during period of warranty. Train community and AMs. Procure and distribute spare parts. Monitor AMs. 	-----	<ul style="list-style-type: none"> Monitor all pumps quarterly, inform EAs of problems. Visit AMs monthly, collect payments for tools. Provide technical assistance to AMs on request, e.g. fishing downhole components. 	<ul style="list-style-type: none"> Repair pumps when requested by community.
Training	-----	-----	-----	-----	-----	<ul style="list-style-type: none"> Training in hydrogeology. 1 month with local handpump manufacturer. 	-----
Payment	-----	-----	-----	-----	<ul style="list-style-type: none"> DNHE salary plus field bonus. 	<ul style="list-style-type: none"> Monthly GOT salary. 	<ul style="list-style-type: none"> Monthly GOT salary.
Tools	-----	-----	-----	-----	-----	<ul style="list-style-type: none"> Full set provided by project, including two tripods that project will transport to site for CM to make India Mark II below ground repairs. 	-----
Transport	-----	-----	-----	<ul style="list-style-type: none"> Two vehicles provided by project. 	-----	<ul style="list-style-type: none"> Motorcycle and fuel provided by project. 	<ul style="list-style-type: none"> Project vehicles.
Communities served	-----	-----	-----	<ul style="list-style-type: none"> 740 pumps served by team. 	-----	<ul style="list-style-type: none"> 150 pumps per person. Distances up to 75 km. 	<ul style="list-style-type: none"> 250 pumps per mechanic.

TABLE 8

MAINTENANCE: SPARE PARTS DISTRIBUTION

PROJECT/ ELEMENT	MOUHOUN Burkina Faso (NETHERLANDS)	YATENGA Burkina Faso (EDF)	AQUA VIVA Mali (FRANCE)	MALI SUD Mali (SWITZERLAND)	KITA Mali (IDA)	MARITIME Togo (CANADA)	PLATEAU- SAVANE Togo (USA)
Distribution system	<ul style="list-style-type: none"> Project procures parts from suppliers and distributes to community based EAs. Manufacturer in Ouagadougou has agreed to supply spare parts to farmers' cooperative that will sell spares. 	<ul style="list-style-type: none"> Local distributor in the project area gets spares from Vergnet representative for Burkina Faso in Ouagadougou. Monthly sales are about 500,000 FCFA with profit of about 15%. He plans to expand supply region wide through his other stores. 	<ul style="list-style-type: none"> An auto-parts distributor in San took over project stock but now obtains parts from Vergnet representative for Mali located in Bamako. No arrangements yet made for Mark II parts distribution. 	<ul style="list-style-type: none"> Project purchases parts from manufacturers and distributes to area mechanics for sale every 3 months. Project considering establishing independent distribution Network. 	<ul style="list-style-type: none"> Project stores spares and has 2 technicians in charge. Spares are also available in districts through agriculture agents. Government will be responsible for stocking and selling parts for 2 years after project ends. 	<ul style="list-style-type: none"> UPROMA parts available at major retail outlet in project area. Vergnet parts procured from France by project and available at headquarters. Community member goes to Tsevie to get parts from project or distributor. 	<ul style="list-style-type: none"> SGGG, a major chain of retail outlets in Togo, procures Vergnet parts from France and distributes them in country. Local store had few parts in stock. Project provides spares for UPM pumps. Some villages stock spares.
Where manufactured	<ul style="list-style-type: none"> Volanta: Ouagadougou (green colored pumps). Netherlands (red pumps). 	<ul style="list-style-type: none"> Vergnet: France. 	<ul style="list-style-type: none"> Vergnet: France India Mark II: Mali 	<ul style="list-style-type: none"> Vergnet: France India Mark II: Mali 	<ul style="list-style-type: none"> India Mark II, EMAMA factory, Mali. 	<ul style="list-style-type: none"> Vergnet: France UPROMA India Mark II, Togo 	<ul style="list-style-type: none"> Vergnet: France UPM: France
Price control	<ul style="list-style-type: none"> Prices set by project. 	<ul style="list-style-type: none"> Established by manufacturer and distributors. 	<ul style="list-style-type: none"> Government agents monitor prices in outlets around country every two months. Initial project stock sold at 10% profit. 	<ul style="list-style-type: none"> Project sets prices charged to villagers. 		<ul style="list-style-type: none"> Project holds periodic discussions with UPROMA concerning prices. 	<ul style="list-style-type: none"> Project reviews prices periodically.

7. HYGIENE EDUCATION

Project staff see the need for communities to modify various habits in order to obtain the maximum benefits from their water supply. Water supply projects therefore often attempt to provide health messages but usually with limited success. Often, especially in areas of extreme water scarcity, all that the beneficiaries want is water, and the quality is of secondary importance.

The objectives of many projects are often the provision of water supply in order to improve the health of the population. It has been shown that provision of water supply contributes to improving the general health condition of the beneficiaries, but that without other interventions such as primary health care, improved hygiene practices and environmental sanitation, drainage etc. full health benefits cannot be realized.

A minimum input to a water supply project is hygiene education which can help to assure that the water is collected, stored, and used properly, and that the environment of the population is kept clean. If water supply projects are to be fully effective then a sound hygiene education program is essential. In order to have an effective hygiene education program, it is essential to have:

- a) well defined and clear messages;
- b) an effective strategy of delivering messages;
- c) time for changes to be effected.

None of the seven projects visited had a specific health education component although some had hygiene education inputs (see Table 9). The projects tended to address this issue basically through the efforts of the extension agents who were inadequately trained to handle this subject or who were not given enough time to devote to it. They were usually only trained to present basic messages on keeping the water point area clean and ensuring that the soakaway for the waste water at the water point was functioning properly. These messages were given to the women responsible for the pump surrounds.

Sometimes the EAs worked with the health departments in delivering hygiene education messages to the communities and in promoting proper environmental sanitation and the use of latrines. This could be taken a step further, where the health department staff could be trained to deliver water hygiene and environmental sanitation messages as part of their daily duties. Then this could help reduce the load on the EAs, but at the same time enhance the quality of the support being provided to the communities.

Specific community members can also be trained to be focal points for information and promotion of good hygiene practices. The "femmes responsables" (women on the water committees) would be ideal for this type of training. One of the projects visited had a very effective ORT training program which was run by the community women themselves after they had received initial training from their extension agents/health workers.

TABLE 9

HYGIENE EDUCATION

PROJECT/ ELEMENT	MOUHOUN Burkina Faso (NETHERLANDS)	YATENGA Burkina Faso (EDIF)	AQUA VIVA Mali (FRANCE)	MALI SUD Mali (SWITZERLAND)	KITA Mali (IDA)	MARITIME Togo (CANADA)	PLATEAU- SAVANE Togo (USA)
Organization	<ul style="list-style-type: none"> ■ No planned hygiene education (HE) component. 	<ul style="list-style-type: none"> ■ No hygiene education. 	<ul style="list-style-type: none"> ■ No hygiene education. 	<ul style="list-style-type: none"> ■ Part of extension responsibility of health workers in region. 	<ul style="list-style-type: none"> ■ Part of extension. 	<ul style="list-style-type: none"> ■ 3 campaigns led by EAs on 3 specific themes. ■ Vaccination campaign. 	<ul style="list-style-type: none"> ■ ORT campaign.
Training	<ul style="list-style-type: none"> ■ 1 day 	-----	-----	-----	<ul style="list-style-type: none"> ■ Included in the training and retraining. 	-----	<ul style="list-style-type: none"> ■ EAs train women who in turn train other women.
Who is Responsible	<ul style="list-style-type: none"> ■ 2 village women. 	-----	-----	<ul style="list-style-type: none"> ■ Project EA. 	<ul style="list-style-type: none"> ■ Project EA. 	<ul style="list-style-type: none"> ■ Project EA. 	<ul style="list-style-type: none"> ■ Project EA.
Materials Used	-----	-----	-----	<ul style="list-style-type: none"> ■ GRAAP methods. 	<ul style="list-style-type: none"> ■ Box of pictures drawn by national graphic designer. 	<ul style="list-style-type: none"> ■ No specific material. 	<ul style="list-style-type: none"> ■ Handbook distributed to women.
Health Facilities	<ul style="list-style-type: none"> ■ 1 community health centre. 	-----	-----	-----	-----	-----	-----
Other Activities	<ul style="list-style-type: none"> ■ Contact with department of health to improve HE in future. 	-----	-----	-----	-----	<ul style="list-style-type: none"> ■ Health survey on prevalence of diseases, treatment, traditional beliefs and needs and on what is expected of project. 	-----

8. LATRINES

Only three of the projects had components for the provision of latrines. These were additions to the water supply projects which were being developed. Of the three, one project provided community latrines and the other two, family latrines. In all cases, masons were trained in latrine construction. For the family latrines, part of the pit construction costs and all the superstructure costs including labor were paid for by the beneficiaries. For the community latrines, the communities were only required to provide labor (Table 10). Promotion of environmental health as part of the latrine component was extensive in only one project. There was a reluctance of many potential beneficiaries to accept the public latrines which they were being offered as they preferred family ones. The projects were limited in the number of latrines to be constructed within the project areas. In one project, health agents were paid by the project to promote and coordinate the latrine component. Once the project is completed, this promotion will stop unless it becomes an integral part of the service they were to the community.

Construction of public and institutional latrines especially for health units, markets and schools, would, if they were properly operated and maintained and managed, be a useful way of latrine promotion. Use of approaches such as environmental health education in schools and with women's groups would also enhance the awareness of the communities to the need for latrines and improved sanitation practices. It is obvious that a clear and well defined marketing and promotion strategy needs to be employed in order to get families and communities to construct and use latrines properly.

TABLE 10

L A T R I N E S

PROJECT/ ELEMENT	MOUHOUN Burkina Faso (NETHERLANDS)	MARITIME Togo (CANADA)	PLATEAU- SAVANE Togo (USA)
Summary of Activities	<ul style="list-style-type: none"> ■ Since the start of the project in September 1987, a total of 225 family/community latrines have been constructed in the project area (15 communities). ■ The superstructure is built by the family or community with local materials. The communities pay the masons, the project is subsidizing the slab production. Two community masons are chosen by the health committee and trained on latrine construction. ■ During the training, the project feeds the masons. The health agents attached to the project have a widespread sensitization program in latrine, use and health education. 	<ul style="list-style-type: none"> ■ The initial campaign to build community latrines has been replaced by building family latrines. 200 latrines have been built. ■ Two EAs per project zone have been trained by technical assistants and two GOT sanitation specialists. They promote latrines, help select sites, supervise brick construction, oversee construction of pits, monitor masons' work and vent pipe installation. ■ Two masons have been trained to make pre-fabricated slabs which are transported by the project to the communities. ■ Superstructure design is left to individuals. The families recruit local diggers and masons and negotiate payment. 	<ul style="list-style-type: none"> ■ A total of 473 VIP community latrines have been built in 26 communities. ■ The community is responsible for unskilled labor construction while the project hires and trains masons to assist them. ■ Masons have had difficulties getting communities to help as communities by far prefer family latrines. ■ EAs have spent much time in supervising this contribution, ensuring that masons are housed and fed.
Type of latrine	<ul style="list-style-type: none"> ■ The type of latrine is a modification of the Mozambique slab with footrests, a reinforced circular slab, and a keyhole shaped concrete plug. The pit is 3 m deep and 1 m in diameter. The superstructure is built with local materials. 	<ul style="list-style-type: none"> ■ Lined or unlined pit latrines. Superstructure design is left to individuals. No other information is available. 	<ul style="list-style-type: none"> ■ Ventilated, improved double pit latrines. The pits are fully lined.
Costs	<ul style="list-style-type: none"> ■ Actual cost per slab is 7,000 FCFA, the project is subsidizing the production. ■ The community pays the masons 300 FCFA/slab, the cement is provided by the project. There is no information on who pays for the sand, the gravel and the steel used for the reinforcement. 	<ul style="list-style-type: none"> ■ The cost of unlined pit latrine is about 20,000 FCFA : the project pays 16,000 FCFA, household provides 1 bag cement for foundation, pays for labor and provides necessary local materials. ■ The cost of lined pit latrine is about 30,000 FCFA: the project pays 21,000 FCFA, household provides 2 bags cement, mason and superstructure. Mobilized towns must collect 1/3 of material costs. The family recruits local diggers and mason and negotiates payment (project guidelines: 2,000 FCFA for pit-lining and 2,000 FCFA for superstructure). 	

Note: Only three projects had latrine components.

TABLE 10

L A T R I N E S (CONTINUED)

PROJECT/ ELEMENT	MOUFIOUN Burkina Faso (NETHERLANDS)	MARITIME Togo (CANADA)	PLATEAU SAVANE Togo (USA)
Training of Masons	<ul style="list-style-type: none"> ■ Two community masons are chosen by the health committee and are given one day training on how to make latrine slabs, one day for the well collars, and one day general training. ■ The project feeds the masons during the training. 	<ul style="list-style-type: none"> ■ Two masons have been trained to make pre-fabricated slabs in Tsevie. The slabs were then transported by the project to the communities. Trained EAs supervise brick construction, oversee construction of pit, monitor the mason work (foundation slab installation) and vent pipe installation. ■ Superstructure design is left to individuals, and that is why the construction is done by local masons. 	<ul style="list-style-type: none"> ■ Project hires and trains masons, who assist the unskilled labor contribution of the communities.
Participation of the Communities	<ul style="list-style-type: none"> ■ The communities pay the masons 300 FCFA per slab. They build the superstructure of the latrines with local materials. ■ In 1987, 25% of the communities worked on building latrines. 	<ul style="list-style-type: none"> ■ Mobilized towns request project assistance and must collect 1/3 of material costs. ■ The family recruits local diggers and masons and negotiates payment. For lined pit latrines household provides 2 bags cement, mason and superstructure. 	<ul style="list-style-type: none"> ■ Community is responsible for unskilled labor contribution. Masons have had difficulties getting communities to help as they prefer family latrines.
Promotion of Latrine Use	<ul style="list-style-type: none"> ■ The project decided to improve the sensitization by collaborating closely with the health department workers in the communities. ■ With regard to the sanitation sector, the project focuses on the following areas: health education in primary schools and latrine construction. ■ Retraining of health agents on environmental conditions. Health education to provide preventive health care. 	<ul style="list-style-type: none"> ■ Health education campaigns were carried out by EAs. In the sanitation sector the sensitization focuses on the following areas: principal diseases, village cleanliness, latrine construction and utilization, drainage and excreta disposal. 	<ul style="list-style-type: none"> ■ EAs mobilize women to sensitize the population in the project areas in health education.

Note: Only three projects had latrine components.

9. TRAINING MATERIALS

As part of the study, an attempt was made to collect and identify the different types of training materials which were used in these projects. The majority of the materials collected pertained to the mobilization of the communities, and training of the water committee members. They described how to: hold community meetings; keep accounts; repair the various pumps; conduction extension; monitor progress; prepare contracts etc. In addition there was material on drilling of boreholes and manuals for training the trainers of extension agents as well as information on latrine construction. Annex VI lists the types of training material collected at the different project sites Annex VII provides a bibliography of the training materials collected including a brief abstract for each item.

Training materials are essential tools for preparing all those involved in the project for their respective roles. Guidelines on how to do things, and clearly defined messages to be presented to the target audiences are invaluable to a project. A range of training materials were used by the projects. The majority of materials were typed guidelines and instructions on how to carry out various activities. Very few used audio-visuals as communication tools although there was agreement during discussions held with extension agents and other project staff, that these tools would be very useful during discussions with communities, to help explain what the project was offering.

Training materials should provide specific messages and recommend alternative methods of service delivery. The messages should not be complicated and should be clearly presented. Suitable ones should be developed for use with the different audiences, the young as well as the old (males and females).

ANNEXES I TO VII AVAILABLE ON REQUEST

LIST OF ABBREVIATIONS

AM	Area Mechanics
EA	Extension Agents
DNHE	Direction Nationale de l'Hygiene et Energie
FED	Fonds European de Devloppment
GOT	Government of Togo
IDA	International Development Association
IMII	India Mark II
ORT	Oral Rehydration Therapy
NGO	Non- Government Organization
CDR	Revolutionary Committee

SKAT

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St.Gallen, August 29, 1991

Handpump Meeting in Islamabad

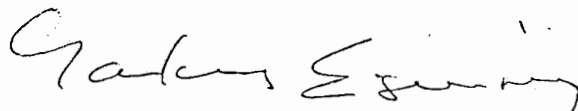
Dear Madam or Sir,

Enclosed you find the report of the Proceedings of the Handpump Meeting held recently in Islamabad, Pakistan.

The report covers the main part of the meeting from 24 - 27 June in Islamabad, and also the optional field trip to Lahore and Karachi from 28 - 29 June. A separate appendix to the report contains the papers which were presented to the meeting by delegates. This appendix has not been circulated with the main report but is available from SKAT on request.

One of the important outputs of the Meeting was agreement on changes to the Afridev Specification to reflect field and manufacturing experience since the original Specification was issued in October 1989. These changes are now being incorporated, and the revised Afridev Specification is expected to be published by SKAT in October 1991.

Yours sincerely,
SKAT - Swiss Center for
Appropriate Technology



Markus Eisenring

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Encl.

Report of the Proceedings of the Handpump Meeting
Distribution: Participants and according to the separate list