



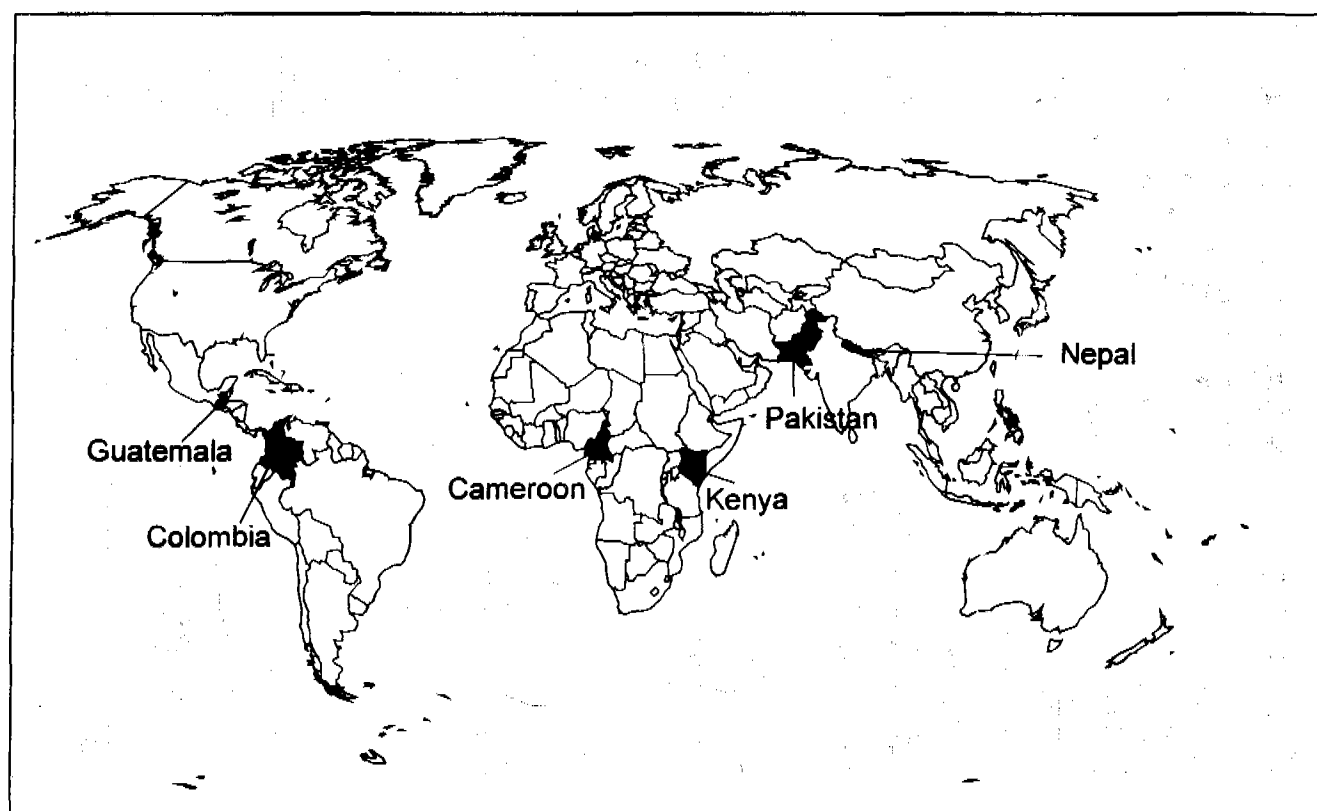
IRC

International Water and Sanitation Centre

Library
IRC International Water
and Sanitation Centre
Tel: +31 70 330 65 00
Fax: +31 70 330 65 01

Water Supplies Managed by Rural Communities

Country reports and case studies from
Cameroon, Colombia, Guatemala, Kenya, Nepal and Pakistan



IRC International Water and Sanitation Centre

IRC is an independent non-profit organization supported by and linked with the Netherlands Government, the United Nations Development Programme (UNDP), the United Nations Children's Fund (UNICEF), the World Health Organization (WHO), the World Bank and the Water Supply and Sanitation Collaborative Council.

Areas in which IRC's work in water and sanitation is concentrated at present include: community financing; community management; community participation; gender issues; health and hygiene; information and communication; monitoring and evaluation; operation and maintenance; rural water supply; sanitation; social mobilization; urban water supply; water resources management; and water treatment.

IRC has strong links with institutions in Africa, Asia and Latin America, and is establishing links with others in the newly independent states of Eastern Europe and Central Asia.

IRC
P.O. Box 93190
2509 AD The Hague
The Netherlands

Telephone: +31 - (0)70-30 689 30
Telefax: +31 - (0)70-35 899 64
E-mail: general@irc.nl
Website: <http://www.oneworld.org/ircwater/>

Library
IRC International Water
and Sanitation Centre
Tel.: +31 70 30 889 80
Fax: +31 70 35 899 64

Water Supplies Managed by Rural Communities

Country reports and case studies from
Cameroon, Colombia, Guatemala, Kenya, Nepal and Pakistan

IRC International Water and Sanitation Centre

The Hague, The Netherlands

1997

LIBRARY IRC
PO Box 93190, 2509 AD T
Tel.: +31 70 30 889 80
Fax: +31 70 35 899 64
BARCODE: 13963-2
LO: 205.1 97WA

Table of Contents

Preface	vii
Introduction	ix
1. Community Water Management Experiences in Cameroon	1
Summary	1
Acronyms and abbreviations	2
Introduction	3
Who does what	3
SCANWATER: from outside to inside control	4
CIACC: from top down to community-managed	5
The Rural Engineering Department – now defunct	6
CARE International	6
SATA-HELVETAS: an active partnership	8
Community Development Department (CDD)	8
Restructuring for greater community participation	9
Rural Engineering Department, SCANWATER and CIACC	9
CDD and SATA-HELVETAS	10
CDD and CARE	10
Assessing results: community management works best	11
Case Study: The Bomono-Gare water supply project	15
A local initiative got things started	15
A one-man show creates new problems	16
Management performance: still some problems	18
Concluding remarks	19
2. A First Review of Experiences with Community Management of Rural Water Services in Colombia	21
Summary	21
Acronyms and abbreviations	22
The rural water supply situation	23
The origin of community-managed water supplies	23
Institutions promoting community water management: continuity and change	26
Government institutions	27
Non-governmental institutions	28
What role for the agencies, what role for the communities?	30
Carrying out community management: monitoring and results	35
Case Study: Ceylan, Valle de Cauca	37
Areas and resources for further development	39
3. Community Management Report - The Case of Guatemala	43
Summary	43
Acronyms and abbreviations	45
Introduction	45
The country and its water and sanitation situation	45

Entities that support the water supply and basic sanitation sector	50
Non-governmental organizations	51
Framework and implementation of rural water supply	52
Institutions supporting community management	54
Procedures for community involvement	54
Community management organizations and their performance	56
Main institutional and community problems with a good management of water supply	58
4. Harambee and Rural Water Supply Systems- The Case of Kenya	61
Summary	61
Acronyms and abbreviations	62
Water conditions in rural Kenya	63
Overview of programmes and projects introducing community involvement in water supplies	63
Characteristics of rural water programmes	66
Arrangements for community water management	67
Local water management organizations	68
Payment for operation, maintenance and management	69
Development of skills and know-how	70
Legal and policy issues	71
Performance in community water management: some examples	71
Case study: Maturu-Luandeti	75
Characteristics of the project	75
Water system management	76
Gender	77
Water quality and use	78
Skills development, training and support	78
Financing and financial management	79
Monitoring, evaluation and information	79
Attitudes of adults and children	79
Areas for further development	80
5. Drinking Water System Management in Rural Nepal	83
Summary	83
Acronyms and abbreviations	84
Rural water supply and community-managed water systems	85
Managerial responsibilities of communities and agencies	86
Different roles for women and men	88
Authority and skills for local management	89
Case study: Bishashaya Village	91
History of the project	92
Community water management	94
Areas for further development	97

6. A situation analysis of rural water supply in Pakistan	99
Summary	99
Acronyms and abbreviations	100
Country profile	101
Agencies involved in rural water supply in Pakistan	103
Local Government and Rural Development Department	104
Projects introducing community involvement in water supplies	105
Organization and performance of community water management	108
Payment for operation and maintenance	110
Development of skills and know-how	110
Legal and policy issues	111
Performance of community management: monitoring and results	111
Case study: Madinatul Karim, Gilgit	113
Characteristics of the community	113
Water sources and sanitation facilities	114
Characteristics of the rural water supply project	115
Implementation strategy	116
Managing the water supply system	117
Skills development, training and support	118
Financing and financial management	118
Suggestions by the community to improve the water supply system	118
Conclusions and impressions	119
Areas for further development	120
9. Conclusions and Lessons Learned	121
Some highlights from the country reports	122
Assessment of the case studies	124
Final remarks	126
Appendix 1: Checklist	129

Preface

This document is the result of a collective effort by six teams from organizations operating in the water supply and sanitation sectors in Cameroon, Colombia, Guatemala, Kenya, Nepal and Pakistan. Coordinated by the IRC International Water and Sanitation Centre, they are carrying out a four-year research project on the role of community participation in the management of rural water supplies in developing countries. This is the first published output of this project.

All teams investigated the extent to which the various water agencies in their respective countries encourage rural communities to manage their own water supply systems. Using staff interviews and document review, they assessed how these agencies involve the communities in their work and address them as the future managers of their local water supply system. They gathered data on the performance of existing community-managed water supply systems. This information was turned into case studies of the six communities – one per team – which, in most cases, have been managing their improved water supply system for several years.

Each team proceeded in its own way using a common table of contents and checklist, prepared by the IRC team on the basis of an earlier international workshop on community management of rural water supplies held in The Hague in November 1992¹. The checklist and guidelines are reproduced in Appendix A. They cover such elements as the overall situation of the rural water supply sector, the various governmental and non-governmental actors involved in the sector, the administrative and legal frameworks for community water management, the types of systems introduced by the various agencies, the participation procedures used for establishing the systems, the attention paid to gender balance in work and decision-making, the preparation for future management tasks, and the monitoring of results obtained from community management.

The present document gives an overview of the situation at the beginning of the project. The country studies were used by the teams for comparing experiences during a planning and training workshop of all teams which was held in November 1994 in The Netherlands. During that workshop a joint research design for the next project phase was developed, and strategies were determined for selecting and evaluating the communities to be studied.

Subsequently, the teams and the local research groups from the identified project communities will review the local management processes and results, identify strengths and weaknesses, and seek ways to improve performance. They will develop a participatory research and action methodology which both groups can continue to use for other situations, and which can be shared with fellow water organizations and colleagues.

¹ 'Community Management Today: the role of communities in the management of improved water supply systems', IRC, The Hague, 1993. Occasional Paper Series No.20

Introduction

There is a growing trend in most countries in the South to encourage rural communities to manage their own water supply schemes. governments are trying to change their role from 'provider' to 'facilitator', and External Support Agencies (ESAs) promote decentralization and greater community involvement in decision making and management.

However, both agencies and communities face numerous constraints. In practice, little emphasis is put on developing management capacities at the local level. The agencies are more focused on construction of water supply systems, whereas the communities often lack management experience and the tools to deal properly with operation and maintenance.

Despite certain weaknesses, however, these studies reveal a significant potential for community-based management. There are several advantages to supporting a more prominent role for the communities themselves: greater efficiency in system performance; improved cost-effectiveness for both communities and agencies; and better prospects for the long-term sustainability of water supply systems.

What are the main obstacles preventing communities from enjoying full benefit from their water supply systems? Problems include: insufficient management capacity, lack of effective and equitable financing systems, and the absence of suitable equipment and infrastructure for operation and maintenance, environmental degradation of watersheds, and inattention to a proper gender balance.

Experience also shows that much could be achieved by building on the traditional patterns of water management at the local level. Water collection and use are often regulated by explicit or implicit agreements, many of which are made by the women. Although they may have long played a crucial role in the management of traditional water sources, their talents have been underutilized. Provided they are neither overburdened with domestic work nor excluded from the decision-making process, women could play a vastly expanded role in managing water supply systems. Work, functions, authority and training should be divided between men and women in a balanced way.

Community management does not imply that communities must take care of everything or pay the full cost themselves. The idea of partnership allows scope for sharing responsibilities between supporting agencies and communities. The exact division can vary considerably, but should be agreed upon in advance.

At present many agencies and communities are struggling together to find solutions for proper water supply systems. The IRC research project on Community Management of Rural Water Supply Systems offers one approach. It engages local men and women in selected communities in a joint action to identify, develop and test new strategies and tools for improving water systems.

The twenty-four communities selected in the research project already have functioning and self-managed water supply systems and service levels of various types, and represent a range of environmental, socio-economic and cultural conditions as well as variations in managerial performance. Because the communities have been selected as being representative of different

types of water supply as well as local management conditions, the participating organizations should be able to apply this experience to other water programmes.

To this end each team has established a programme for sharing its work, not only within their own organization, but also with a national group of other agencies dealing with community management of rural water supplies in their country. An international advisory group gives inputs to the project and helps disseminate the project's results on a wide scale.

Together, the process and results of this action research will improve our understanding of what comprehensive, gender sensitive community management of local resources and domestic water supply can achieve, and which agency approaches and tools can best help rural communities and their local water management organizations to obtain and preserve an effective water supply service. Future publications will report on those experiences.

Chapter 1

Community Water Management Experiences in Cameroon

Anthony Nforba Nchari, Emmanuel Nformi Ngaba and Nguethakan Amouye

Summary

Right after independence the new government of Cameroon instituted a programme to supply drinking water to both urban and rural areas. This was the responsibility of the Ministry of Mines, Water and Power (specifically the Rural Engineering Department) and the Community Development Department (CDD). Also active were such foreign organizations as SCANWATER, Cooperation for American Relief Everywhere (CARE), Cameroon Industrial and Civic Contractors (CIACC) and Swiss Association for Technical Assistance (SATA-HELVETAS).

Due to poor planning and management, however, and lack of involvement of the local population, these projects have not been very effective. Projects implemented by the Rural Engineering Department, CIACC and SCANWATER were – by design – never intended to promote community participation or community management. Yet in projects supported by CDD, SATA-HELVETAS and CARE, community involvement and ownership are part and parcel of the approach. Results now show that projects in which the government operates and administers the water scheme are far less successful than those which treat communities as the future managers and involve them directly in the process.

Recognizing the importance of participation for achieving sustainable operation and maintenance, the Cameroon government has come out with a number of guidelines for incorporating community involvement into rural water supply projects. SCANWATER and CIACC have recently started reorganizing their systems so that villagers have a say in the management of the systems.

A case study on the historical development of a water supply system for the village of Bomono-Gare highlights the role of the community during planning and construction. It shows that having a representative group from the community is a prerequisite for proper management of the system.

Acronyms and abbreviations

CARE	Cooperation for American Relief Everywhere
CDD	Community Development Department
CIACC	Cameroon Industrial and Civic Contractors
ESA	External Support Agency
REDSTS	Rural Equipment and Development Specialization Training School
SATA-HELVETAS	Swiss Association for Technical Assistance
SNEC	National Water Corporation
WMC	Water Maintenance Committee
XAF	Communauté Financière Africaine franc

Introduction

Upon independence, the new Cameroon government immediately embarked on a programme to supply potable water to the urban and rural areas of the country. The aim was to meet the water needs of the population and to eradicate – or at least significantly reduce – the incidence of water-related diseases, particularly in the rural areas. Besides the National Water Corporation (SNEC) a number of foreign organizations, notably SCANWATER, CIACC, CARE and SATA-HELVETAS have been active in projects for potable water. Whilst the parastatal SNEC concentrated its efforts in the urban centres, the other organizations focused on the rural areas that were far worse off in terms of water supply. The government showed its concern for providing potable water to the population by creating the Ministry of Mines, Water and Power and the Community Development Department (CDD).

The provision of potable water in rural areas is one thing, but the sustainability of such water projects is quite another. Of the estimated 7,000 water systems constructed in rural areas in Cameroon, many are known to have gone out of operation not long after the project's completion. The obvious reasons for this are poor planning and management, and in particular, the failure to involve the local population in all phases of the project. Effective participation would have helped to guarantee continuity after the project's completion.

Amongst those institutions promoting a better supply of potable water to the rural areas, CDD and SATA-HELVETAS have been the most successful. Their projects emphasize self-help and the involvement of the members of the community throughout the various phases. Once the project is handed over, the community assumes responsibility for managing the water system.

Who does what

The Cameroon government has given top priority to supplying drinking water throughout the country and creating the Ministry of Mines and Water, the Rural Engineering Department and the Community Development Department to carry out its policy. The Community Development Department works mostly in the English-speaking part of the country, where most of the successful self-help and community-managed projects are to be found.

The government has also encouraged foreign organizations to provide potable water in the rural areas. Figure 1 shows the main organizations supporting rural water projects in Cameroon and the number of systems developed by each. The urban centres are taken care of by SNEC. The failure and consequent abandonment of many rural water supply systems has led the government to issue the following guidelines:

- Any CDD/SATA-HELVETAS projects which have been initiated by the local population shall continue to be operated and maintained by the population with the assistance of CDD/SATA-HELVETAS.
- The completed projects of SCANWATER and CIACC must be reorganized so that the local population becomes responsible for maintenance of the systems.
- Before any new project is carried out in a village, a sum of XAF 135,000 must be paid by the population as a guarantee for the maintenance of the system.
- The population shall contribute to the realization of a water project through labour, funding and any other appropriate means.

- In a system with diesel or electric engine pumps, the population must bear the cost of monthly upkeep.
- When a water supply system is completed it belongs to the members of the community for which it was meant and not to the government.
- Two water operators should be trained to guarantee the proper functioning of each system.
- Serious breakdowns are to be repaired by the provincial Service of Mines, Water and Power and paid for by the population.
- The Ministry of Mines, Water and Power shall take the decision about what type of water system is good for that village.
- Provincial commissions shall be created in every province to sensitize and educate the population about the maintenance of the old SCANWATER and CIACC systems.

Organizations promoting rural water				
CIACC	CARE	SCANWATER	RURAL ENGINEERING	CDD/SATA-HELVETAS
30 PROJECTS	143 PROJECTS	335 PROJECTS	3900 PROJECTS	347 PROJECTS
Total no. of water projects: 4755				

Figure 1: Organizations supporting rural water supply systems in Cameroon

From the policy statements of the Ministry of Mines, Water and Power it is evident that the Cameroon government is now clearly in favour of community participation in rural water projects. The involvement of the local population in planning and management is seen as necessary for making projects successful and sustainable. A range of institutions and support agencies are engaged in implementing the policy.

Before 1988 the government commissioned the Department of Rural Engineering and the CDD to supply potable water to the rural areas. The programme was initially under the Ministry of Territorial Administration and later transferred to the Ministry of Agriculture. At present the Ministry of Mines, Water and Power is responsible for urban and rural water supply in Cameroon. It also supervises SNEC, which oversees SCANWATER and CIACC.

SCANWATER: from outside to inside control

SCANWATER, a private Danish company, was commissioned to build the first water station towards the end of 1980. The building of new schemes continued until 1992, when about 335 schemes had been installed in medium-sized villages and small towns. Water is most often obtained from a borehole. After pumping it undergoes a simple treatment process by aeration, followed by filtration and chlorination. After pumping the water up into a reservoir, it is distributed through public standpipes and a few private connections. Power is normally supplied by a diesel-powered generator, but sometimes electric pumps are used.

The SCANWATER approach was to bring potable water into a village using its own engineers and technicians. The organization then trained an operator and left for the next village after handing over the project to the government. With the failure of this approach, there has been a move now to prepare the villagers themselves to take over the projects.

For many years the government has maintained these water systems free of cost to the consumers, entrusting their operation and management to SCANWATER. Until August 1988, the local community was never involved at any stage of the project.

With the deteriorating economic situation, however, the state could no longer maintain the installed water systems. Faced with not only the full range of operating problems, but also the growing number and dispersed nature of its installations, it was decided to transfer all running and maintenance expenses to the beneficiaries. The new water policy delegates power to the community, through a village committee, for the management of the water installations. Considerable effort is currently being made to encourage the villages to take over permanently the responsibility for maintaining the waterworks. Training and sensitization programmes are being undertaken to ensure a smooth transition. Awareness-raising usually covers the history of the project and the current water policy, information on water and hygiene, the importance of participation and the responsibility of each individual.

CIACC: from top down to community-managed

Cameroon Industrial and Civic Contractors (CIACC) is a local water construction company of Dutch origin that receives technical and management support from the Vermeer contractors group in the Netherlands. Under the supervision of the Ministry of Mines, Water and Power, it had initially the same approach as SCANWATER. This involved moving into a village with its engineers and technicians, constructing a water system, training an operator to run it and handing over the project to the government after completion. The community members were not in any way involved; hence many of the systems became inoperative and were reorganized, along with those built by SCANWATER. CIACC constructed a total of 30 water systems in three provinces. The main source of water in CIACC water projects is groundwater (wells); there were very few cases of lake and spring sources.

The failure of completed SCANWATER and CIACC water systems led to their reorganization by the Ministry of Mines, Water and Power. Provincial Commissions have been created to mobilize, sensitize and educate the villagers who benefit from these systems. The educational programmes cover the importance in rural areas of drinking only clean water if such water-related diseases as typhoid fever, diarrhoea, dysentery and cholera are to be eradicated, as well as the importance of maintaining the system.

Seminars are now organized for operators and members of the project and the maintenance committee. They usually last four days and cover the following:

- operation and maintenance of the system
- accounting, bookkeeping and financial records
- writing minutes of meetings and recording decisions.

The CIACC officer and maintenance technicians form the commission that undertakes the sensitization and training programmes. They are also responsible for the democratic election of the villagers who are to serve on the Executive Committee for the maintenance and administration of the village water system.

After the election, a contract is signed between the village and the government. Its contents are given in Box 1. The District Officer signs on behalf of the government and the President/

Chairman of the maintenance committee signs on behalf of the village. There is always a representative of the Ministry of Mines, Water and Power. Approximately 200 contracts have been signed between the government and villages since the reorganization was launched.

Box 1 Terms of community water management contract in Cameroon

The contract between the villagers and the government usually has the following terms:

- The villagers are responsible for operating and maintaining the system, and for financing the purchase of spare parts.
- The government is responsible for providing technical assistance, for funding training and for the purchase of tools for repairs.

The Rural Engineering Department – now defunct

As mentioned above, the Ministry of Mines, Water and Power commissioned its Department of Rural Engineering, together with the Community Development Department, to construct and administer the system for supplying drinking water to the rural areas. The Rural Engineering Department, unlike the CDD, carried out projects that were totally government-sponsored. Members of the beneficiary community did not participate. The Rural Engineering Department was also charged with supervising the foreign water construction companies such as SCANWATER and CIACC.

Before the Rural Engineering Department was eliminated, some 3,900 water systems were completed in as many villages. These included piped systems fed by gravity or mechanical pumps and with public waterpoints, boreholes, handpump wells and dug wells. The installations were built mainly in the four Western Provinces of Cameroon (the West, Littoral, South West and North West), and for villages or rural centres with a population of 5,000 - 10,000 inhabitants. They were intended to be operated and maintained by the government. However, over 50 percent of these schemes are now estimated to be non-operational, due to a lack of funds and the absence of proper participation and organization of the villagers.

The malfunctioning and collapse of most of these installations has resulted in public health problems and an increase in the incidence of water-related diseases and infant mortality. Hence there is an urgent need to rehabilitate the non-functioning installations. However, due to a lack of coordination between the various government departments, no one knows the exact number of installations and their location.

CARE International

CARE was founded in the United States of America in 1945 in response to the needs of millions of Europeans left destitute by the Second World War. Its original name was the 'Cooperative for the American Renovating of Europe'. Once things in Europe improved, CARE continued with its work in other deprived areas of the world, changing its name to 'Cooperation for American Relief Everywhere'. During the last four decades CARE has become one of the biggest private of non-profit organizations working in development. Since 1946 CARE Canada and CARE USA have been working hand in hand, first in Europe and later in developing countries. By the end of 1970 other countries were forming national groups: West Germany, Norway, France, Italy, Great Britain, Austria, Japan and Denmark. These organizations founded CARE International, which today is synonymous with the

promotion of development. In 1978, CARE USA opened a mission in Cameroon with the signature of an agreement with the Ministry of Agriculture. The first CARE project was launched in 1979 in a rural zone of the Eastern Province of Cameroon in collaboration with the Community Development Department. In 1980 its activities were extended to the Far North Province, where a project for the supply of potable water in villages was established.

The head office of CARE in Cameroon is located in Yaoundé but delegations have been established in Bertoua (East Province) and Makolo (Far North Province). The head of CARE Cameroon is supported by a team of national and international employees.

CARE is currently operating in four provinces of Cameroon in different fields of development. Besides developing village water supplies, it is interested in health, environment, conservation, forestry, agriculture, the promotion of small and medium-sized enterprises, emergency aid, women and development, and training and education. North American organizations sponsor the projects in the East Province and the Dutch government sponsors the projects in the North Province.

In the area of rural water supply CARE has so far constructed 141 handpump wells in the rural areas of the East Province and one water supply system in the Far North Province using a water catchment. Any village wishing to benefit from CARE's assistance in the provision of potable water has to meet the following conditions:

- an application to CARE for assistance
- a down-payment of XAF 150,000 after the first field test has been carried out
- a bank or post office account opened with at least XAF 25,000 for future maintenance
- readiness to dig from the ground level to the water level if the project is a well
- supply by the village of sand and gravel, if available
- fencing off the well after completion
- routine testing of water quality
- the formation of a Water Maintenance Committee
- provision of voluntary labour in the case of a large water supply system.

In return, the village gets the following services from CARE:

- CARE takes over the construction of the well when the water level is reached and installs the rings and a handpump imported from Canada
- CARE trains the water operator or pump mechanic
- CARE carries out routine supervision and financial monitoring after handing the project over to the community and evaluates the communities effort
- CARE educates the users about water quality issues
- CARE stipulates that handpumps must:
 - be easy to install
 - be easy to maintain
 - be cheap to purchase
 - be easy to obtain spare parts for
 - be able to supply good water without recourse to rivers or lakes.

SATA-HELVETAS: an active partnership

The Swiss Association for Technical Assistance (SATA-HELVETAS) first came to Cameroon in 1961. By 1963 its pioneer engineer had constructed 23 water points in the Ekona Mbenge Water Supply Project. Given this initial success and the interest shown by the people in community work, an agreement was signed between SATA-HELVETAS and the Cameroon government on 29 June 1964. SATA-HELVETAS's assistance to water projects then started on a larger scale. By 1994 SATA-HELVETAS had constructed 344 water points.

Besides its water supply activities, SATA-HELVETAS set up a Building Training Centre in Kumba where technical personnel could be trained for different jobs: mason, caretaker of a water supply, building contractor, technician, supervisor, etc. By 1994 SATA-HELVETAS had trained a total of 189 caretakers and 446 water project maintenance committee members. SATA-HELVETAS also provided training for its partners, notably the CDD technicians and staff of non-governmental organizations (NGOs), mainly on the protection of the water catchments and the maintenance of water systems.

The role of SATA-HELVETAS is to support local initiatives, encourage rural communities in their self-help efforts and create incentives for economic and social development. SATA-HELVETAS practices an active partnership by training counterparts from Cameroon, and encourages sustainable development. The organization gives priority to:

- villages having the most urgent need
- villages/communities providing considerable self-help through substantial contributions in kind and cash
- projects serving the whole population or all concerned groups
- projects in remote and disadvantaged areas
- villages guaranteeing proper maintenance and respecting the environment.

To qualify for assistance, the villagers have to meet the following conditions:

- for new water systems, make a contribution worth 30 percent of the investment, in kind or cash
- for the extension of an existing water system, make a minimum contribution of 40 percent
- assume responsibility for the maintenance of completed projects and cover 100 percent of the costs
- for extensive repairs, make a minimum contribution of 50 percent, with a maximum of 100 percent for communities of good financial standing.

A community's maintenance record is the most important element in assessing its contribution. The rights and duties of the community with regard to their water system are given in Box 2.

Community Development Department (CDD)

The major partner of SATA-HELVETAS in community work has been the Community Development Department. The department came into existence in 1961 and works on the same lines as SATA-HELVETAS, since both operate as partners in promoting rural self-help projects. The CDD was headed by a Principal Community Development Officer in Buea when

it was located in English-speaking Cameroon only, but got a Director when it was transferred to Yaoundé. Administratively the department falls under the Ministry of Agriculture.

Box 2 Rights and duties of communities benefiting from SATA-HELVETAS water projects

Rights

- The water project is the property of the village/community.
- The community can raise fees to maintain the water system and pay for repairs and the caretaker.

Duties

- The village has to contribute in cash and/or kind to the construction of the water system.
- In case of seeking funds from other donors HELVETAS must be informed in advance and in writing.
- The community must open a bank account and ensure proper auditing.
- The community must nominate a caretaker and an assistant and elect and support the maintenance committee.
- It should take charge of maintenance after completion of the construction.
- It should establish a maintenance reporting and monitoring system.
- The catchment area has to be protected.

The CDD has three services: technical, women and training. All three assist the rural population in their self-help projects. The technical section assists the rural communities with construction work. The women's and training sections assist in educating, mobilizing and sensitizing the rural communities during their self-help projects. The CDD has three Community Training Centres where most of its personnel are trained. They are located in the South West, North West and Northern Provinces. The Technical Training Centre or Rural Equipment and Development Specialization Training School (REDSTS) trains technicians, plumbers, caretakers, masons and supervisors.

Restructuring for greater community participation

Community management involves the members of a community directly in all phases of a project, in such a way that they are part of the decision-making process, regard the project as their own, give it their support and continue to look after it. Projects where community participation is encouraged have greater chances of success than those that discourage participation. Participation takes different forms:

- participation in the decision-making process
- planning, providing and managing inputs into the project in cash, kind or labour
- benefiting directly from activities and results of the project.

Rural Engineering Department, SCANWATER and CIACC

Of the institutions and agencies that are responsible for supplying water in the rural areas in Cameroon, the Rural Engineering Department, SCANWATER and CIACC were by design not meant to promote community participation and involve the members of a community in the management of their water systems. For instance, the Rural Engineering Department of the Ministry of Mines, Water and Power created 3,900 water systems and these were all

handed over to the government of Cameroon for maintenance. The same applies to SCANWATER with its 335 water systems and to CIACC with its 30 water systems. Most of the non-participatory and government-managed water systems are no longer functioning and the location of some of them is not even known. Recognizing these failures, SCANWATER and CIACC have recently been engaged in reorganizing their systems and letting the villagers have a say in the management of the systems.

CDD and SATA-HELVETAS

The Community Development Department of the Ministry of Agriculture and its external partner SATA-HELVETAS have adopted a self-help approach to rural development. The community initiates the water project, usually on the basis of a felt need. It sets up a Project Committee to plan and implement the project. The General Assembly or the Representative Assembly, which represents the whole community, is usually the highest decision-making body. When the plans are agreed to, all members of the community contribute in cash, labour or kind to the project and its eventual maintenance. The community must contribute a certain percentage of the total project costs.

On completion of the water system the community sets up a Maintenance Committee, elected from the local population. The community engages a qualified caretaker (plumber) and an assistant. To manage the funds the community opens an account and ensures proper auditing. It also is expected to protect the catchment areas and ensure the continued reliability of the water source. It establishes a monitoring, evaluation and reporting system. The water supply belongs to the community and to no one else. CDD and SATA-HELVETAS provide technical, financial and material support. Thus the CDD/SATA-HELVETAS partnership has been able not only to train community technicians and project maintenance personnel, but it has also sensitized and educated the entire community.

CDD and CARE

Like the CDD/SATA-HELVETAS supported projects, CARE promotes and assists only those self-help projects having community involvement and ownership. CARE works together with and uses the CDD approach.

To start with, a community must indicate clearly its needs and interest in developing a water supply. The Community Development Assistant then helps to sensitize, mobilize and educate all members of the community on the importance of clean drinking water and CARE's conditions for undertaking the project with the community. Then, if the idea of a water supply project is still accepted, democratically conducted elections are carried out to choose the Water Committee members. They are installed and charged with the responsibility of planning, implementing and maintaining the water system on behalf of the community. The Committee then formally writes an application to CARE, accepting the terms of the agreement given in Box 3. It invites CARE to do a field test on the technical and economic feasibility of an improved water supply system. When the results are positive the project can go ahead.

To implement the project, CARE works together with the CDD. Through the Water Committee the villages contribute money to construct the well from the ground level to water level and to supply local materials. CARE staff constructs the well from the water level

downwards and installs rings and a handpump, usually purchased from Canada. It also trains the village water mechanic. If the pump is damaged or functions badly the mechanic will contact the Water Committee to buy spares from Bertoua where the spare parts store is located.

Box 3: CARE's conditions for constructing a water supply system in a rural area

The village must:

- apply to CARE for assistance
- be ready to pay a fee/deposit of XAF 150,000 after the first field test has been carried out
- open an account in a bank or post office with a minimum of XAF 25,000
- be able to dig from the ground level to the water level if the project is a well
- supply labour particularly in the case of a large water project
- supply sand and gravel, if available
- fence the well after completion
- form a Water Maintenance Committee.

CARE must (in conjunction with CCD):

- carry out a technical and economic feasibility study
- construct the well from the water level downwards
- install rings and a handpump (usually purchased from Canada)
- train the Water Operator
- educating the community about water quality
- monitor and support community management performance
- carry out routine supervision of finances and maintenance after handing over the project to the community.

CARE further makes sure that the savings in the post office do not get below XAF 25,000 to act as guarantee for the maintenance and to avoid closure of the account. The spare parts for the pump can be purchased either with cash or in kind. It can take a while (3-4 days) for the needed spare parts to be obtained if the village is far from Bertoua. Usually the water operator or pump mechanic is given a catalogue with all spare parts and their prices. In the internal regulations on water use there is a clause prohibiting the community members from washing clothes and other items at the pump site, so as to preserve the quality of the water in the well.

In conclusion, of all the agencies promoting water supply in the rural areas, only CDD/SATA-HELVETAS and CARE have involved the communities in all stages of the project's realization and recognized and worked with them as future managers of the new community water system. Usually an elected Project Management Committee or Project Maintenance Committee becomes responsible for the day-to-day management of the water supply and supervises the caretaker, who is usually a trained plumber. The General or Representative Assembly of the community has the right to make final decisions on critical issues.

Assessing results: community management works best

It is quite evident that those water projects in which community members were not directly involved in the planning and management have been a total failure. Of the 335 SCANWATER systems and 30 CIACC systems over 90 percent are reported to be non-

functioning. The same sad situation applies to the water systems constructed by the now-defunct Rural Engineering Department of the Ministry of Mines, Water and Power. The vast majority of the 3,900 water systems constructed in different parts of the country, but particularly in the four Western Provinces, are not functioning and, in a significant number of cases, the locations of the water systems are not even known.

On the other hand, the water projects promoted by CDD/SATA-HELVETAS and CARE have, to a very large extent, registered a significant success. Out of the 142 handpumps installed in the East Province, 136 are reported to function well and so do the Water Committees. When contacted, the director of CARE Cameroon sounded very proud of community performance. The same success story applies to Community Water Projects promoted by CDD/SATA-HELVETAS. Out of the 302 completed projects only 33 (10 percent) are not functioning well.

The major reason for success or failure stems from whether or not the members of the community have been involved throughout the project. The question of ownership – who owns the improved water system? – is also a significant contributing factor. For instance, when the Rural Engineering Department constructed improved water systems and handed them over to the Ministry of Mines, Water and Power for operation and maintenance, these schemes were doomed to fail as the state not only lacked the organizational support but was unable to continue to provide any financial support.

The community could not come to the rescue because it was someone else's (the state's) project and, besides, they had not been involved in planning a type of water system that they could sustain and did not receive the relevant training to maintain and manage the water supply. The extent to which members of the community were made aware of the project's purpose and benefits also played a critical role in determining success or failure.

Thus, while the success of the CARE and the CDD/SATA-HELVETAS-supported projects can, to a large extent, be attributed to the principles of community involvement, management, sensitization, education and ownership, the failure of the CIACC, SCANWATER and the Rural Engineering Department projects can be attributed to the lack of these elements. A project is judged successful if the system for supplying potable water to a community is maintained and continues to function after its installation.

Nevertheless, a number of problems are encountered by both agencies and communities when implementing and supporting community-managed water supplies in the rural areas. Major problems encountered by the support agencies include the following:

- Lack of cooperation from the population due to the absence of local involvement in the earlier planning and execution of the projects (SCANWATER, CIACC and Rural Engineering).
- The systems are too expensive to be run by the local population (SCANWATER, CIACC).
- The equipment is too sophisticated for the rural population to operate (SCANWATER).
- Wrong choice of water sources (SCANWATER, CIACC).
- The poor location of water points does not encourage general use by the population (SCANWATER, CIACC).

- No means of transport to carry out construction and repairs in the field (CDD).
- Delays in agency (CDD) support for community projects.
- Delays in receiving contributions from the local population (CARE, CDD).
- Spare parts for the systems are too expensive and not easily obtained from the local market (SCANWATER, CIACC).
- The distances for obtaining spare parts are too great and the parts can only be obtained in Bertoua (CARE).
- The number of non-functioning projects is not known (SCANWATER, CIACC and Rural Engineering Department).
- The population needs were not considered (SCANWATER, CIACC).
- Lack of cooperation between the state and the population (SCANWATER, CIACC, Rural Engineering Department).

From their side, communities also face problems in managing their improved water supply. In the following case study the process of establishing a community-managed water supply and the experiences with its operation, maintenance and administration have been recorded.

Case Study: The Bomono-Gare water supply project

The village of Bomono-Gare is located in Dibombari Sub-Division in the Mungo Division of the Littoral on the national highway no. 2 at 16 km from Douala. It lies about 100 m above sea-level and spreads about 1 km on both sides of the highway. Bomono-Gare village has a total population of 3,500 inhabitants, 52 percent of whom are female and 48 percent male. Children under 14 years form the largest group (46 percent), whereas adults and old people form 40 percent and 12 percent of the population respectively. Life expectancy is about 54 years, which is slightly above the national average of 50.

The population of Bomono-Gare has an ethnic structure. The main ethnic groups are the Pongo and Bayangi, who are the indigenous populations (42 percent and 33 percent), the Metta (11.8 percent), the Bamilike (7.5 percent) and the Ibo from Nigeria (5.7 percent). Most of the non-indigenous population migrated into the area looking for jobs on the plantations of Socapalm. The majority (about 95 percent) of the men can speak, read, and write in French, whereas illiteracy is still high among the women.

Agriculture is the predominant occupation and the main source of income. Men are responsible for clearing the land. Women are responsible for sowing, planting, weeding, harvesting and, if needed, for the processing and storage of the farm products. The main crops are cassava, maize, bananas and palmnuts. Vegetables such as pepper, tomato and okra are also produced. The major fruits are pineapples, mangos and oranges.

Bomono-Gare has its own public health centre. Malaria, rheumatism and dysentery are the most common diseases. There is a public primary school with six classes, and a railway station. An agro-industrial complex unit is located near Bomono-Gare village that processes palm products and by-products.

The village is headed by a chief. The succession is passed from father to son. The chief runs the affairs of the village together with a traditional council. The traditional council is composed of ten men appointed according to their age and their leadership role in their extended family.

Traditionally, Bomono people themselves manage common infrastructures such as schools, health centres and water sources. Apart from participating in the management of communal institutions, the people in Bomono-Gare assist each other in good and bad times (marriage, birth and baptism of a child, death of a family member). However, this spirit is not extended to agricultural activities; thus, any household which needs help in weeding or harvesting, for instance, must hire labour. The Bomono piped water supply takes water from a spring. Two catchments collect the water and direct it to a 200 m³ reservoir. Two electrical motors pump the water to the sedimentation tank through about 1.2 km of pipelines. Water is then distributed to the population through 12 public taps and 10 private connections.

A local initiative got things started

Bomono had always suffered from a high incidence of water-related diseases during the rainy season and from the absence of water during the dry season. The only river, which runs 50 m below and 500 m away from the village, overflows with mud in the rainy season and falls

almost dry in the dry season. Thus, for many years, the population endured most water-related hardships. But nothing was done to solve the problem until Mr. Daniel Ebongue, a local son, took charge and introduced to his people the idea of a water project based on self-help. He had witnessed community projects on a self-help basis when working as the Delegate of Tourism in the English-speaking part of Cameroon. He brought some staff of the Community Development Department (CDD) from Buea in the English-speaking zone of Cameroon to Bomono. Using films about water projects and water development in the rural world they raised awareness and interest in water. The population was convinced of the necessity of good drinking water, free of bacteria. They saw that it was better to save energy to do something else than travelling long distances just to fetch water. At this stage the population made a request for assistance in establishing an improved village water supply to the Ministry of Territorial Administration (MINAT, order no.1344/MINAT of 13/04/1974). A feasibility study was undertaken by Mr. Ulrich Dubs, an engineer from SATA-HELVETAS. The study estimated the cost of completing the water system at XAF 25 million.

To plan and execute the construction of the one solution investigated, the people of Bomono-Gare elected a twelve-person Project Committee with a chairman, vice-chairman, secretary, assistant secretary, treasurer, assistant treasurer and six women's representatives. Members were elected by simple majority vote. The Project Committee was advised by the chief of the village and two members of the Village Council. Through advertising, the Project Committee had appointed one native male to be trained as plumber (caretaker). The Project Committee had responsibility for organizing and supervising the construction at community level, for raising funds locally and for seeking contributions at national and international levels through CDD.

Several meetings between the CDD/SATA-HELVETAS and the Project Committee helped to clarify the roles played by both partners and by the community. The community's roles included the supply of local construction materials (sand, gravel, stones), as well as labour for digging and backfilling of trenches, mixing concrete and digging the foundation for the storage tank, the catchment, pump house and sedimentation tank. In addition the Committee set a tariff for cash contributions towards the construction costs, according to people's capacities to pay.

Because of difficulties in collecting the required total, a fund-raising campaign was organized on 6 December 1975. This included money-raising activities such as traditional dances from the various tribal groups, a bicycle race, a cross-country race, a football match, tombola and film show. Besides individual contributions, national companies like Brasseries du Cameroon, Guinness Cameroon, Bata Cameroon, Solado-Douala, SICAF Douala, Shell BP Douala, SOPARCA, CHOCOCAM and SIC CACAO also contributed. So too did the Presbyterian Church of Bomono-Gare, and the chiefs of the neighbouring villages of Nkade, Nkapa, Suza, and Bomono Ba Mbengue.

The physical work started on a sound footing in early 1976 with the construction of two catchments. However, because of financial constraints, progress was very slow, even though SATA-HELVETAS, the Swiss government and the Cameroon government had already given some aid before 1980. By the time the first funds collected had been spent, only about 10 percent of the whole construction had been completed and the project came to a halt. It became necessary to organize a second fund-raising ceremony. This second ceremony took

place on 7 March 1981 with Mr. Mukuri Maka as the organizing president. With the funds collected, the project started again, but slowly.

Mr. Daniel Ebongue, who had retired as delegate, came back home and took over as president of the Project Committee. Since he had been the project promoter and very conversant with the community development approach – which was unfamiliar to the communities of the French-speaking zone – he worked hard for the project, travelling from ministry to ministry, embassy to embassy and meeting with the elite from Bomono-Gare to raise the needed funds for the water supply. After ten years the system was almost completed, thanks to the joint efforts of dedicated people from Bomono-Gare, international organizations, foreign embassies and local companies. At the time of completion in 1986 the total contribution was XAF 32 million.

A one-man show creates new problems

When the water supply system was completed in 1986, the Project Committee became the Maintenance Committee responsible for the management and maintenance of the new system. As Mr. Ebongue had devoted so much to the success of the implementation phase, he was recognized as the one who should lead the Maintenance Committee. Unfortunately, Mr. Ebongue started managing the water scheme as a one-man business. He collected water taxes according to tariffs he set and then used these collections to pay the caretaker and the electricity bill and buy the needed spares and materials without ever involving anyone. He called no meeting to discuss the management of the water scheme. Nobody, not even the chief of the village, knew how the scheme was being managed. But all efforts to convince him that what he was doing was wrong failed.

In 1992, the chief of the village and an important number of the local elite called a development meeting. Mr. Ebongue, who knew what the outcome of the meeting was likely to be, did not attend. At that meeting a new committee, made up of 14 members, was elected, with Mr. Mpressa Nkembe as chairman. Mr. Ebongue was said to have been very angry about his replacement. That very night, both electric motors which run the pumps were stolen. Thus, the village was without water for three months.

The chairman of the Maintenance Committee reported the matter to the administration and the police as soon as the motors had disappeared. But no action was taken. The whole village came out for a search and found one of the motors abandoned in the bush, already damaged. The village council withdrew money from the village fund for the repair of the damaged motor and the purchase of a new one, and water started flowing once again after three months of real suffering.

By the end of April 1994 the new Maintenance Committee had issued a document that defined clearly the committee's composition, role and functional relationship with other community committees. Figure 2 shows these relationships.

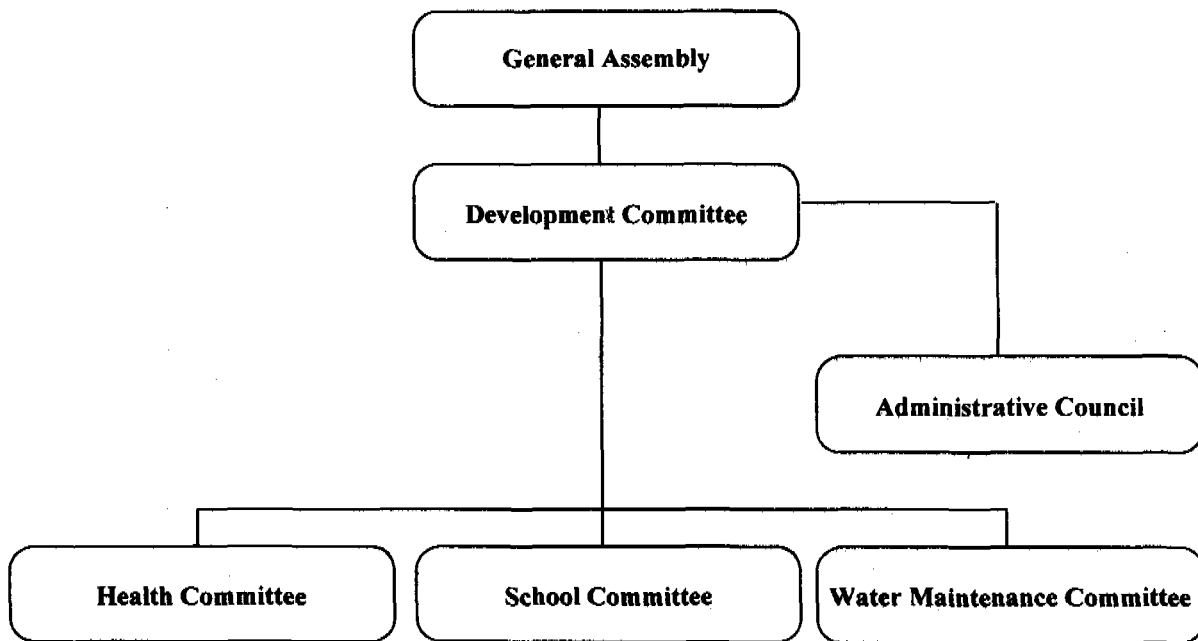


Figure 2: The structure and relationships for the management of Bomono-Gare village water supply scheme

The General Assembly is the highest decision-making organ. It is composed of the whole village and it meets once a year in an annual assembly. An extra ordinary assembly can be convoked by the Water Maintenance Committee (WMC) if there is a problem. The Development Committee is elected and plays a major role in defining the policy with regard to the social and economic activities to improve the well-being of the whole community. Its support to the WMC is vital for the management of the water supply system. The Administrative Council is in charge of general policy related to water. It is composed of the chief of the village; the chairman, the secretary, and the caretaker of the WMC, the internal auditor, four representatives of tapstand controllers (users of all 12 public tapstands elect their representative), two representatives of private connections (the ten elect their representatives), two representatives of the population at large (one male and one female, elected by the population), a representative of youth (elected by the youths), and the representative of the external elite (elected by the external elite). The Administrative Council meets three times a year and when an important problem concerning water comes up.

The WMC members are elected by the population during a General Assembly meeting. It is responsible for the management and proper maintenance of the system and is composed of 15 members, both men and women. The members meet on the 10th of every month or when there is an urgent need. The committee consists of a chairman, secretary, treasurer, caretaker and 12 controllers of standposts, four of them women. The chairman is elected by the General Assembly and is in charge of management and policy making related to the water scheme in the village. At the end of each year he has to present to the community a detailed report on the functioning of the community water system. The secretary is also elected by the General Assembly and is in charge of keeping up-to-date minutes of meetings. He has to produce a report of the last meeting at the beginning of each sitting. The treasurer is in charge of the bookkeeping and registers the various movements of money in and out of the maintenance fund. The caretaker is responsible for the operation of all pumps and the general maintenance

of the whole system. The caretaker works six hours per day and is paid XAF 26500 per month. Each tapstand controller is responsible for the maintenance of the tapstand and the collection of water taxes from the tapstand's user households. As a compensation, they do not pay the monthly water tax.

Money for maintenance is obtained from levies on tapstand use, private connections and the use of water for amenities and production. Levies are collected on the 10th of every month. In each user household, all adults pay. The general structure of the levies is given in Table 1.

Table 1: Water tariffs by gender, use and service level

- Men	500 XAF
- Women	300 XAF
- Laundry activity	800 XAF
- Block processing	3,000 XAF
Private connections	
- water in the yard	5,000 XAF
- water in the house	10,000 XAF
- Farms and other uses	10,000 - 15,000 XAF
Private connections	
- had participated	30,000 XAF
- had not participated	150,000 XAF

A list of rules and regulations has been produced. The 'Règlement Intérieur de l'Eau de Bomono-Gare', also gives a detailed job description for the caretaker, who is expected to prepare weekly reports. Other records kept include a minute book and records of stock purchases, correspondence, finances and maintenance.

Management performance: still some problems

The new executive committee has a few non-resident members and young people are not well represented. The new committee seems to be afraid of some people in the village. Some households have been using piped water for two years, but have refused to pay their monthly contribution. The former chairman of the water committee refuses to recognize the new management structure and to pay water fees.

Technically the water system is working. The sedimentation tank needs repairs and cleaning. The pump house and collection chamber also need cleaning, as well as drainage provisions. The storage reservoir is fairly clean, but needs renovation because of some leakages. The catchment needs protection and cleaning. The main and secondary pipelines have a few leakages. Because of a landslide and heavy erosion the main pipeline is exposed in some areas. All the 12 standposts are functioning but need renovation. A general plan showing the location of all the different installations is not available.

The Maintenance Committee lacks sufficient funds to carry out all necessary repairs. The water scheme has no bank account and the chairman is at the same time the treasurer, a rather

unhealthy situation. There is also a lack of tools for maintenance and a safe place to store spare parts. Some tapstands have been damaged by some of those who are reluctant to pay their water tax. The Community Development Department has completely neglected its support role on water management in the village.

Concluding remarks

The problems of the community of Bomono-Gare in managing its water supply scheme are not exceptional. Some of the common problems which communities encounter, according to the agencies interviewed, are summarized below.

In operation and maintenance:

- The population is occasionally forced to stay without water for a long time due to faults in the water supply system.
- Illegal connections are made. Some connections, because of technical errors, have been done arbitrarily, making disconnection difficult.
- The caretaker has a low level of competence.
- There are no incentives for the caretaker to do maintenance and take part in committee meetings.
- There is a lack of communication between the technical staff and the Project Maintenance Committee, e.g. in the village of Mutengene.

In financial management:

- Inadequate financial contributions by the beneficiaries to meet such goals as doing renovations and building reserves, e.g. in Mutengene and Bonadikumbo.
- Community members who cannot pay in cash have difficulties in contributing in kind because some of the materials, such as gravel, are not available in the vicinity.
- The chairman of the committee collects the water dues but the dues are not turned over to the treasurer.
- Financial transactions are not recorded in the ledger.
- Too many unauthorized committee members collect fees and give out receipts.
- Bank withdrawals are made inconsistently and are sometimes not approved and registered.
- There is a lack of appropriate financial control and supervision from the agency.

In general administration:

- Absence of, or few female members on water projects or maintenance committees in Mutengene and many other communities. Women are key users of water and their absence brings about an imbalance in the decision making. Bonadikumbo and others are an exception.
- Long gaps in between committee meetings, which renders the making of important decisions and managing difficult. In Mutengene for example, the gap was as long as five years.
- Personality and role conflicts occur among committee members. The committee lacks coherence. Some members tend to dominate the committee.

- Work is given to a contractor by committee members without the prior approval of the other committee members.
- There is a lack of collaboration between the CDD and the water project.

Experiences in Cameroon in the domain of rural water supply show that the extent of success or failure in keeping rural water supply systems operational depends on the degree of involvement of the community members in all stages of the water project and in their preparation for self-management of the system after it has been completed. It is precisely for this reason that some water agencies (CIACC, SCANWATER, Rural Engineering Department) have failed and others (CDD/SATA-HELVETAS, CARE) have had a certain degree of success.

Failure has resulted not only in heavy financial losses but also in dashing the hopes of the affected rural communities of enjoying a reliable supply of potable water and lowering the incidence of water-borne diseases. The recent reorganization of CIACC and SCANWATER emphasizing a 'community participation' that was totally absent in the past is an indication that lessons have been learnt from these mistakes. Nevertheless, this study shows that although treating communities as the future managers of their new water supply and preparing them for their tasks gives better results, it is no panacea for overcoming all problems. The learning process takes time and patience.

Chapter 2

A First Review of Experiences with Community Management of Rural Water Services in Colombia

Mario Alejandro Perez, Cecilia Gomez, Jesus Anibal Valencia

Summary

In Colombia, community management of improved water supplies has been mainly promoted by the state, beginning in 1961. By now, although not very explicit, the government has formulated a policy which creates the space and legal security for community management of rural water supply and sanitation systems.

Organizations active in the field of community water management include governmental agencies and funds like the Departmental and Municipal Health Services, the National Rehabilitation Plan (PNR), and the Plan for Adjustment of the Sector of Potable Water Supply and Basic Sanitation (PAS). Non-governmental organizations (NGOs) include the National Institute of Health (INS), the Provincial Coffee Growers Committees, the Centro Inter-Regional de Abastecimiento y Remoción de Agua (CINARA), Foster Parents Plan (FPP), and the Public Services Cooperatives.

Although governmental and non-governmental agencies may take different approaches, they both see the administration of water supply systems, which includes operation and maintenance, as a community responsibility. Other activities, such as choice of technology, planning, design, construction, management of the catchment area, monitoring and control of the water quality, community mobilization and training are considered by the government agencies as their exclusive responsibility. NGOs see these as a shared responsibility which gives the communities the power of knowledge and helps them control and sustain the local systems on their own.

Formalized by law, the Administrative Water Committee is the main community organization which agencies encourage to manage water supply systems. Several organizations promote the participation of women in community water management organizations. Although functions held by men prevail, women have obtained a larger share in the management of water services.

A case study on the village of Ceylan shows strengths and weaknesses in an existing community-managed water supply and sanitation system. Problems caused by the low level of socio-economic development call for appropriate technologies, operation and maintenance. Other topics that have been identified important for further development are water source protection, increased credibility of local management organizations, capacity building, supply of materials, better coordination, credit and support services, and gender.

Acronyms and abbreviations

AT-PAS	Technical Assistance Plan for Adjustment of the Sector of Potable Water Supply and Basic Sanitation
CINARA	Centro Inter-Regional de Abastecimiento y Remoción de Agua
COP	Colombian Peso
CORPES	Regional Planning Councils
DIGIDEC	Ministry for Local Government
DRI	Co-Financing Fund for Rural Loans
FINDETER	Ministry of Finance
FPP	Foster Parents Plan
INPES	National Institute for Special Health Programmes
INS	National Institute of Health
NGO	Non-Governmental Organization
O&M	Operation and Maintenance
PAS	Plan for Adjustment of the Sector of Potable Water Supply and Basic Sanitation
PNR	National Rehabilitation Plan
SENA	National Service for Adult Learning
UNICEF	United Nations Children's Fund
USD	United States Dollar

The rural water supply situation

Colombia is located in the northwest of Latin America, between the Atlantic and Pacific oceans. Its population was 36.2 million in 1994, of which 73 percent lives in urban areas and the remainder (27 percent) in rural zones. One-third of the population lives in the four large cities. Nearly 38 percent of the total population lives in communities with 12,000 people or less.

In hydrological terms, Colombia is the ninth richest country in the world and has enough surface water for its needs. However, coverage and quality of water supply and sanitation services are inadequate. In 1993, the average coverage figures for piped water and sanitation were 76.4 percent and 63.4 percent respectively. But in the rural zones these figures are 44 percent and 19 percent. An increase to 66 percent and 40 percent by 1998 is planned. This leaves over 8.5 million people without piped water and 13.2 million without a sewerage system. Coverage is low; when compared with countries having the same per capita income the figures should have been 83 percent and 70 percent. Moreover, regional variations are large and services are concentrated in the central parts of the country. Only 16 percent of the water supplies include full treatment systems to ensure bacteriologically and chemically safe drinking water.

The Andes zone communities have piped gravity water supplies, most with yard or house connections. Villages and small towns usually have conventional treatment systems; a few have small-scale treatment plants. However, most of these systems have deteriorated, no longer function or are beyond the capacity of the municipalities to run, maintain and manage. Official statistics indicate that more than half of the treatment plants need improvement or conversion to another type of treatment technology more suited to local management capabilities, such as multi-stage filtration. High levels of contamination and turbidity, and sudden changes in raw water quality, limit the application of slow sand filtration as the sole means of treatment. In the plains and coastal zone groundwater is used. The cost of pumping represents a major problem for community management. In the Pacific zone rainwater catchment is used.

A programme which allows for the management and control of the quality of drinking water in the municipalities, provinces and at national level is absent. Also lacking are national or regional programmes for capacity building in operation, maintenance, source management and administration. Generally the contacted institutions were unaware of any gender implications in their work. Little attention has so far been paid to the development and organized introduction of variations in technology to optimize the existing infrastructure and for increasing the efficiency of new investments.

Colombia has therefore fallen behind its water supply and sanitation programmes, with marked differences from one region to the next and between the rural and urban zones. This has serious consequences for the health and the quality of life of its population. Due to the lack of an information system, however, reliable data is hard to come by.

The origin of community-managed water supplies

Community management of improved water supplies has been mainly promoted by the state, going back 35 years to when the programme was first established after the Declaration of

Punta del Este in 1961. Started as special health programmes, community projects were boosted by the creation of a National Revolving Fund of Basic Water Supply and Sanitation. In 1968 the National Institute for Special Health Programmes (INPES) was created and given legal autonomy, its own capital and the delegated responsibility for the implementation of the national plan for basic water supply and sanitation for communities of up to 2,500 inhabitants (Decree 470/68).

The programme launched its community participation activities through the Committees for Communal Action (councils), which had been created in 1958 by the National Front as a means of pacifying the opposition party. But the programme also stimulated the formation of administrative committees for rural water supplies and sewerage systems.

In May 1974, developments were formalized with the publication of the Regulations of the Administrative Committees. They read: 'Autonomous entities charged with the administration, operation, maintenance and improvement of the water supplies and sewerage systems constructed by the National Programme of Basic Rural Sanitation'. In 1975 INPES was renamed INS, or National Institute of Health, and the programme expanded to communities of up to 5,000 inhabitants (Decree 671/75). Four types of administrative committees became possible, depending on the size of the schemes: rural, regional, associated and head of municipality. The size of the committees was increased to four persons, of whom two were from the community.

With the administrative reform of Decree 77 of 1987, the responsibility for obtaining loans for water supply and sanitation services was delegated to the municipalities. The National Constitution of 1992 and the Law on Public Domestic Services (Law no. 142/94) ratified this change. The new constitution gave formal recognition to democratic institutions which favour community participation in various aspects of life at the local, regional or national level. Article 365 of the constitution stipulates that the state can directly or indirectly give loans for public services to organized communities, but retains general responsibility for control and supervision of these services. The law presents three options for organizing public services: by the state, by the private sector and by communities.

The constitution also recognizes that community enterprises enjoy a particular status, where the nature and ownership of profit is fundamentally different from the private sector. Such differences are also recognized internationally.

Nevertheless, the new Law no. 142 of 11 July 1994, which regulates public services of water supply, sewerage, hygiene, electricity, gas and telephones in rural areas, pays little attention to the question of loans for water supplies. It treats water supply in rural zones and small towns in a marginal way, but allows organized communities to pursue and constitute their own enterprise for public services and gives a constitutional base for loans for public services to organized communities.

In the formulation of the Community Development Plan of 1992-1994, the Ministry for Local Government (DIGIDEC), showed the new spirit of the constitution. In this plan communities have a distinct identity based on a particular place and a group of human beings responsible for their own development. The dynamic element of the community concept is organization; it is this element which frees the potential for participation and development in a community.

Participatory democracy takes a concrete form when the community organizes itself into local institutions. It gives local management with new autonomy, in the sense of having collective support, which occurs when the members of the community participate democratically in the decisions of the community organizations. This whole context creates an important space in which to seek alternative models for organizing community water supply and sanitation services.

Although not very explicit, the state has formulated a policy which creates the space and legal security for community management of rural water supply and sanitation systems. Implementation however, is sometimes slow. Also, in many zones of the country it is still very hard to get legal recognition for the water management organizations of rural communities and many of them function without legal status. There are numerous reasons: bureaucracy, delays in bestowal of legal status, the inappropriateness of policy, lack of interest by the community and in many cases lack of knowledge of procedures by the state itself.

The institutional responsibilities for the sector can be divided into four major sections: the construction and operation of the works; financing of the works; the planning and technical assistance, and the regulating norms. Construction, operation and maintenance are the responsibility of the municipalities themselves, which may involve the private sector; organized groups (communities) may do the same. Most of the schemes are built through contracts with the private sector.

Financing may take place at three levels of the administration. The state continues to stimulate investments in the sector through long-term credit and co-financing with non-reimbursable funds to the municipalities. FINDETER (the Ministry of Finance) stands for an important part of the credit and has a Fund for Co-financing of Water Supplies. The provinces may finance projects when they have financial instruments to channel funds to the sector, or through provincial loans. The municipalities finance schemes with their own funds and through credit or parallel financing mechanisms, mainly through the transfer of resources by the state.

The design of regulatory norms, the monitoring of their compliance, technical assistance and sectorial planning fall under the Ministry of Development. The department in charge is the Unit for Drinking Water and Basic Sanitation of the Vice-Minister for Urban Development and Municipal Equipment. The Commission for the Regulation of the Drinking Water fixes the norms for quality and efficiency which determine the tariff formulas, and sets the basic requirements for the operation and maintenance of the water supplies. Its decisions are evaluated by a Consultative Committee of which the ministries of Development, National Planning and Housing form part. A special unit will be established in the Ministry of Development to monitor water services. Its initial task will be to check compliance with the norms regulating the sector with respect to treatment of users, information and accounting systems, allocation of subsidies, financial management, information to the public and fulfilment of technical requirements of the schemes. Water quality control will remain under the Ministry of Health.

The planning will be developed by the Ministry of Development according to the national policies on housing and urban development and the plans of the Regional Planning Councils (CORPES). They will include coverage targets, systems of co-financing, definition of

priorities for investment and determination of sources and means to achieve the set objectives. In addition the Ministry will be expected to promote the technical and administrative development of the sector, including plans for sectoral capacity building.

In this way the new institutional set-up of the public administration of the sector unites the different functions: execution and operation by the municipalities; financing by all levels; regulation, control and planning in the Ministry of Development and technical assistance at the national, regional and provincial levels.

Institutions promoting community water management: continuity and change

In general, both governmental and non-governmental institutions are involved in the implementation of projects for community-managed water supplies, at national and regional levels.

Community management of rural water systems goes back quite far in Colombian history and dates from the time before the state undertook the provision of loans for these services, during the 1950s. Some private institutions like the Provincial Committees of Coffee Growers, and some international NGOs, also promote community management of services.

Between 1979 and 1987 different entities were charged with the execution of rural works. These included the National Institute of Health, which through its provincial health departments carried out the DRI-PAN Programme, a rural development programme which included the construction of community-managed water supplies; the National Plan of Rehabilitation; the Regional Autonomous Corporation of Cauca; Provincial Committees of Coffee Growers and other organizations directly related to the sector. In 1987, and because of various problems in the sector, the national government began a process of restructuring. This led to:

- the decentralization of the sector and devolution of responsibility for water supply and sanitation to the municipalities
- a vigorous reform in 1988 entitled Plan for Adjustment of the Sector of Potable Water Supply and Basic Sanitation (PAS)
- an institutional change in 1994 whereby the Ministry of Development through its Direction for Drinking Water and Sanitation assumed the ultimate responsibility for the sector, with the exception of monitoring and control of water quality, which remained under the Ministry of Health.

The changes mentioned above brought about closure of the National Institute of Health (INS) and the redistribution of the rural sector's responsibilities through different national, departmental and local institutions. However, INS's philosophy of community participation, as well as the organizational community schemes, have been upheld. The same National Plan of Development (1990-1994) established that in order to attend to rural zones, municipalities and departments they would enhance the Basic Rural Sanitation Programme. This management structure, that originated in the former INS, still combines municipal and departmental funds with community resources for the funding and execution of projects. The administration of the projects was charged to Local Management Boards (Juntas Administradoras Locales). Thus, even though INS has not existed since 1986, its forms of community organization and community working schemes continue to exist.

Government Institutions

Departmental and Municipal Health Services

Since the reforms were introduced, the principal public institution involved in community-managed water systems is the Ministry of Health, through its Departmental (Provincial) and Municipal Health Services. The services exist in all provinces and most municipalities. The number of rural communities covered by the service is given in Table 1.

Table 1. Rural communities with a water supply under the National Health System

Institution	No. of communities	Population
Departmental Health Services	2415	1,395,000
Municipal Secretariats	465	416,000
Total	2880	1,811,000

The type of technology used depends on the environment. In mountain regions such as Nariño gravity systems with house connections are used, sometimes with conventional treatment plants. In a plane province such as Valle, groundwater is pumped to reservoirs for distribution by gravity, with either slow sand filtration with pre-treatment or small-scale treatment systems. The water is mainly for domestic use, although some communities also use it for mixed farming. The systems are usually small. They have a caretaker who looks after maintenance and repairs of the intake, the sedimentation tank, the transmission main and distribution net. The Administrative Committee handles the financial aspects, paying the caretaker and acquiring basic materials. The National Health System leaves the selection and payment of local water supply personnel to the community organization.

The health institutions choose the communities where they will build an improved water system on the basis of epidemiological criteria. Usually they also ask for a contribution and a token of interest from the communities. Agua Pura, a Ministry of Health in Valle project has as criteria a wider distribution of coverage over the regions and a community request for a loan for the project.

Their procedure is to:

- establish contact with the community and its leaders
- include the project in the agency's proposal
- send a technical team to do the topographical and other studies for the design
- discuss with the community its contribution, participation and organization
- accompany the community in its process of participation and organization.

The Sectional Health Services are the main implementors of water projects at regional (provincial) level. In the case of Valle province the implementing group, which works with the health service, is Agua Pura. Implementation of rural water systems is the same as under the former INS programme.

Two NGOs have relatively large programmes at provincial level. They are the International Foster Parents Plan, which works in Tulua in the central part of Valle, and the Public Service Cooperatives in the province of Santander.

Programme of Sectorial Adjustment (PAS)

PAS, now called AT-PAS (AT = Technical Assistance) was established in 1988 to restructure the water and sanitation sector. In 1994 it worked in 76 localities in all parts of the country with a total population of 170,000. Its funds are handled by FINDETER, the organization in charge of the programme for financing of territorial development. FINDETER provides financing for improved infrastructure to municipalities and provinces. The type of system built depends on the physical-geographic conditions, but most are conventional piped systems with conventional treatment plants. The systems are sometimes managed by local water committees, but these must then have representatives from the municipality on the committee, and the municipality will select the staff for operation and maintenance (O&M). The projects are chosen according to national priorities. They must be present in a project portfolio and be selected for action. There is very little community involvement other than a small element of community labour.

National Rehabilitation Plan (PNR)

The plan was created in 1986 to provide a better infrastructure in areas of unrest, but is now serving the poorest and most marginalized zones. At present it covers 400 municipalities. The number of water systems built is not known. Implementation involves contributions from the community and a community organization is established to manage this contribution and the resulting water supply system. Projects can be requested on the basis of need and poverty by the municipal administration, but also directly by the population. There is little choice of technology: most systems are gravity supplies without treatment and house connections.

Co-Financing Fund for Rural Loans (DRI)

This is the former programme for Rural Integrated Development. It has been implemented throughout the whole country. The fund has no direct implementor. Funds for rural water supplies are funnelled to the National Institute of Health (now: Provincial Health Services) and other organizations, such as the Committees of Coffee Growers. The procedures for community participation and management are those of the concerned implementing agency.

Non-governmental institutions

Centro Inter-regional de Abastecimiento y Remoción de Agua (CINARA)

CINARA is an independent foundation attached to the University of Valle in Cali. It works at national level as well as in neighbouring countries. CINARA has so far been involved in 70 projects for community-managed water systems in rural areas and 12 projects in the peri-urban zone of Cali. The total population involved is some 212,000 people. Most systems are in the Andean zones and comprise piped gravity supplies with house connections and community-managed water treatment plants based on slow sand filtration and pre-treatment, technologies on which CINARA has done much research. The selection of communities in which CINARA works is determined by the criteria of the programme under which the work is financed. The systems are operated and maintained by a caretaker, or a caretaker and

operator. Locally elected water committees, called Administrative Committees, select and employ the local staff and administer the water service.

Provincial Coffee Growers Committees

Growing coffee is the principal agricultural activity in Colombia and the country's second largest export. A significant part of the development effort in Colombia has gone to this crop. The way in which the coffee growing sector has been organized is worthy of imitation, since it has undeniably contributed to a better quality of life in the coffee communities.

Coffee is grown in the Andean zone at an altitude of between 1,500 and 2,000 m. The zone runs from the southernmost province of Nariño to the north-eastern provinces of Santander and cuts through 14 provinces. In each province a committee exists which becomes part of the National Federation of Coffee Growers. In time, committees of coffee growers will also be formed at the municipal level.

A part of all coffee export revenue goes back to the producers, but another part goes to the Provincial Committees of Coffee Growers, which are supposed to use the money for improving the infrastructure of the coffee growing areas: roads, schools, health centres, water supplies and sewerage systems. Because of these funds the institution is the second largest implementor of water supply systems in the country. Often, the investments in water supply are made jointly with the provincial or municipal health services.

So far, water supplies have been built in some 1,900 communities with a total population of some 1 million people. Most systems are piped gravity systems with house connections for domestic use only. Chlorination is the most common water purification method, followed by multi-stage biological filtration. Sometimes, pre-treatment or slow sand filtration are also used. The most usual manpower is a part-time caretaker who is also a farmer or day labourer. The Administrative Committee administers the funds. Projects are initiated by the leaders of the local coffee growers, who send their requests to their representatives on the Provincial Coffee Committees. The committees allocate the projects according to the established priorities, contributions received from communities and internal power relations.

Foundations

Although most foundations in Colombia work in the urban environment and are dedicated to other sectors, such as small enterprises and commerce, there are a few organizations which support rural water supplies on a small scale. Organizations working in Colombia as a whole include the Carvecal Foundation, the Social Foundation and the Foundation Compatir.

Foster Parents Plan

The Foster Parents Plan (FPP) gives financial support to community projects which improve the living conditions of poor children, such as schools, health centres and water supplies. At present 315 communities comprising 42,300 people have water supplies constructed with financial aid from FPP. The systems either use surface water by gravity or pump up groundwater and distribute the water to home taps. Use is mainly domestic but cases of combined domestic and productive use occur. Where treatment is included the system used is conventional and often combined. The majority of systems do not have treatment and are run by a local caretaker and an administrative committee. The initiative comes from the

community, which registers with FPP, sends in its proposal and budget and forms a local planning committee. FPP asks for voluntary labour and contribution of materials for the construction and sends the funds for the non-local investment costs directly to the responsible community organization. An adequate level of community organization is a precondition, as this institution is, with help from FPP, directly responsible for the management of the funds during the construction of the works. An additional selection criterion may be the risk of disease.

Public service cooperatives

In the south of the province of Santander the public service cooperatives are an important example of community capacity building for self-management of public services. The philosophy and organization of this movement resembles that of the cooperative movement with a vertical and horizontal structure, with a central cooperative, a university, training centres on forming and running cooperatives, a loans programme, etc. This organizational system gives the member cooperatives access to training, financial and technical assistance and other means which enable them to fulfil their function of providing social services. So far the member cooperatives have constructed five water supplies for a total of 10,000 people. A weak point is the absence of any technical training for managing the water supplies, such as on operation, maintenance, monitoring, supervision and control. The only training given concerns the cooperative system dealing with administration and financial management.

What role for the agencies, what role for the communities?

Division of responsibilities and decisions

An engineering project for the construction of a water supply has six major stages: planning, design, construction, operation, administration and monitoring. During this process a relationship is established between the community and the agency which allows for a division in responsibilities and tasks before, during and after the construction. The government institutions and non-governmental organizations interpret community management in different ways. The government institutions act principally as organizations of planners which take decisions, while the non-governmental organizations see the work as a way to strengthen civil society, with popular participation as the keystone of the project.

As a result, governmental implementing agencies consider the choice of the technology and the planning, design, construction and monitoring of the works their responsibility. The NGOs see these activities as shared responsibilities between agency and community, with each one fulfilling a specific but complementary role in the development of the project.

Nevertheless, both governmental and non-governmental agencies see the administration of the system, which includes operation and maintenance, as a community responsibility. Only the Sectional Health Service in Valle considers operation, maintenance and administration a shared responsibility of agency and communities. The latter is a leftover of the time when the programme was still carried out by the National Institute of Health and the institute's promoters were the third member, next to a locally-elected president and treasurer, of all community water committees.

Once the construction is completed the agencies assume responsibility for technical assistance. The community's role is that of co-worker so that the system will be managed;

only in CINARA has a training programme been developed which demystifies the technology and gives the means of knowledge so that the community can take up a management responsibility.

Other activities, such as the management of the catchment area, monitoring and control of the water quality, community mobilization and training are considered the exclusive responsibility of the government agencies, while the NGOs see these as a shared responsibility for which participatory techniques are required which give the communities the power of knowledge and help them control and sustain the local systems on their own. The communities get the responsibility to administer, operate and maintain the new water system. The support they get from the institutions is very strict as far as administration is concerned. The main tasks include bookkeeping and updating fees, with an emphasis on maintaining a sound financial footing. The organizational, managerial and leadership aspects receive little attention. The programmes for operation and maintenance are sufficiently elaborate to provide the required working tools. However, the whole training approach fails to integrate the technical, administrative and social aspects into one comprehensive system.

Not all community organizations which manage the local water supply have legal status. In small communities and in certain areas in the country problems occur, because of lack of knowledge about the legalization process in the community organizations as well as the agencies. With the arrival of decentralized administration, the communities are interested in managing their own public services, but they are afraid of doing so because they consider that they lack the know-how. Another important aspect is that they still have to get used to being autonomous in a country where administration has always been centralized. Both the governmental and non-governmental agencies still have to elaborate an action programme which permits the creation of a type of autonomous organization, which has an integral vision of the water supply system and links good administrative and financial management with a technical and social training programme that involves the users and the other institutions in the sector.

Local management organizations

The Administrative Water Committees are the main form of community organization which the agencies encourage for managing the community water supply. This type of organization has been introduced under article no. 014 of May 1983 by the National Institute of Health (INS) in their National Programme for Basic Rural Water Supply and Sanitation, to help shape community participation. This INS decree lost its vigour when the new national constitution was adopted in 1991. Its 365th article establishes other organizational bodies to administer public services, without, however, excluding the administrative water committees. Decree no. 142 of July 1994 turned the 365th article into law. As a result the agencies continue to promote the administrative water committees, but also experiment with other administrative models, while considering that the former system has generally given good results.

According to the INS decree an administrative committee consists of a representative of the communal Action Committee (i.e. the local council), two representatives of the users chosen in a general assembly and one representative of INS. The term of office is usually two years, after which the president has to call for new elections. In many communities other functionaries have been added, such as voting members and a secretary; where administration

of the water system is combined with other services, the post of administrator has been created. Although the administrative committees are the prevailing model, some institutions, such as the Provincial Health Service in Nariño, promote a municipal administration as an option. In municipalities with fewer than 5,000 inhabitants the establishment of committees is being promoted. Usually the mayor presides, while the community's health promoter is the auditor. The other members are chosen by the users during a general assembly.

Because of political differences which often arise between the mayor and the other committee members, some communities have decided to exclude municipal functionaries from a position on the administrative committee and to include only directly elected members and the health promoter. The latter is the most common solution in smaller communities and in rural areas.

In Valle, the Health Service and CINARA promote administrative committees, whose members are all chosen directly by the users. In a few cases – like that of Ceylan, presented in the next section – these committees have developed into a small community enterprise for public services. Wherever a water management committee is already present, the sector institutions have to respect this organization and if necessary take measures to improve or strengthen it.

Some agencies, such as the municipal health services, FPP and the Committee of Coffee Growers consider it important that a management committee be formed before the water supply system is constructed. For others, such as CINARA and the Agua Pura programme, the formation of the committee that will manage the system has to take place during the execution of the works. These last two agencies believe that it is important to revive the organization and participation of the community in the establishment of the water supply service before creating any legal entity to administer the service. A project committee or community support group elected by the users is promoted in an effort to integrate leadership and community.

Gender aspects

FPP, the Committee of Coffee Growers, the municipal health service and CINARA promote the participation of women in the community organizations for water management. About 30 percent of the members of local water management organizations are women. An exception are the water committees of FPP, which have been particularly vigorous in introducing women in water management and where 80 percent of the committee members are women. Table 2 gives the division of management functions by gender.

Table 2 The division of management functions by gender

Function	% Men	% Women
President	80	20
Administrator	90	10
Treasurer	50	50
Auditor	70	30
Voting member	60	40

Although functions held by men prevail, women have obtained a greater share in the management of the water service. Women are having fewer children in both the rural and urban areas, alongside a greater participation of women in education and paid work. Most water committees have at least one female member and she may be one of the most active participants. Women are present at the meetings and take part in meeting decisions, but at the moment that their representation on the committees is sought, they may prefer not to take part. Having already accumulated multiple tasks as mothers, housewives and often day labourers or employees, they may not wish to add one more.

However, many water committees have women treasurers because they have experience with household management. They are trusted as financial managers. In many communities the participation of women in the management of the water system is limited because of the time they need for household chores. However, cases also exist where this function on the administrative committee is nominally held by a man, but it is the man's wife who actually does the work within the organization.

Communication

To communicate with users the administrative committees use a mixture of formal meetings, loudspeaker messages, flyers and bills. CINARA is the only organization which explores alternative forms of communication and trains the local committees in the use of these techniques for a more effective contact with the users. Its activities include workshops for painting, drama, games, picture-making and wallpaper displays. The techniques serve to clarify the causes of existing conflicts and to help users to arrive at consensus in the general user assemblies. The decisions themselves are then taken by majority vote.

Payments for operation, maintenance and administration

In the majority of water projects the community takes part in covering the costs of operation and maintenance by means of a water tariff. Often the communities have to cover the full amount of such costs. But there are communities which cannot cover the costs and need help, through subsidies or cash transfers. Two types of subsidy are current: direct subsidies financed as part of the loan agreement by the municipality or the state, and cross-subsidies from those with more income to those with less, by means of a differential tariff. However, such financial arrangements are far less common.

Case studies show that rural tariffs generally vary between COP 100 and COP 1,500 per household per month, which equals USD 0.10 to USD 1.50. Most tariffs are monthly, some are collected once every two months. The way of payment can vary: at a local office after receiving the bill, by door-to-door collection with a receipt given by the caretaker, informally when meeting on the road and, quite often, in the home of the treasurer or other member of the committee. Generally the bookkeeping and fund collection system is deficient, which is one reason for the high incidence of arrears in payment. The head of the family - a man or a woman - is usually responsible for the payment, but the actual act of paying can be done by anyone, man or woman, youngster or aged person.

Wherever support agencies are involved multi-tiered payment systems are common, i.e. not all households pay the same amount. Usually tariffs vary according to usage - domestic, commercial or industrial. But in many programmes a flat tariff is common.

The decisions on the local payment system are generally made by the communities themselves, on the basis of a general consensus, in order to avoid conflicts. In recent years, and under the influence of international criticism and the need to reserve its finances for investment costs, the state has increasingly pressurized organizations to cover all running costs and to raise the water tariffs as necessary for that purpose. The recent Law no. 142 on public services supports these efforts with the same arguments. The investment costs are generally fully paid by the implementing institutions from outside the community. Only in communities where the programme of Agua Pura is active do the tariffs include a loan recovery element for the capital costs of between 10 and 20 percent. However this amount does not go to the financing agency, but is directly managed by the community organization.

It is typical in communities that lack banking or other financial institutions for the treasurer to simply keep the money in his or her home. This often makes for rather informal accounting. The treasurer uses the money to pay any water system costs as the need arises. The treasurer does the accounts, which are checked each month by the president; even though some deficiencies exist, there is a sense of discipline and responsibility with regard to the financial aspects.

Skills and knowledge development

Community involvement in the different project phases adds to the efficiency and sustainability of the water systems over time. Community participation should therefore be envisioned from the beginning of the project onward, and should include some training in the technology that will be implemented. Agencies such as the Municipal Health Service, FPP and CINARA do involve the community in planning and decision-making. The training needs are decided jointly by the agency and the community; only the Committee of Coffee Growers decides unilaterally on training needs without consulting the community.

The locations where the training is held are also chosen together; usually it takes place within the project community, or a number of community water management organizations will agree on a single location. Although both men and women can take part, a predominance of male participants is observed, especially in the case of operation, maintenance and caretaking. Most training programmes consider the following aspects:

- ***O&M of the systems, with or without treatment***

This course is offered by the various agencies, with the exception of the Committee of Coffee Growers. Normally all members of the local water management organization will take part, but the men participate more actively than the women, and the most active participants are the caretakers and operators.

- ***Monitoring and control of water quality***

The only institution offering this training is CINARA. All members of the water management committee take part, women and men. The secretariats of the Municipal and Provincial Health Services also offer this course to their health promoters, as these agencies are formally responsible for the preservation of water quality in the country.

- ***Administration of water supply systems***

Plan International, Agua Pura, Cafeteros and the Provincial Health Institute of Nariño are among those offering their own courses in administration and bookkeeping. The level and intensity of this training is, however, low. The Municipal Health Service contracts other

organizations to assist them in this training, such as SENA, the National Service for Adult Learning and other specialized training institutes.

- *Social control*

The process of social control allows the communities to exercise control over certain aspects of the works, such as the use and quality of materials. In the programme of Agua Pura, in which the Provincial Health Service of Valle and CINARA take part, this is seen as an important field for community capacity building. The training is usually given to those members of the community with experience in civil works, such as supervisors and labourers in the building industry. They usually form a community committee for social control during the execution of the works.

- *Caretaking*

In the programmes for Agua Pura and the Secretariat for Municipal Health in Valle courses for scheme caretakers and health promoters are offered.

The most common training methods are quite conventional, relying on lectures, video presentations and practical exercises. The Committee of Coffee Growers and the Provincial Institute of Health in Nariño use only conventional training methods. However, Plan International and the Agua Pura programme combine conventional techniques with other elements, such as games. CINARA uses especially drama and other art forms (painting, music) as well as group dynamics as learning methods.

The trainers are mainly engineers and professionals in administration. CINARA has introduced teams of social specialists (sociologists, social workers etc.) who work in interdisciplinary training teams with engineers. This approach is now being replicated in the programmes of Agua Pura and the Committee of Coffee Growers. The same institute has also been contracted to do courses on O&M of multi-stage slow sand filters and for a participatory programme of water quality monitoring and control.

Once the systems have been built the institutions continue to give support to the communities in those aspects where further capacity building is needed, e.g. after communities have elected new members for a new term of office in community water management. Only the Institute of Health in Nariño does not continue support, due to financial constraints.

Carrying out community management: monitoring and results

The agencies generally monitor community management after the schemes have been completed. The exception is the Provincial Health Institute in Nariño. During construction, the agencies monitor the investment costs; afterwards they look at operation and maintenance. They also check the books, tariffs and arrears in payments. CINARA is the only agency which carries out the monitoring jointly with the community.

The absence of uniform standards results from a failure to set and enforce general standards, while the organizations which monitor the particular projects do not coordinate their efforts. There is also a lack of monitoring tools to enable the communities to exercise their own control, in quantitative as well as qualitative terms. While some institutions do exercise control, they do so irregularly and without having defined the tasks very well. Also they are

not dedicated to strengthening the communities' management capabilities. The only tool developed so far to help communities do their own monitoring is a procedure to monitor the quality of the water.

An integral vision of rural water supply includes the improvement of sanitary conditions. The agencies report that the majority of community-managed water schemes are in good sanitary condition; nevertheless the disposal of human excreta and wastewater, general hygiene conditions and the collection and disposal of solid wastes leave much to be desired. Coverage is low and alternatives to conventional solutions are needed in accordance with local conditions and the local culture.

The community water management organizations undertake periodic activities to upgrade their systems. As their first strategy they cite meetings for decisions on what steps to follow. This may lead to fund-raising activities or in a small number of cases, to negotiations with agencies, especially those which work with NGOs.

Some communities have been particularly successful in managing their water supply services. One such community, Ceylan, was studied in depth, to know what has been achieved and to identify what factors made this success possible.

Ceylan is located in the province of Valle of the Cauca. It lies at an altitude of 1,350 m and has 500 households comprising 3,000 people. Ceylan belongs to the coffee growing zone and is part of an area in Valle with a high level of agro-industrial development. The standard of living is therefore higher than that of many other rural areas. Ceylan is the seat of the important Departmental Committee of Coffee Growers, which besides giving its support to the community also makes significant investments in its infrastructure.

The most important economic activity is agriculture. The main products are coffee, plantains and bananas. Coffee cultivation requires a lot of human power. The men work as daily labourers. Women are incorporated as seasonal labourers in April, May, October and November. During harvest, the average monthly income is USD 200. In the rest of the year it drops to USD 88. Families in which two members work have a substantially higher income.

Ceylan has three primary schools, one secondary school and a health centre. Respiratory diseases are the most common illness. The Asociación Junta Administradora de los Services Públicos de Ceylan 'Servipublicos' (Association of Public Services) is in charge of the operation and maintenance of the water supply system, the sewer system, garbage collection and the mail service. The association was proposed as an alternative community organization which would manage the services independently. It replaced the public institutions that previously had managed the services very badly. Its managing committee was elected in 1993 and re-elected by the general assembly. The present committee consists of one president (man), one vice-president (woman), one secretary (woman), one voting member (man), and the treasurer (man). The members of the committee receive no salary, with the exception of the treasurer, who is also the full-time administrator. The committee reports to the Junta Administradora, which is in charge of day-to-day management and operation of the services. The latter has a staff of three: the above-mentioned administrator, an operator-plumber and a garbage collector. The water supply was developed in various phases, of which the main ones are mentioned below:

Phase Steps in developing a community water service system

1. piped water supply taken directly from the source
2. construction of a storage tank for untreated water
3. community negotiations with different institutions for the improvement of the quality and quantity of water
4. construction of a water treatment plant based on biological filtration technology in different stages
5. community management and participation in the optimization of distribution nets and the strengthening of the community organization
6. the organization of other public services.

At present the community benefits from a water supply system which consists of a surface water source (La Elvira Creek), an aqueduct that works by gravity from the main water intake down, with a grid, sand trap, transmission main, treatment plant, storage tanks, distribution network and a system for water consumption measurement that serves as a basis for drawing up invoices and the collection of monthly charges. The water service runs 24 hours a day. More recently, the system's management has established contacts with departmental institutions to develop a programme for protecting the water source.

For the elimination of excreta, conventional toilets are used that discharge into a collective sewer system which deposits all residual discharge into the Las Violetas Creek without any treatment. Not all households are connected to the sewer system; households without access deposit their residual water in a trench that goes through the town. Garbage is collected twice a week in a truck operated by one person and is dumped into the Las Violetas Creek. Now the truck has replaced the horsedrawn cart which was used earlier and the garbage is dumped in a sanitary landfill in another city (Tuluá).

The water from the aqueduct is used for the preparation of food, personal hygiene, household chores, laundry, cleaning of pigsties and the watering of small vegetable gardens. The consumption level per house does not exceed 25m³/month, a volume which corresponds with the lowest consumption level established by the Junta Administradora.

The user households pay monthly the equivalent of USD 1.20 for the water service, based on a consumption of 25m³/month, without stratification. A table of additional charges determines the tariff for the consumption of additional cubic metres. Charges for the sewer system are equivalent to USD 0.20, with a similar monthly tariff for garbage collection.

The combined income from the charges for connection and services covers the cost of staff, materials, office supplies and accessories and all further costs of operation, maintenance and administration. The community considers itself the owner of the water supply system and has taken an active part in the optimization of the distribution net, which in turn has increased the community's sense of responsibility for the payment and control of water consumption. The establishment of the public services has strengthened community work and organization and has generated a dynamism that has resulted in the creation, with the active participation of men and women, of community cooperatives and associations of small companies for the sales of their products. Nevertheless in some cases teamwork is limited, due to conflicts of leadership and political disagreements. A summary of strengths and weaknesses is presented on the next page.

The existing community-managed water supplies generally have big problems. Those with relations with government agencies such as the Secretariats of Health in Valle and Nariño have problems with water quality, continuity, coverage and quantity and suffer from conflicts with the community at large. Those communities working with NGOs mainly have problems with coverage and continuity. These are related to the state of the distribution network and the uses of the water.

In local administration and financing the community water management organizations also face important problems: high arrears in payment associated with the low payment discipline and poor reliability of the service, and, due to the low tariffs, a low financial sustainability of

the schemes. When costly repairs are needed, the local management organization often cannot meet its obligations. Financial management is a problem, because there is no local tradition of managing accounts.

Strengths and weaknesses in the management of water supply and sanitation of Ceylan	
Strengths	Weaknesses
<ul style="list-style-type: none"> • the presence of several leaders with external outreach and a strong community orientation • the capacity to consolidate a process of community participation around common objectives of water supply and sanitation services • the capacity of the community to negotiate for the support of public and private institutions to construct and improve the water system • a positive response from public and private institutions in the area • a good record of community organization and participation • a high production backed by the Association of Coffee Growers which allows for adequate socio-economic conditions, invests in infrastructure and stimulates participatory development activities among its member cooperatives • a strong agricultural institute (secondary school) that has educated community members over several generations and has given the area an important level of education. 	<ul style="list-style-type: none"> • both Junta and community do not have an integral vision of the water supply system • the Junta, community and the institutions in charge do not monitor and evaluate the performance of the system and the Junta must exercise better control on operation and maintenance of the treatment plant • technical monitoring, security and control of the treatment plant and of the system in general also need to be improved and local procedures for improving the security and control of the system need better coordination • financial limitations exist on major repairs and new investments in water supply • there is a need to: extend the coverage of the sewer system to 100 percent; extend the collectors up to the final discharge; install a treatment plant for residual waters; purchase an adequate place for the dumping of garbage; and design a sanitary landfill as well as a programme for the classification and recycling of garbage • the health centre needs to be approached to coordinate actions related to water and sanitation, and to improve the exchange of information with the community • the water tariffs are also paying the cost of the other service, particularly the garbage; this limits the use of these resources.

The person most responsible for financial management is the treasurer; the health service of Valle reports that 60 percent of the treasurers are women, a reflection of their honesty and ability to carry out the work. Local personnel are often poorly paid, although this has improved. The payment capacity of the communities is generally low, depending on the type of production; only in the coffee zones is it medium.

Areas and resources for further development

Operation, maintenance and technology choice

The main problem facing the communities in the management of their water systems is their low level of socio-economic development. This affects the water supplies in two ways: by causing financial difficulties in paying for the operation and maintenance costs of the systems, and by making it difficult to improve and expand the schemes.

The low socio-economic level also affects the educational status and the administrative capabilities of the communities. Upgrading of general education should improve possibilities for training and improved administration. In the short run the alternative is to adjust the training to the different educational levels of the communities.

A review of field experiences with community management in Colombia confirms that financing of O&M is a major problem. However, the problem is as much related to the absence of a culture of payment as it is to a low capacity to pay. It is further influenced by problems of water quantity, water quality and reliability of service.

Hence, a necessary pre-condition for improving the rural water supply depends on identifying technologies which are at the same time effective, inexpensive to operate and easy for the community to operate and maintain.

Water resources

A second problem reported by the different agencies is the ongoing depletion of water resources in different parts of the country. Despite the abundance of water which characterizes Colombia, it is becoming increasingly difficult in many zones to safeguard the nearby sources for rural water supply systems. Every time it is necessary to go to farther away, which also increases the costs.

Both agencies and communities are becoming aware of this development and in several provinces they are making the effort to protect the sources. Nevertheless, this awareness has not yet achieved a national status which might give the impetus to launch an ambitious and large scale programme supported by the state.

Credibility of local management organization

A frequent problem is that the community water management organizations have difficulties being accepted and credible in the community. This stems from the fact that many of these organizations are a part of the municipal administration and there is a high degree of scepticism about their worth.

Supply of materials

Handpumps are rarely used for community water systems in Colombia, except on the Atlantic Coast. There are too many problems with supplies. Some products for water purification, in particular chlorine, are difficult to get in many areas or are expensive. A programme for the local production of chlorine based on kitchen salt is under way in CINARA.

Capacity building

Not all agencies are experienced in training or have access to good training programmes. Some, such as the Sectional Health Service of Nariño and the Provincial Coffee Growers Committee in Valle do not have the necessary training materials, trainers and training methodologies. The other institutions also lack basic materials but to a lesser extent. This is the case for the Project for Pure Water and the Municipal Public Health Secretariat in Cali.

The communities, for their part, are willing to undertake the management of their own water supplies, but in a few cases the agencies oblige them to do so. Unfortunately the help

available from governmental and non-governmental agencies is too limited to cope with the number of communities which need assistance.

Coordination, credit and support services

Sector reform calls for better coordination between the agencies with respect to the support, training and technical assistance they give to the communities. In any case community organizations in Colombia cannot get credit from the state, but must go through the municipal administration to get financing.

Only a few institutions offer technical advice and help for drinking water systems, and these are concentrated in those areas where demands for their services are high and well paid, that is, in the large cities. The rural sector is deprived of such companies. In the same way the country lacks an adequate training programme which coordinates and links those institutes such as SENA, the National Service for Adult Learning, which have the infrastructure, resources and know-how for improving the situation of the rural water supply systems. The same heterogeneity which characterizes the development of the country can be found in the concentration of possibilities for assistance and support for communities which manage their own water services. The majority of such possibilities is concentrated in the centre of the country; the south, north and part of the east have fewer.

Gender

The study confirmed that the majority of the agencies have no well-defined gender strategy. However, tacit recognition of women's potential to contribute to water resource projects was found in the Municipal Public Health Secretariat of Cali, the Foster Parents Plan and CINARA.

Scope and leadership for community water management

In general all institutions mentioned before have adopted community management as the basis for rural water services. The legal and political climate has created an institutional space and environment where community participation and management are possible. However, the lack of coordination, along with the process of decentralization in the country means that the sector has fragmented the decisions and responsibilities without the necessary accompaniment of a strong lead agency. The recent restructuring of the sector in 1993 and 1994 has not permitted that a single, central institution lead and develop a policy at national level.

The following three important sector institutions have not yet been contacted for this study: Co-Financing Fund for Rural Loans (DRI), National Plan for Rehabilitation (PNR), COOPCENTRAL in Santander and the National Federation of Coffee Growers, which is formed by representatives of the provincial committees of coffee growers, but has difficulties in representing all coffee growers cooperatives because of the great autonomy of the provincial branches.

The non-profit sector in Colombia is not very active in the rural areas, but the non-governmental organizations are very strong in the country and their interest should be developed.

The United Nations Children's Fund is actively involved in the rural sector and together with CINARA, is now making a diagnosis of community water problems in the basin of the Paez River as a result of flooding in 1994.

Most of the above mentioned groups have shown an interest in establishing a reference group. Nevertheless, the group will have to be convoked at a higher governmental level. The aim is to institutionalize water project management within each community, so that decisions are arrived at locally by people having a long-term interest in their outcome. Experience has shown that goodwill can help launch a programme, but is never enough to sustain it.

Chapter 3

Community Management Report - The Case of Guatemala

Carlos Romeo Siman and Fabian Gonon Ortiz

Translated by Thomas Hart

Summary

The Ministry of Public Health and Social Assistance is the most significant actor in the water sector, representing almost two-thirds of the total rural water investment in the country. Other governmental agencies active in drinking water and sanitation are the Presidential Secretariat, the Urban and Rural Development Office, and the municipalities. Furthermore, Guatemala has over 200 national and international Non-Governmental Organizations (NGOs) implementing rural water supply projects, including United Nations Children's Fund (UNICEF), Cooperation for American Relief Everywhere (CARE), World Vision, Institute for the Economic and Social Development of Central America (IDESAC), World Doctors, CARITAS, Foster Parents Plan, and Agua del Pueblo.

The main technology used in rural communities is the gravity piped water supply system. Water supplies are often inadequate, however, due to leakage, population growth and construction failures. The main cause of contamination is poor handling and storing of drinking water. Less than half of the population has an excreta disposal system, and a large part of the existing systems – usually traditional pit latrines – is not being used due to various deficiencies or unhygienic conditions.

There are no laws governing community management of water supply systems in Guatemala. Although all agencies subscribe to the principle of community management such as the one drawn up by the National Plan for Water Supply, in reality this is often reduced to contributions of labour and local materials. The few organizations which actually promote community management usually try to include the local population in funding, decision-making in planning and design, operation and maintenance, source protection and training.

To date there is no entity in charge of community water supply, and no monitoring and evaluation is being done. Hence, there is no information on the performance of community-managed systems available, although it is evident that neither source protection nor water quality are being guaranteed. A number of major institutional and local problems stand in the way of effective community management of water supply systems. These include a shortage of water, legal problems with source ownership, lack of skills training, limited financial resources and limited institutional capacity.

Acronyms and abbreviations

ADP	Agua del Pueblo
CARE	Cooperation for American Relief Everywhere
DSM	Environmental Sanitation Directorate
FIS	Social Investment Fund
FONAPAZ	National Peace Fund
IDEAS	Centro de Investigación, Documentación, Educación, Asesoramiento y Servicios
IDESAC	Institute for the Economic and Social Development of Central America
INFOM	Technical Promotion Institute
NGO	Non-Governmental Organization
SHR	Secretariat of Hydraulic Resources
UNEPAR	Execution Unit of the Rural Piped Water Programme
UNICEF	United Nations Children's Fund

Introduction

This report deals with community management of rural water supply in Guatemala and has been divided into four sections. The first section describes the main characteristics of the country and the water supply and basic sanitation problems in the rural communities. The second section examines the characteristics of the institutions and organizations that work in the rural water sector in the country. The third section gives an overview of community participation in the water supply process and its main resources and obstacles. The fourth section shows the main problems found in community management and also the institutional constraints and reasons why we have been unable to work in a team approach.

Our investigation was done in the following way. First a bibliographic review of the main institutions that work in rural water supply in Guatemala was carried out. Most of our statistics and graphics came from this study. The key personnel of the institutions were then interviewed for purpose of learning about their experiences with community management. Information was especially sought about women's participation and the source of funds that the communities handle. Added to this problem was Agua del Pueblo's (ADP) lack of experience in field investigation. For this reason we looked for support from other agencies in the country.

This report was made with the desire that our experiences in Guatemala should help others working in the water supply sector.

The country and its water and sanitation situation

General characteristics

Guatemala is located in Central America and covers 108,889 km². It is divided into 23 departments, 330 counties and 22,000 rural communities.

The estimated population for 1993 was some 10.02 million inhabitants. Annual population growth is 2.8 percent. The rural population is estimated at 68 percent; of the total of whom 66 percent are indigenous. They belong to 23 ethnic groups, each of which speaks its own language.

The problems of the rural communities have been linked to historic developments, stemming from the Spanish Conquest.

Land distribution is a major problem. Official data show that 64.9 percent of the arable land is concentrated in the hands of only 2.2 percent of land holders while 89.7 percent of the family farms work a mere 16.4 percent of the land.

Besides their size, the small holdings are usually located on the worst land and suffer from loss of fertility and soil exhaustion due to over-exploitation. Production is geared towards the internal market, with such crops as corn, beans, green beans, and pumpkin. In the small holdings traditional technology is still used, and yields are low.

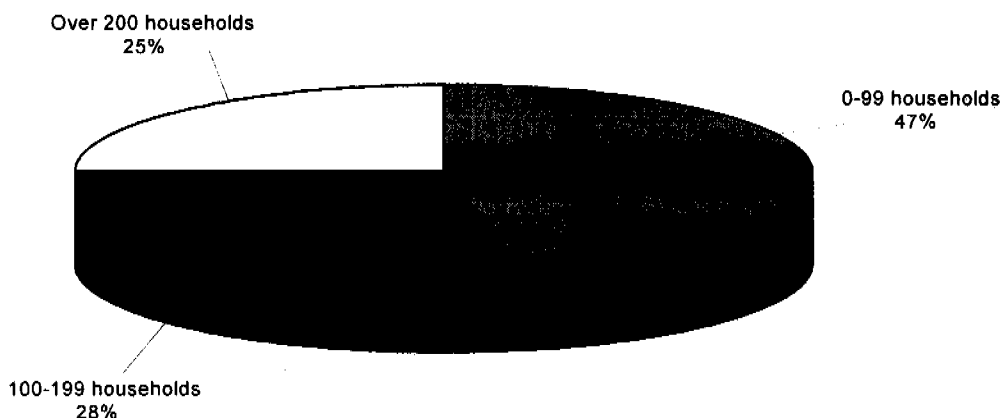
Most of the small holdings are located in the departments of Totonicapan, San Marcos, Solola, Las Verapaces, Quiche and Huehuetenango, all are situated in the Guatemalan

highlands. They represent up to 95 percent of the holdings, and continue to grow even smaller due to an ongoing division process.

Farmers with little or no land are forced to work for the large landowners. They are often exploited, living in inhuman conditions and earning a salary of between USD 0.64 and USD 1.6 per day.

As a result of this agricultural structure, the country is polarized. A small minority of landowners own the main sources of production, control most capital and enjoy all the benefits of culture and science as well as possessing large foreign bank accounts. The majority of the population, up to 84.2 percent of the total, have little wealth and live in poor to miserable conditions. The high mortality rate among adults and children is mainly due to gastrointestinal and infectious diseases, a situation made worse by overcrowding and unhygienic housing. Families with up to six members live in one or two rooms made from mud bricks.

Seventy-eight percent of the Guatemalan population is illiterate. In some districts of the country this percentage is as high as 95 percent of the population. Levels of unemployment and sub-employment are as high as 40 percent. Rural communities are generally small in population size (Figure 1.)



Source: Water and Sanitation in Rural Areas of Guatemala. UNICEF, 1990

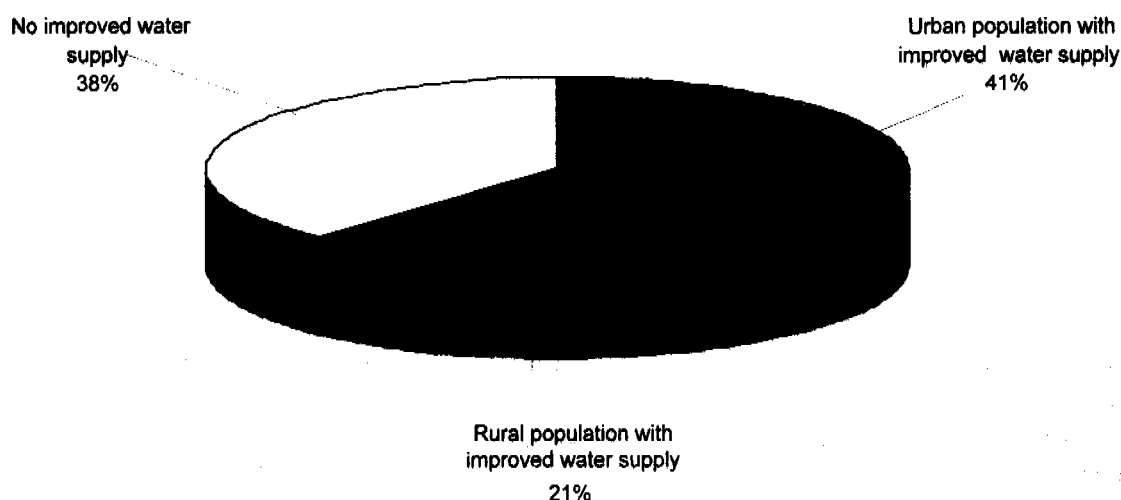
Figure 1: Size of the rural communities in Guatemala

Government repression in the earlier years has weakened social and political organization in the rural areas. Historically, people in the highlands, especially those in the rural areas, have their own organization and a deep sense of family unity. Life is structured around a system of elders, councils and community committees that have survived, despite government repression and organized offensives by external groups. Nevertheless, the interventions by groups representing external institutions and interests have brought considerable conflict into local affairs.

Improved water supply and sanitation

National coverage rates for improved water supply show that in 1990 only 62 percent of the whole population had access to improved water services through any of the following systems: piped systems with private connections, mechanical and manual drills, hydraulic

rams and others. Coverage of the rural population amounts to only half of the coverage in urban areas (Figure 2).



Source: Water and Sanitation in Rural Areas of Guatemala. UNICEF, 1990

Figure 2: Improved water supply in urban and rural Guatemala

During the last 20 years the increase in coverage has been slow, especially in the decades of the 1980s and 1990s, when urban coverage only increased by 3 percent (from 89 percent to 92 percent) while the rural areas had an increase in coverage of 6 percent (from 37 percent to 43 percent) (Table 1).

Table 1: Increased coverage in improved water supply in Guatemala, 1970-1990

Area	1970	1980	1990
	percent	percent	percent
Urban	80	89	92
Rural	13	37	43
National	36	58	62

Source: Public Investments Plan COPECAS/SEGEPLAN, 1990

If the country's population growth remains at 2.8 percent and the efforts of the water supply institutions also remain at the same levels, improved water supply in the rural areas will only have increased by 3 percent by the year 2000; which means an increased coverage from 43 percent to 46 percent. Facilities for human excreta disposal are now owned by 41 percent of the population; yet only half are considered adequate and are being used in a correct way. Table 2 shows there is also a substantial difference between the urban and rural population as far as this service is concerned.

Table 2: System of excreta disposal in Guatemala, 1990

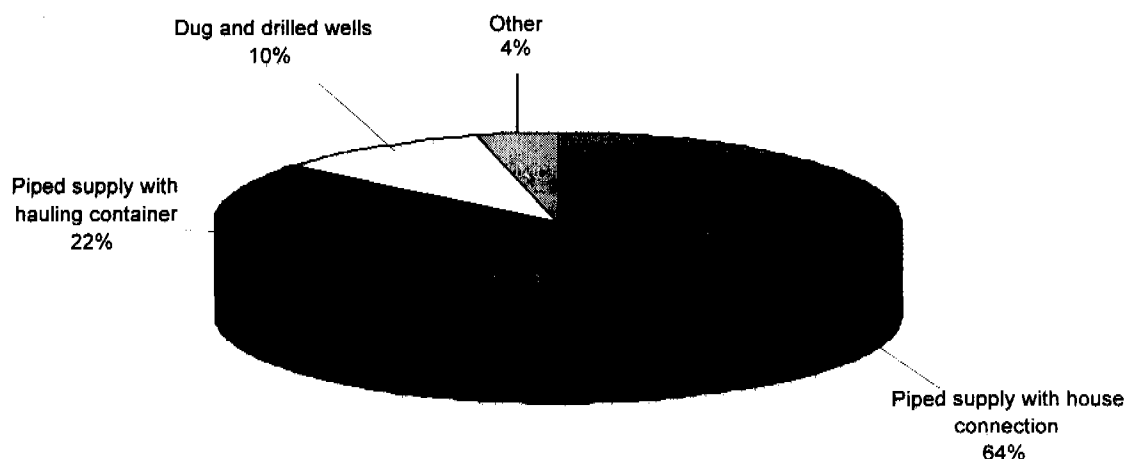
Area	1970	1980	1990
	percent	percent	percent
Urban	42	73	72
Rural	17	35	52
National	26	49	59

Source: Public Investments Plan COPECAS/SEGEPLAN, 1990

It is evident that there is even less sanitation infrastructure in rural areas than among urban inhabitants. When we speak of coverage we refer to quantities, but the problem is not only a matter of numbers but also a matter of how adequately the system works for the rural population. We know that most of the excreta disposal systems currently in use are inadequate for the communities they serve. This is because systems are often not installed, used or maintained in a proper way.

Water supply technology

The main technology used for water supply in rural communities relies on piped systems that work by gravity. This is done because of the topography of the land and the location of the water sources. The systems have either private connections or shared community taps (Figure 3).



Source: Water and Sanitation in Rural Areas of Guatemala. UNICEF, 1990

Figure 3: Types of rural water supply services in Guatemala, 1990

Dug and drilled handpump wells, hydraulic rams and pluvial water systems are used in special cases and areas, such as areas in the zone with high rainfall and in communities located above or far away from the water sources.

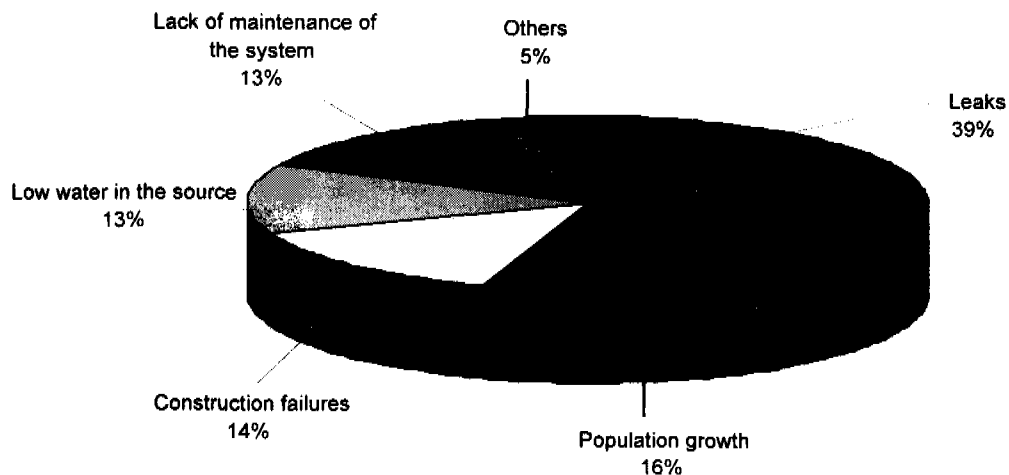
Although 42 percent of the population has some kind of acceptable water supply, a large percentage complains that the water pressure varies depending on the season (summer/winter). Only 39 percent of the population can always count on sufficient water to cover its needs.

Some 41 percent sometimes does not get any water and 14 percent frequently gets no water at all. The main reasons for the insufficient amount of water are: leakage or malfunctioning of the water system, low quantities of water in the water source, defects in the construction and hydraulic designs, lack of maintenance, population pressure and vandalism.

The 58 percent of the population which lacks an acceptable water supply system must go to wells (44 percent), springs (32 percent), rivers and brooks (14 percent), or lakes, lagoons and other sources (12 percent).

The supply and use of the water is generally women's responsibility. They must spend about two hours a day on water supply duties, without taking into consideration the time of their children, who usually join them in this task.

Although there is no detailed research that gives information on the quality of the water consumed in the rural communities, it is evident that most of the areas that have an improved water supply, do not have systems that guarantee the potability of the water provided. We can only be sure that the water is tubed. The water systems currently used certainly contribute to saving effort, costs, time and risks in the process of water supply, but are far from having a major impact on health. Due to inadequate water transport and storage conditions the possibilities of water contamination are great. No matter what kind of water supply system is used, it is always necessary to carry and store it. Among the most popular ways of hauling and storing is the use of plastic containers.

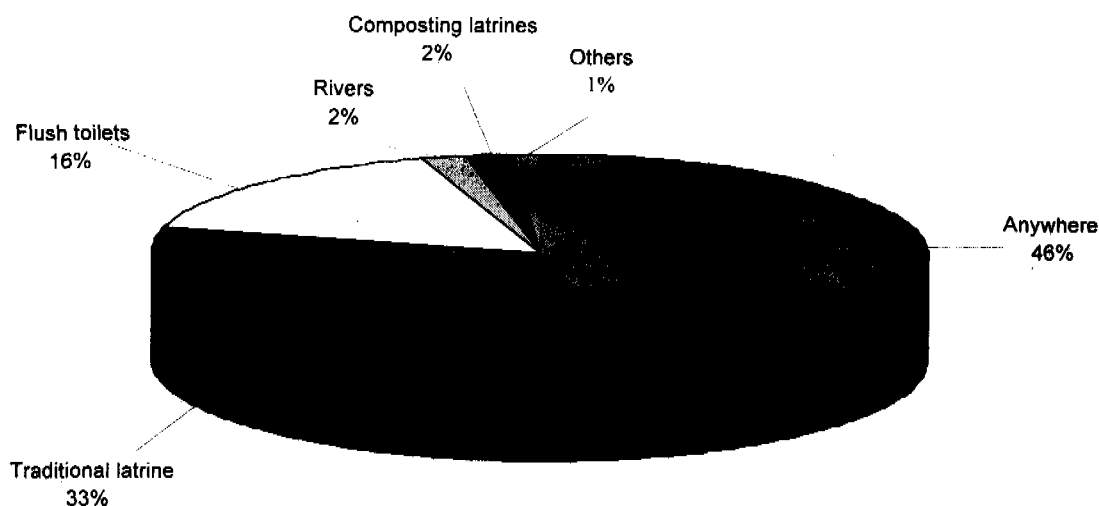


Source: Water and Sanitation in Rural Areas of Guatemala. UNICEF, 1990

Figure 4: Reasons why the water flow may get interrupted

Poor handling practices in haulage, storage and consumption of water are considered the greatest causes of water contamination:

- the containers used are not always clean and in good hygienic condition
- these containers are not always kept covered and therefore can be easily contaminated
- the water in these containers comes easily into contact with soiled hands and soiled objects.



Source: Water and Sanitation in Rural Areas of Guatemala. UNICEF, 1990

Figure 5: Different manners of excreta disposal among rural families

Technology in excreta disposal systems

Some 52 percent of the rural population has been provided with some kind of excreta disposal system. Most of these families have traditional pit latrines, while a smaller number of families has a more sophisticated type of system. The remaining 48 percent does not have any kind of system at all; they deposit their excreta in the land used for cultivation of vegetables, or in forests, streets or rivers.

Forty-four percent of the households with latrines do not use them and 81 percent of the children in the rural communities do not use the latrines because they are not used to them, consider them unsafe or because they believe they are only for adults. It is commonly believed that latrines can pass on spiritual diseases or skin diseases. Another common belief is that women can get pregnant if they use them.

Entities that support the water supply and basic sanitation sector

There are three types of agencies in charge of the water supply in Guatemala: the state, municipalities and non-governmental organizations (NGOs). At state level there are two ministries and the presidential office. The institutions dedicated to water supply depend on support from those offices to carry out their work.

The Ministry of Public Health and Social Assistance is the most significant actor in the water sector. The funds that it handles represent 65 percent of the total rural water investment in the whole country. The following units are of particular relevance to the rural water sector:

- UNEPAR: Execution Unit of the Rural Piped Water Programme
- DSM: Environmental Sanitation Directorate
- PAYSA: The unit dealing with the Sanitation and Water Programme of this name
- Health units: 25 around the country
- SHR: Secretariat of Hydraulic Resources

Presidential Secretariat

This office contributes some 15 percent to national rural water development. The President can create special organizations to overcome difficult situations in the country, such as the Social Investment Fund (FIS), which arose after the 1976 earthquake, and the National Peace Fund FONAPAZ which takes care of the areas damaged by the internal conflict. These organizations tend to be dissolved once they have accomplished their purpose.

Urban and Rural Development Office

The Urban and Rural Development Office has organized departmental urban and rural development councils in the 22 Guatemalan departments. The councils are in charge of the water supply in rural communities, especially through technical infrastructure units. Its investment in the water supply represents 5 percent of the total investment in the rural water and sanitation sector.

Municipalities

Water supplies in the 330 counties around the country belong directly to the municipal corporations of each county. These corporations receive 8 percent of the total tax intake by the state. The income is used to build infrastructure, including water supplies in each of their counties. Municipalities hire private corporations for the implementation of their projects. Sometimes they hire national NGOs. To supervise these projects they can count on state support through INFOM, the Technical Promotion Institute.

Non-governmental organizations***National NGOs***

In Guatemala, over 200 NGOs are implementing rural water supply projects. Together they contribute 15 percent of the total water investment. The largest contributors are: World Vision, IDESAC (Institute for the Economic and Social Development of Central America), World Doctors, CARITAS, Foster Parents Plan, Juvenile Community Development Alliance, IDEAS, Carrol Behrhorst Foundation, Central Menonite Committee and The People's Water (Agua del Pueblo).

International NGOs

International NGOs mainly finance water supply projects, but are not involved in implementation. Both UNICEF and CARE work on research, project methodologies and techniques and tools for the educational work that is part of improving rural water supply and sanitation.

There are no organizations that cover any specific geographical areas. All organizations work in different counties and rural areas around the county. Around 40,000 families and 240,000 inhabitants benefit every year. Even though this annual coverage is high, it is not enough to cover needs, due to the demographic explosion of 275,000 new inhabitants per year.

Human resources

The institutions working in the water supply field face many constraints, not only in terms of quantity of human resources, but also in terms of quality.

In 1994, the ten main water supply institutions (based on coverage) that were working in the rural areas, had a total of 1,571 employees. Among them were 45 managers, 501 administrative employees, 207 professionals, 357 technicians and 450 field workers. However, not all this personnel is exclusively dedicated to water supply and sanitation. The kind of employees most commonly needed in the rural water sector are: construction managers, health technicians, sanitary inspectors, aqueduct technicians, administrative workers, topographers, civil engineers and social workers.

Of the professionals working in this sector there are only 11 sanitation engineers and 13 social workers; the others are civil engineers. This shows a preoccupation with coverage, rather than the quality of the project.

There is no data bank in the country that offers an overview of human resources in the sector. There is a general lack of administrative procedures and elements for monitoring and evaluating the quality of the work being done; and this translates into a low capacity to measure its effectiveness.

Even though most of the institutions in the water supply sector have job description manuals, the rules are only partially applied. This situation contributes to a poor staff performance, because it eliminates the principal base on which the recruitment and selection of sector personnel is done. It also affects the monitoring and evaluation of the employees' performance. On such a basis it is impossible to elaborate precise plans or take efficient actions for the development of the sector's human resources.

It will come as no surprise that little activity takes place in human resources development. Most of the institutions do not invest in the capacity building and training of personnel for two reasons: a) having not foreseen a need for it they do not include a budget for this purpose; b) investment in human development is given a low priority by the directors of the organization. There is little support to the management for ensuring the kind of human development that might improve the quality of their employees and of the institution as well.

The few institutions that do train their personnel do not work with experts in this field to guarantee that the development programmes are successful. The training programmes are a result of external influences and do not necessarily meet the real needs of the institutions. Moreover in most cases the activities are done in an isolated way and lack proper follow up.

Framework and implementation of rural water supply

The legal framework for water and sanitation consists of the Constitution, the Health Code issued in 1979, the Regulation Code of the Public Health Ministry, the Civil Code, an agreement signed with UNEPAR, and other regulations.

The Fundamental Law of the Republic has been in effect since January 14, 1986, and its articles 93, 94, 95, 97, 98, 126 and 127 establish the regulations and principles regarding human rights, health care, an adequate environment, a good ecological balance and community involvement in health and water supply programmes.

The Health Code was issued in 1979. Three of its chapters are related to sanitation, potable water supply, excreta disposal and piped water. The articles in Box 1 have been copied from this code.

Box 1: Legal framework for water supply in Guatemala

ARTICLE 21: The Ministry of Health and Social Assistance through its dependencies shall promote the supply of potable water to the villages and especially to the households. It also shall ensure its proper operation and maintenance and shall have the faculty to demand of those in charge of the water supply the proper water treatment.

ARTICLE 25: The Ministry of Health and Social Assistance through the General Office of Health Services shall control the correct functioning of all the water supplies for human use and shall determine its potability. The owners or people in charge of these water supplies should allow for these inspections at any time.

ARTICLE 27: The Ministry of Health and Social Assistance should plan, promote and build water supply systems for the rural communities, coordinating all its resources to ensure success. The state should provide all the facilities for the proper fulfilment of these dispositions, in accordance with the approved work plans.

ARTICLE 34: The Ministry of Health and Social Assistance throughout the General Office of Health Services should be able to take the responsibility for proper excreta disposal and piped water systems in the rural communities and in those areas not covered by other agencies.

Organic Laws of the Ministry of Health : The government agreement no. 741-84, in its articles 54 and 55 grants to the Division for Sanitation of the Environment the faculty to programme, supervise and monitor the activities related to the sanitary conditions of the environment, and to organize specific resources. It empowers the Division to watch over the enforcement of the sanitation legislation.

In 1992 the Secretariat of Hydraulic Resources (SRH) was created. It is in charge of planning, administering, coordinating, regulating, monitoring and registering of the hydraulic resources in the country. It is also in charge of legislation for specific laws regarding hydraulic resources.

The laws mentioned in Box 1 are general and do not provide specific operational rules; therefore, the water supplies in the rural communities are built according to the individual policies of different agencies of the public sector and NGOs. These agencies work with regulations similar to those mentioned in Box 1, but not in its totality. The regulations of the agencies and the communities form the only basis for coordinating the community-managed water supply services in Guatemala.

No laws exist in the rural communities to determine how to pay for water. In some cases there are fees to be paid, to ensure the maintenance of the water supply system. However, the law does regulate the ownership and use of the water sources. Ownership must be proven by written documents. These documents must be signed and legalized by the municipal authorities and there must be an agreement among the parties involved. Usage permits only require that the parties involved agree to the terms in question and sign a document legalized by the municipal authority. These documents are needed before initiating the preparation stage of any water supply project.

Since there are no laws on community management of water supply systems, policies have been drawn up by the agencies working on water supply projects. The national plan for water

supply says that: community management is fundamental for the development and success of the national plan; therefore, the community must be involved from the preparation stage on and throughout the water supply and sanitation process. The community must provide the labour force and local building materials and pay a fee to properly maintain and keep the systems working.

All the agencies in the water sector subscribe to this policy of community management; however, implementation varies according to different points of view. In reality, most state and non-governmental organizations reduce community management to contributions of labour and local materials.

Institutions supporting community management

There are only a few agencies in the rural water sector which have a national coverage. In the public sector these are UNEPAR and the area headquarters. The only NGO with national coverage is The People's Water, Agua del Pueblo. Of an annual coverage of 240,000 inhabitants with new water supply systems, 85 percent comes from public institutions, while 15 percent is implemented by national and international NGOs.

Staff

The ten most important water sector organizations in the country have a total of 1,571 employees, of whom 44 percent are field workers, 24 percent are administrative staff, 24 percent are technicians, 6 percent are professionals and 2 percent are managers. Not all of them are exclusively in charge of water supply systems, and only 7 percent of the sector staff belong to NGOs.

In principle all the water sector agencies in the country are committed to a policy of community management. However, in reality:

- a) Most agencies limit community management to contributions of local labour and materials during construction. Community management is seen only as a form of cheap help to reduce the construction costs of the water supply projects.
- b) Most agencies do not encourage the decision-making process among villagers. Those that do are usually small and do not have a major coverage impact.

Procedures for community involvement

Preparation stage

The water supply agencies begin a project at the request of the community members, except for FONAPAZ and FIS. Since these are public organizations they promote their services in those areas where they have a political interest. In most cases the community request is made in writing. From the time the request is made the public organizations require about six to seven years to carry out the project, while most NGOs only take three to four years. This shows that NGOs are better able respond promptly to the needs of communities.

Until now the planning of the projects has been done by the agencies. Some of these agencies inform the community of the constitutional decisions and a minority of the agencies makes an effort to consult with the community members and adjust the planning accordingly.

Before implementation of the project, all agencies draw up written agreements with the villagers. In this agreement the obligations of both parties are specified. The content is related more to the institutions' proposals than to the interests of the community.

Institutional support

Agencies that promote community-managed water systems support the communities in the following ways:

- Funding the project. The community must pay back part of the investment and the maintenance and operation fee.
- Study, design and construction of the water supply system and sometimes excreta disposal.
- Involving the community in unskilled labour and the supply of local materials.
- Decision making. Only when their methodology seeks community management, and when plans and designs are flexible enough to allow communities to participate in the decision-making process.
- Support to operation and maintenance. The community members take responsibility for the operation and maintenance under the supervision of an elected water management committee and with the help of local trained manpower. The agencies attend to specific demands from the committees and communities.
- Source protection. The agencies plan activities for reforestation of the water source and the villagers work to protect it.
- Skills training. Training is given to committees, caretakers, treasurers and to the users, with emphasis on women. It is part of the community's responsibility to participate in this kind of activity. Skills training begins during the preparation stage and is done through workshops and lectures in community meetings.

Training of the treasurer and caretaker is sometimes done through workshops and lectures, but mainly discovery learning processes are used, which take place in the working context. The caretaker participates in the construction stage, while the treasurer does the bookkeeping. The training is directed at men, with the exception of hygiene education, which is directed mainly to women and children. Women are the target group for hygiene education due to their role as housekeepers.

Hygiene education takes place in the communities and is carried out by teachers, health technicians and social workers. Participatory approaches have been developed; however, the people in charge of this education do not always understand that it is as important to share experiences with the community members as it is to teach.

Agencies which only use community participation to furnish unpaid labour mainly focus on the technical investigations, design and building of the water supply and sanitation systems. The community's participation is seen only as a means of lowering construction costs. Generally, the agencies finance the whole project and the villagers only pay an operation and maintenance fee. These agencies also provide education and skills training, but in a less intense way using top-down methods based on exposés and lectures. They believe the institution is there to provide the solution and the community is there to receive the benefits. The people only play the role of passive spectators.

These agencies do not monitor and support the operation and maintenance of the systems and leave it up to the community to find solutions to any problems. However, the technology and time frame to implement the project is defined by the agencies according to their own policies and regulations.

In a few cases organizations in the private sector build water supply systems. However, these organizations are only concerned with doing the project as cheaply and quickly as possible. Once the project is concluded, they do not take on any responsibility for operation and maintenance. This is left up to members of the communities even though they are without training or skills.

Community management organizations and their performance

The Water Committee

Two organizations can be in charge of the water supply in the communities:

- 1) Pre-improvement committees, whose duties are to promote and implement infrastructure projects, such as roads, water, schools and others. These committees are formed among community members and work for a long time.
- 2) Pre-water committees, whose role is just to implement the water supply systems; when their objectives are met the committee is dissolved.

Both types of committees consist of seven members with the following functions: president, vice-president, secretary, treasurer and three voting members. The committee members have the following tasks: the president represents the committee and the community in all practical and legal matters, and chairs the meetings. The vice-president helps and substitutes for the president when she or he is absent. The treasurer collects the fees and does the bookkeeping. The secretary is in charge of drawing up all the minutes of each meeting and of keeping all documents. Committee members may belong to any religion or political group. Of the committee members 98 percent are men and 2 percent women. Where committees have one or more women this is due to the absence of men in their community, due to male emigration as labour in large farms or businesses.

The committees are chosen by village assemblies. They are accountable to the community members and also to the local authorities. Because they are chosen to serve the interests of the entire community, they do not exclude any member of the community for social, political or religious reasons. During the realization of the project the pre-improvement or pre-water committees function as follows:

- legalize the status of the committee and the water source ownership
- take care of all the administrative tasks during planning and construction
- plan and direct meetings and assemblies to resolve issues related to the project
- involve and organize the community members to work in the project
- control the materials and labour force
- participate and promote the community participation activities related to education and skills training
- collect and administer the villagers' financial contributions.

The community participates in the meetings and in the decision-making process. It provides labour and local building materials and contributes fees so that the committee can cover the scheme's expenses. Members of the community get information from the committee members, and keep up with the progress of the project – especially the funding aspects.

Management and monitoring of constructed water supplies

After the scheme's completion the committee is generally in charge of the maintenance and operation of the water system; occasionally a maintenance committee is formed. This committee is in charge of getting the community involved and makes sure that there is always enough water for the villagers.

The committee collects the household fees to pay off the construction loan and sends the money to the project agency usually once a year. It also collects the maintenance fee which amounts to between USD 0.18 and USD 0.60, depending on the operation and maintenance costs of the particular system. The committee decides how to use the money and the treasurer is in charge of the bookkeeping. The treasurer sometimes gets paid for doing his work and must account to the committee whenever required to do so.

The work of the committees is backed up by their legal position, but they also rely on the support of the mayor, who represents the municipal authorities. The committees are able to carry out their functions thanks to the experiential learning they obtain during the implementation of the water system, e.g. the treasurer's experience in bookkeeping. Operation and maintenance are carried out by the committee with the help of the caretaker, who has been trained during the construction stage. This person is in charge of controlling the valves, cleaning the tank and doing minor repairs.

The committee's activities during the operation and maintenance stage are far less demanding than during the preparation stage. They usually do some work when there are failures or leaks in the system, but do not attach much importance to preventive maintenance.

To finance the schemes' operation, maintenance and administration, users are responsible for two types of payments. First, they must repay the agency's loan for the investment costs of the water system, and second, they must pay for maintenance and operation. When these fees are insufficient, the treasurer informs the users and he collects an extra payment once it has been approved in an assembly.

By law, the bookkeeper is required to report the financial situation of the committee to the governor every three months and extend an authorized receipt for the fees collected to repay the loan. Very few partner agencies give the community a choice regarding payments. They usually establish an amount without taking into consideration the community's opinion. The fees collected for operation and maintenance are generally recorded in a simple book and the treasurer must inform the members of the community as to the whereabouts of the money to avoid later conflicts and misunderstandings. Both fees are paid in the same manner by all the villagers. The payments are made by the head of the family, who in 89 percent of the cases is a man; 11 percent are women. If the head of the family is widowed or somebody in the family has a physical or mental handicap the community usually decides not to charge them, but they are assigned a task instead.

Every two years the user assembly chooses a new caretaker and committee. This is done two or three months before the sitting committee's term of office has expired, so that the newcomers can get proper skills training from those leaving. Once the construction is finished there are no systematic support activities for the committee or the community to help with operation and maintenance of the water system.

There is no entity in the country in charge of community water supply and its quality, and concern with community management is even less. Each agency controls its own system; however, many have no idea of the actual control and management of the systems by the community committees. The few agencies that provide support to communities managing their own scheme only do this when there are technical failures or the communities demand it. In neither case does the process include monitoring and evaluation. Therefore, there is no information regarding the management of the water supplies by the communities after their completion. Evident, but not yet quantified, is that there is no protection of the water sources and no guarantee of a good water quality. Often, animals can be observed drinking from the source, while people are washing clothes or otherwise polluting the water sources. The frequency of the failures or repairs in community-managed water supply is unknown; however, it is known that the communities have the economic capacity to meet these expenses. Yet when a failure is too serious for a local solution, the communities must look for agency support.

Furthermore, there is no organization in charge of controlling the quality of the water. So far the only concern seems to be the quantity of the water supply along with a few actions to protect the water sources.

Main institutional and community problems with a good management of water supply

The major problems reported for communities managing the water system are:

1. A shortage of water for the user population due to decline of water in the water source, an increased number of connections and waste.
2. Legal problems with the ownership of the source, e.g. as a consequence of a change in ownership of the land where the source is located.
3. The skills training of the caretakers and treasurers is not enough to take care of the operation, maintenance and administration of the water supply system. The technical training for the caretakers is insufficient; therefore, they only respond to minor repairs and failure of the system, but do not provide regular operation and maintenance services.
4. When important failures and repairs come up, the community does not always have the necessary financial and technical resources and partner agencies do not provide support.
5. Poor fund management and lack of communication among the committee members and with the villagers cause mistrust and conflicts among leaders and community members.
6. Abuse of power by the committee which sells connections to other users without authorization of the community and which sometimes allows the use of water by the wealthier for purposes other than domestic water supply.

7. The communities have no established means or procedures to control the water's quality and potability; furthermore, they do not see the necessity of control.
8. Breakup of water committees, leaving the total responsibility to two or three persons who want to help, but who do not have the skills needed.

Institutional constraints regarding support to community management are:

1. The general scarcity of adequate water sources for building water supply systems based on gravity and the decreasing amounts of water in the sources of existing water supply systems.
2. Limited financial resources in implementing and funding agencies to support community management. Their main concern is the quantity of water supplied, not its quality.
3. Institutional incapacity (technical and financial) to support the operation and maintenance of the water supply. No relevance is attached to this stage of the projects; therefore, there is no advance planning.
4. Absence of specific operational laws as far as water supply is concerned. Each partner agency develops its own policies and regulations and so do the communities, with the purpose of a better administration of the water supply projects.
5. Absence of any 'real' organization which would coordinate all the efforts of partner agencies, monitor overall performance and define nation-wide political strategies regarding water supply and community management.

Chapter 4
Harambee and Rural Water Supply Systems -
The Case of Kenya

Isaac Oenga and Pauline Ikumi

Summary

In 1983, the government policy of District Focus for Rural Development became operational, shifting increased responsibility to districts in order to encourage local initiative and improve local capacities. This, together with *harambee*, the local spirit of working together which was introduced at independence in 1963, gives the general framework for community management of water supply systems in Kenya. Several agencies and authorities are involved in rural water supplies, such as local groups (self-help groups, women's groups, church organizations), government departments, parastatals, non-governmental organizations (NGOs) and external support agencies. External Support Agencies (ESAs) support a variety of programmes in all parts of the country, each donor with a specific area of concentration. Usually the high-potential areas are left to government support.

Traditionally ESAs have allocated communities the tasks of providing free unskilled labour while they kept the right to plan, decide and manage the implementation of the project activities. Operation and maintenance in the past was the responsibility of the government or an ESA. With decreasing resources these agencies again used 'their right to decide' to allocate this responsibility to the communities. In general, communities lack much sense of ownership and satisfaction, which hinders their meaningful involvement.

Communities traditionally have their own management structures which are rarely utilized by the projects. ESAs normally dictate their water committees be elected to serve as liaison offices with the ESA. Local management organizations have little legal status and are not involved in decision making.

Some communities are managing their water systems adequately. When communities have been adequately involved during the implementation, including the choice of appropriate technology, they are able to organize the operation and maintenance of the systems. However, programmes usually provide inadequate information on requirements in terms of financial arrangements, spare parts, necessary skills and the need for routine preventive maintenance. The case study of Maturu-Luandeti community shows that the initial supply-driven, non-participatory approach has caused a lot of problems and stimulated people to return to their traditional sources, as many community members thought the water was free and expected the programme to continue running the water system. The history of the project has greatly impaired the community's willingness to assume full responsibility and ownership. These and other experiences provide a lot of areas that should be studied further.

Acronyms and abbreviations

AGM	Annual General Meeting
ASAL	Arid and Semi-Arid Lands
CARE	Cooperation for American Relief Everywhere
DANIDA	Danish International Development Assistance
DDA	demand driven approach
DDC	District Development Committee
EEC	European Economic Community
ESA	External Support Agency
FINNIDA	Finnish International Development Agency
GTZ	German Agency for Technical Cooperation
KES	Kenya Shilling
KFWWSP	Kenya Finland Western Water Supply Programme
KWAHO	Kenya Water for Health Organization
KWPC	Kenya Water Pipeline Conservation
LBDA	Lake Basin Development Authority
NGO	Non-governmental organization
NORAD	Norwegian Agency for International Development
O&M	operation and maintenance
ODA	Overseas Development Administration (UK)
PRA	Participatory Rural Appraisal
PRAV	Participatory Rural Appraisal at Village Level
RDWSSP	Rural Domestic Water Supply and Sanitation Programme
SHEWAS	Siaya Health Education Water and Sanitation
SIDA	Swedish International Development Agency
USAID	United States Agency for International Development
WASE	Water and Sanitation Educator

Water conditions in rural Kenya

According to the 1989 Census, Kenya has an estimated population of 24 million people and an area of 583,000 km². More than 80 percent of the Kenyan population lives in rural areas, and less than 5 percent of the rural population is served by public water systems. Only 15 percent of the total land area receives more than 750 mm of rainfall annually. Population growth is 3.5 percent annually, one of the highest growth rates in the world.

The government policy of District Focus for Rural Development became operational in July 1983. By shifting increased responsibility to the districts it hopes to broaden the base of rural development and encourage local initiative in order to improve problem identification, resource mobilization, project design and implementation. In the past, it was public policy to provide all basic services to the citizenry. With diminishing resources however, the public policy is being reviewed to allow for more inputs from the beneficiary communities.

The District Focus Strategy for Rural Development policy allows for a bottom-up approach in the identification, planning, design and implementation of development programmes. Each district is given a budgetary ceiling within which to plan its activities. Funds are centrally coordinated and allocated. Recently a cost-sharing policy has been introduced along with a policy for encouraging inputs from the communities. At Independence in 1963 the communal spirit of working together, *harambee*, was introduced. Properly utilized and managed, *harambee* should help communities develop self-reliance.

While the general framework has been put in place, detailed guidelines still need to be developed. Further training of sector personnel is crucial if they have to understand, support and put into operation the community management of improved rural water supplies adequately.

Overview of programmes and projects introducing community involvement in water supplies

In Kenya several agencies and authorities are involved in the rural water supplies. These include:

- self-help groups
- women's groups
- church organizations (Catholic Diocese, Church Province of Kenya, Adventist Development and Relief Agency)
- NGOs
- ESAs (donors)
- government departments (water, health, and agriculture for irrigation)
- parastatals (Kenya Water Pipeline Conservation, Lake Basin Development Authority, Tana and Athi River Development Authority, Coast Development Authority, Uaso Nyiro Development Authority and Kerio Valley Development Authority)
- institutions like schools, colleges, seminaries, and hospitals
- private persons.

Self-help groups in high potential areas have taken initiatives to develop, operate, maintain and use water schemes, especially in the Meru District, and the Central Province of Kenya. In other parts of the country small-scale activities are being organized by women's groups, mainly using shallow wells, as in Kakamega and Siaya, or rainwater harvesting systems as in Baringo and Nakuru. Self-help and women's groups usually cover small areas, a few villages at most. NGOs are biased towards poor communities, especially in the arid and semi-arid areas of the country. NGOs in Kenya like the Kenya Water for Health Organization (KWAHO) and CARE International (Cooperation for American Relief Everywhere) serve communities in different parts of the country.

CARE Kenya

CARE Kenya supports SHEWAS (Siaya Health Education Water and Sanitation). The project started in 1990 and has been working in phases. It covers 16 sub-locations in Boro and Uranga divisions of Siaya District. The project uses the PRA (Participatory Rural Appraisal) approach. The selection criteria for the sub-locations included high infant mortality and high incidence of water related diseases. Some of the constraints noted include:

- distribution of water points is not adequately rationalized
- lack of confidence by the communities as PRA takes 1½ months, which is a long time
- spares distribution needs to be further developed
- the project is not assisting income generating activities.

The PRA approach has been extended from sub-location to village level and is now called Participatory Rural Appraisal at Village Level (PRAV). The community has become more involved in identifying its needs and participating in hygiene and homestead surveys. The programme also addresses hygiene practices among school children using a child-to-child approach. The community contributes towards latrine building, roof tanks and sanplats. Water committee members receive the necessary training from the beginning. The duration of the project, from needs identification to the completion of implementation is two years.

External support agencies support a variety of programmes and operate in all parts of the country. Each donor has an area of concentration. The government departments cover all areas of the country, while the parastatals, except the Kenya Water Pipeline Conservation (KWPC) have a given area of jurisdiction. Usually the high-potential areas are left to government support. FINNIDA (Finnish International Development Agency) covers the Western Province, while GTZ (German Agency for Technical Cooperation) supports the Kilifi Water and Sanitation Project. The Netherlands' bilateral cooperation programme in collaboration with the Kenya Government is supporting the Rural Domestic Water Supply and Sanitation Programme under the auspices of the Lake Basin Development Authority.

FINNIDA

The Kenya Finland Western Water Supply Programme (KFWWSP) started in 1981 and aimed to improve the water supply situation. The programme has had four phases. In Phases I to III the supply-driven approach was used, while in the current phase IV, the programme has adopted the demand-driven approach. There are four departments within the programme:

- planning and design, which includes water supply development, design guidelines and a water point inventory

- administration, which covers personnel matters, administration and finances
- technical department, covering construction, operation and maintenance
- community and training department.

Five districts, Vihiga, Kakamega, Bungoma, Mount Elgon and Busia, were covered during the first three phases of the programme. During this time the programme allocated a certain number of point sources to a given district. The district in turn distributed these point sources to communities. Communities were mobilized to accept the project and participate in its implementation. This gave communities little time to express their desires in the needs identification process. Some of the constraints observed included ownership, financial problems, illiteracy of committee members, mismanagement of funds and inadequate community commitment. In phase IV the programme has adopted the demand-driven approach (DDA) which includes:

- community involvement in the decision making process
- a formal application to the programme by the community
- cost sharing with the community providing between 25 and 100 percent of the implementation cost depending on the type of technology
- training input given by the programme but with the community also contributing to the cost of training.

The programme conducts training for the communities using film shows, newspapers, posters and radio programmes. Women have been encouraged to take an active role in the implementation and management of the improved water supplies. The programme gives special attention to the sustainability of the water supplies. The ownership of the development progress is vested in the community. Stable community management greatly enhances the sustainability of the water supplies.

LBDA

The Rural Domestic Water Supply and Sanitation Programme Phase II, (RDWSSP II) is within the Lake Basin Development Authority (LBDA). In the current Phase II of the programme, the project team consists of staff from the ministries of Culture and Social Services and Health. One of the primary objectives of the programme is to reduce the burden borne by women and children in water collection. The programme creates awareness in the community through *barazas*, using the participatory rural appraisal (PRA) approach. The activities done during PRA include drawing a community map, making a seasonal calendar and ranking health risks. The programme considers that using PRA encourages community participation in the water and sanitation improvement process and enhances sustainability. It also equips community leaders to manage the systems. Some of the constraints encountered include ignorance, poverty, and taboos.

SIDA

Swedish International Development Agency (SIDA) supports water programmes in Tharaka and Kwale. It also supports the Environmental Health Package from the Ministry of Health in the Eastern and Rift Valley Provinces. This programme includes small water supplies, especially rainwater catchment, spring protection and small gravity extensions.

ASAL

The Arid and Semi-Arid and Lands (ASAL) Programme is carried out in different areas and is financed by the external support agencies indicated in brackets. The programme includes:

- Machakos Integrated Development Programme (European Economic Community (EEC))
- Kitui Integrated Development Programme (United States Agency for International Development/Danish International Development Agency (USAID/DANIDA))
- Baringo Integrated Development Programme (World Bank)
- Turkana Rehabilitation Programme (Norwegian Agency for International Development (NORAD)) (dormant at this time)
- Embu/Meru/Isiolo (Overseas Development Administration (ODA))
- Laikipia Rural Development Programme (SWISS)
- Taita Taveta Rural Development Programme (Danish International Development Agency (DANIDA))

Characteristics of rural water programmes

Different programmes have different technological options. These include:

- shallow wells with handpump (handpumps have not been standardized)
- borehole with handpump, motorized submersible pumps or solar panels
- spring protection
- gravity schemes
- rainwater harvesting
- surface pumped water supplies
- hydram (Ndogino, is rarely used).

Whereas communities would like to have water for livestock and small irrigation, the programmes usually provide domestic water for human consumption only. Many programmes have workplans based on output. Consequently a vast majority of the staff is oriented towards meeting these output targets. Little staff time is spent on community mobilization or capacity building either in planning or in the eventual ownership, maintenance, and management aspects. Hygiene education and behavioural change are treated as technical subjects. In rural areas systems have broken down because communities have not adopted them as their own. Also the support system from the formal and informal sector is not sufficiently developed towards maintenance of the rural systems.

There are no clear community selection criteria for rural areas in Kenya. The agencies and the government decide together on which area the agency will concentrate. Some programmes take into account:

- high mortality rates
- desire or need for water (especially where there is scarcity)
- areas with high incidence of water-related diseases.

Awareness raising is usually done through public meetings. The politicians and the local administration have a larger say because they normally get to know of the proposed

development activities before the intended beneficiaries do. There have been efforts to streamline this system whereby the district focus strategy is being used to develop rural policy. The District Development Committee (DDC) coordinates all development activities within the district.

To initiate a project, agencies and authorities in Kenya approach the communities through a *baraza* (meeting). They inform the communities of the proposed water project. This usually takes a very short time (one to two days) and without sufficient additional time for these communities to digest the whole concept of the proposed water project.

The programme staff decides what technical option they consider suitable for a given community, based on technical investigations. Often communities are not given the full requirements for the operation and maintenance of the systems. Issues like staffing requirements and operation and maintenance (O&M) costs – which would enable them make informed decisions and choices – are not discussed.

Also the programme decides on the number of committee members and the gender balance in these committees. Communities comply so that the proposed development may take place. Even in the demand-driven approach communities are given guidelines to which they must subscribe.

Programmes normally last two to three years, and are sometimes renewed for a few more. A few weeks are spent in the villages with the communities. Agencies may be in the same geographical area but rarely will a programme return to the same village. There is an inadequate support system for operation and maintenance of the water system, and there is inadequate monitoring once the project has been implemented.

Arrangements for community water management

Most communities are very poor. The women are the main collectors and users of water in the household. External agencies have the resources needed for making physical improvements but they do little for community development and institutional capacity building. While communities have a longer time horizon within which to plan, ESAs have a limited time frame, ranging from one year for government financial allocations, to five years for national development plans.

Traditionally ESAs have allocated communities the tasks of providing free unskilled labour while the ESAs have kept for themselves the right to plan, decide and manage the implementation of the project activities.

Agencies have in the past initiated water improvements. The agencies have developed workplans and provided personnel and other resources but have managed these developments with little or no involvement by the communities. Even where communities were involved in the process, it was community involvement in agency-sponsored projects. This may need to be changed to agency involvement or participation in community projects, to enhance ownership by communities and sustainability of the water supply system.

In the past O&M has been the responsibility of the central government or an ESA. However, with dwindling resources these agencies have, "again using their right to decide", decided to allocate this responsibility to the communities. Whereas an equitable sharing of responsibilities is a healthy matter, all parties concerned need to communicate with one another, if the developments are to be sustainable.

Agencies provide short-term support services during the implementation of a project. The water agencies, especially, need to be strengthened to cope with the increased demands from the communities for support services. The support services needed include technical, supervisory and advisory services on routine aspects of community management of improved or traditional water systems.

Each individual programme generally has its own quality control measures, but some kind of quality control clearing house that communities could call on for assistance might be a good idea.

In rural areas many community members are small scale farmers. The main source of income is from the sale of farm produce. This means that payment for services received needs to be adapted to this situation. In the pastoralist communities water improvements have usually not provided much benefit for the water needs of livestock. This negates the sense of ownership and satisfaction, thus hindering meaningful community involvement.

Communities are willing to undertake management of water supply systems if they see the improvements as desirable and as belonging to them. The pensioners who come back to their communities have time and a wealth of experience which will, if properly tapped, greatly assist in community management and strategic planning. An important condition is that support given to communities is equitable to all communities. When one community receives more support from the government or ESA than other communities in similar situations, local people lose interest.

The private sector has always been involved in large urban water schemes where investment ensures good returns. But incentives are now needed that will get the private sector involved in supplying water to rural areas. Some initiatives are evident in the manufacture of the so-called AFRIDEV pump but these need to be expanded. Standardization of handpumps may form a significant contribution in this respect.

Local water management organizations

Normally ESAs have dictated that water committees be formed within the communities to serve as liaison offices with the ESA. These committees are elected by the community, generally without a defined mandate. Initiation of local management structures comes from ESAs or projects. In normal daily life communities have their own management structures which are usually not utilized by the projects. These community management structures include the local village elders, the local school committees, the local church committees, and the local cooperative movement officials.

Local management structures consist in most cases of 7 to 11 members. More men than women are represented in these structures. Increasingly women are taking the role of treasurer

and secretary, while men are often seen to be the chairpersons. The local management structure functions as a liaison office for project implementation and arranges for local inputs. Generally decisions are taken by the agencies and then communicated to the communities. The communities are not involved in decision making. Local water management structures are constituted upon the advice of the agency implementing a particular project or programme. Normally a community (village) meeting is convened in which committee members are elected.

The local management organizations have little legal status and membership does not confer any special status. This area needs urgent attention if these organizations are to become sustainable. Communities look to these committees to be their negotiating team with the agencies. On the other hand, agencies expect the committees to act as their liaison office with the community. Thus, the committee finds itself in a dilemma.

Improved water supplies are managed by men and women. Increasingly both men and women are getting involved in the decision making, resource contribution and O&M of the water supplies. Generally the men are assigned the task of developing the systems, collecting funds, safeguarding security and carrying out tasks that need muscular power, while the women provide assistance. The women are often treasurers or caretakers with backup support from the men. Management of community supplies needs to be streamlined by clearly defining the roles of the communities in general and the roles of women in particular. Management by objectives needs to be emphasized.

The decisions are vested in the committee, which include men and women. The chairperson is usually male, but women are named increasingly as treasurers. The secretary may be either a man or a woman. While men will consider water development as a token of prestige, women are more concerned about reducing their daily burden. These different viewpoints often lead men to opt for "prestigious" technical options which are more expensive to implement as well as to operate and maintain, whereas women tend to be more realistic and choose the options that are easy to operate and maintain and will provide water all year round.

It is increasingly being recognized that women play a vital role within the water sector. Most agencies and authorities have their own guidelines on gender, but these need to be harmonized so that a general policy can be developed.

Payment for operation, maintenance and management

Payment for basic services has recently been introduced as "cost sharing". The tariffs set for water use are usually not related to the actual cost of production. Long before the project implementation starts communities are advised by agencies to collect money for operation and maintenance and keep it in a bank account. Communities are expected to maintain regular contributions, either monthly or yearly. In reality these contributions are only given when the system breaks down and requires repairs. There are different modes of contribution. Labour (usually unskilled), materials or cash are some of the most common. To contribute unskilled labour the communities organize themselves into groups to do the work. Those who cannot, hire people to do work on their behalf. In some cases women provide food for the labourers as part of their contribution. Cash contributions can be collected at the point source from each household or family irrespective of whether they can afford it or not. In certain areas pump attendants do not pay for water.

Each community has its own way of mobilizing resources. These may include a monthly contribution, or an ad hoc resource mobilization whenever there is a need. In some communities a cash contribution is given at the end of the month by each household. Other communities collect the cash yearly. Money can also be collected on a seasonal basis, when the farmers have sold their crops. The amounts are proposed by the committees and approved by the communities. The contributions are usually collected by the treasurer of the Water Committee, who may move from house to house or wait at the water point. The consumers are normally informed in advance in a public *baraza*, or the word is sent around. Very few communities have built offices for the general administration of their water programmes.

Tariffs are not based on the cost of production but on the general guidelines given by the water agency. This leaves little room for communities to decide their tariffs. As communities are not registered water undertakings, they have no legal basis for adjusting tariffs. Mostly the head of household is responsible for paying the water fee. In many cases he may be away in the city. The responsibility is thus shifted to the woman. In areas where the woman is the head of household, she is responsible for payment. If the head of household does not pay for the water, the woman is sanctioned. She is denied water and has to look for alternative sources, which are often far and unprotected.

Funds are managed by the water committees. Constraints include: distance to the banking facilities, misappropriation of funds and unaccountability. The general lack of understanding about bookkeeping within the communities aggravates the situation. Irregular reporting patterns also contribute. The normal accounting procedure is to make a list of those who paid subscription and monthly payments, and a list of expenses. Accounting is done on ad hoc basis, usually once every year or two, or when disputes occur. Regular accounting is often lacking in many of the community-managed systems.

Development of skills and know-how

The introduction of management skills and know-how is normally done after the project has been handed over to the community. While communities get involved in the programme during the start of implementation, management of the facility is perceived as needed only after handing over the water supply system. It may be useful to introduce management aspects in the planning stage of the project, to allow time for on-the-job training of community members in the management of the improved systems. Communication, information and routine involvement of the communities in decision making are crucial if community management is to be effective. Bookkeeping and feedback to communities on financial matters are of paramount importance if honesty, transparency and a sense of trustworthiness are to be cultivated.

Training is always set by the agencies with little or no consultation with the communities. It is usually given by the implementing agency with support from certain government departments. The private sector has not taken interest in this area.

The training received by the committee members is mostly of a general nature. Training for tasks and in routine management are not emphasized. Repair skills and bookkeeping are taught, while reporting and communication are not given much attention. Lectures are based on a pre-prepared curriculum encompassing both men and women. Learning is not interactive

and little effort is made to train for specific tasks. This needs to be improved to allow for more on-the-job training, role plays and learner-centred approaches.

Generally the programme introduces the managerial skills it considers necessary and gears training in that direction. Beneficiaries are deemed to be insufficiently aware of what skills they need for proper management of the facilities. Another drawback is that the training often takes place away from the community, a particular problem for women. The general concept of water committees does not stem from existing management capacities within the committees. While individuals chosen to serve in the water committees may have certain skills, the traditional, ordinary administrative structures within the communities are rarely used.

Legal and policy issues

National laws allow people to use naturally-occurring water for domestic purposes. However, use of equipment or structures in a river or water body has to be licensed by the state. Discharge of wastewater is regulated but enforcement of the regulations is weak. Groundwater is governed by the law, while rainwater harvesting is not adequately covered in the law.

The issue of what legal status should be accorded to water committees and local organizations in the water sector is being reviewed. Two aspects come into focus:

- the General Water Resource Management Policy and legal framework
- the ownership (water undertakings) of the improved water supplies with the necessary backup support from the water agency needs to be streamlined.

In Kenya, the Water Act is being reviewed and will hopefully shed more light on these aspects.

Performance in community water management: some examples

In the national context little monitoring of performance of community-managed schemes exists. The district water offices are strategically placed and could fulfil this role, if their capacities were developed. Monitoring of technical and managerial aspects of the rural water supply is needed in order to ensure good performance. Unfortunately information on these aspects is lacking and no systematic effort is being made to collect and utilize these data.

ESAs monitor the performance of improved water systems during the implementation phase of the programmes they support. They report on the operation of the water committees during this period. Otherwise monitoring systems are ad hoc, often by way of informal monthly returns by the extension staff. No follow-up systems have been developed to encourage monitoring and the utilization of the data collected for corrective or planning purposes. In most cases only technical aspects are monitored. It would be useful to discuss to whom water committees are responsible and for what purpose the data are collected.

Where communities have been sufficiently involved during the implementation stage, they are usually able to choose appropriate technology to organize the O&M. However, programmes usually provide inadequate information on the requirements for proper O&M of systems in

terms of financial arrangements, spare parts, necessary skills and the need for routine preventive maintenance.

Communities keep financial records. In some cases minutes of the management committee are kept although these are not usually made available on a regular basis. In the majority of cases local management organizations meet regularly. Keeping financial records and records of meetings needs improvement. Women participate in these management committees as well as in women's groups. The local management organization usually presents its accounts to the community once a year. This needs to be changed to regular and systematic accountability so that the communities feel part of the process.

Communities usually keep the surroundings of their water points clean. Sometimes the wastewater is used for small-scale gardening. In certain cases measures to reduce erosion are not adequate. In most cases clothes washing and animal watering are not practised near the point source. The community designates a place for clothes washing nearby, and animals usually have a separate watering point.

In areas where surface water is easily available, people still use this water and claim that the cost and distance of the new sources hinder their use of the improved water systems. This is often the case in communities where shallow wells with handpumps have been poorly located. The projects that have a piped scheme tend to consider extending the pipes to the unserved areas, although funds are usually a limiting factor. It is not clear if these projects take into account the quantity of water available before planning such extensions. The projects using point sources tend to feel content when everyone walks to the water point to draw water.

Some communities are managing their water systems adequately. The **Sigomere scheme** in Siaya utilizes a groundwater borehole with submersible pump. An extensive distribution pipe network exists and the programme has its own technical personnel for pipe repairs and other tasks. The community is divided into sub-committees to ease the management of the water supply. A central management committee coordinates the management of the water supply. This water supply was constructed with help from the KFWWSP. An agreement was signed between KFWWSP and the central management committee. The programme and the community shared the cost of construction. The water supply raises funds from the following:

- *harambee*, which raised KES 90,000
- a connection fee of KES 2,520, paid by each member, which includes an application fee of KES 50, a membership fee of KES 30, a labour fee of KES 320, a meter deposit of KES 500 and a contribution to the development fund of KES 1,500.

It is worthwhile to note that the connection fee of KES 2,520 was set by the community. The budget committee allocates the funds to pay for materials and power. Water bills are issued to consumers every month. The revenue realized is expended on salaries, power, transport, materials and training. The central management committee has access to records such as the receipt book, cash vouchers, or ledger at all times. Once a year the Annual General Meeting is held to review progress and approve plans for the following year. Some of the constraints include insufficient water meters and spare parts for the pump, and high demand for extension. The demand is higher than what the existing tank capacity can cope with.

The **Wakhungu Women's Group** started in 1991 due to water problems in the area. The KFWWSP raised awareness and the community applied for assistance. The community raised KES 12,000 as part of their cost sharing during implementation. The money was raised from among the 289 members. A total of three wells has been planned. Each member contributes KES 60 per month for general development and Ksh 30 for the maintenance fund. Some of the basic objectives of Wakhungu Women's Group are:

- to create self reliance
- to undertake income generating activities
- to improve living conditions and prevent water-related diseases.

The **Lwero water supply** was funded by OXFAM. The community received KES 140,000 towards construction of wells. KFWWSP was contacted and the organization accepted to construct shallow wells. The community shared the cost and committees were created. A maintenance fee was agreed upon ranging from KES 3 to 10 per household per month. Women were involved in the development process. Some of the records kept include a members' register, a record of attendance at meetings, a duty-rota for caretakers, a visitors book, and a record of minutes. Some of the achievements include: making water available for domestic use and watering of livestock; reducing the incidence of the water borne diseases. Some of the constraints include:

- some community members have gone back to drawing water from the rivers
- the wells dry up during the hot season
- in some areas water pipes are being stolen
- mismanagement of funds.

The **Maturu-Luandeti water scheme** is located in the Kakamega district and is sponsored by KFWWSP. It uses a gravity water supply system and has repairmen. The projects are usually operated during the day. The scheme covers the Maturu-Luandeti sub-locations. It serves schools and the community. Initial awareness creation was done by the programme and the project was registered with the Ministry of Culture and Social Services in March 1992. The management committee comprises 12 people: a chairman, vice chairman, secretary, assistant secretary, treasurer and committee members. The term of office is three years before new members are elected. The staff members include an office clerk, two plumbers and security staff. The scheme has flat rates which are reviewed from time to time. In 1993 the kiosk rate was KES 10 per household, while primary and secondary schools had different rates. The funds raised are used for operation and maintenance of the water supply.

The central management committee is proposing that all consumers should be metered. It has also proposed that the water supply be extended to cover all of the two sub-locations (Maturu and Luandeti) and that administration be improved. It wants to start income-generating activities in order to enhance the sustainability of the water supply. The main uses of water include domestic use (washing, drinking), livestock watering and small-scale irrigation. The water supply was said to have both internal and external constraints. Even with these problems, community members are working hard to keep the water points clean and ensure that women are fully involved.

The **Nyamware-Kionyo water project** aims to construct water tanks and pit latrines in schools and is funded by SIMAVI, an NGO in the Netherlands. The project started in June 1993. It has a management committee comprising 12 men and 3 women. The management of

the project is vested in the community. The community is responsible for decision making, digging the pits and providing unskilled labour, locally available materials and water for construction.

The **Rabar water project** is under the care of the Siaya Health Education Water and Sanitation Programme. It started as a result of bad health and diarrhoea among children. The project aimed to improve health conditions especially among children. The project uses the participatory rural appraisal approach. The community chooses a committee which will be responsible for the project implementation. The project is coordinated at sub-location level. The management committee includes church organizations, women representatives, village elders, retired officers, public health workers and an assistant chief. The committee was called the PRA team and its task was to identify the problems at sub-location, or village level. Hence the team was called PRAV. The PRAV consists of a chairperson, a treasurer, a secretary, two pump attendants, two technicians and one village elder. The PRAV team does the location of sites and planning sequence for the project. The team has rosters on digging, deepening the walls and other activities. All community members are fully involved.

The **Gingo water project** was started by women assisted by the chief, the treasurer and the secretary. The women applied at the Lake Basin Development Authority for assistance. Their objectives were to provide potable water, enhance self-reliance and train children about hygiene. A survey was done and the project started in March 1994. Cost sharing was agreed upon between the community and the Lake Basin Development Authority (LBDA). A water committee was elected which handled all the problems of land acquisition. The community had to dig the well up to 16 feet. The LBDA deepened the well to 48 feet. To date there are four pump attendants. Six latrines have been constructed.

The **Othith water project** started in 1989 with 12 members. The community consists of 84 homesteads and a population of 800. The project receives materials from the LBDA. There are water committee members and caretakers, which involve themselves in activities like tree nurseries and kitchen gardens. The project has a home and bank account. The enrolment fee has been agreed upon and the project hopes to get clean water and build a posho-mill. The project's main problems are an unwillingness to cooperate and the inability of some community members to pay the enrolment fee.

The **Obouch water project** started in 1993 and is promoted by a Water and Sanitation Educator (WASE). The WASE draws a map showing all the villages around the water project. Each household is represented by a circle. The WASE, together with the head of the household, depicts either existing or non-existing pit latrines, clothes lines, refuse pits or dish racks, using different symbols. This is then compared to circles of neighbouring homesteads, thus allowing for self-evaluation. The group encounters problems of illiteracy and poverty. Next to these brief case studies a more in-depth study of how a community manages its domestic water supply was made in the Maturu-Luandeti gravity scheme area. This scheme was constructed with help from the Kenya Finland Western Water Supply Programme (KFWWSP). The chairman of the project committee, Mr. Wambia, was the guide to the community. Prior arrangements for the visit had been made. A follow-up visit was made during which the village map was drawn. The purpose of the second visit was to let community members draw a village map of Maturu Luandeti indicating the various water sources and other important features.

Case Study: Maturu-Luandeti

In the preceding sections a general overview has been given of issues concerning community management of water supplies and a number of programmes have been described. This case study presents the role of community management in the Maturu-Luandeti gravity project.

The scheme's coverage area has a population of 4,201 people and a growth rate of 3.3 percent per annum. The area is inhabited predominantly by members of the Kabras and Tachoni sub-ethnic groups of the Luhya community. The Nandi are the minority ethnic group found in the area. Each group has its own dialect, customs and taboos. The majority of the people is not educated and a few have reached primary level of education. Still, over 60 percent speak and understand Swahili, the national language.

There are two health centres, one at Luandeti market and another at Lumakanda. Both health centres are run privately. The health situation in this area is lower than the national average, with a child mortality rate of 87 per 1000 and a life expectancy of 54 to 60 years. Water-related diseases in this area include diarrhoea, skin infections, dysentery and hookworm. The scheme covers an area with a high agricultural potential. The land is privately owned, and the average size of a plot is two hectares. Agriculture furnishes the main source of income, through sale of farm produce, casual farm work, and sale of livestock.

Springs are the major traditional sources of water in the area. Currently about 60 springs have been proposed for protection. However, as the region has a high rainfall, successful rainwater harvesting projects can also be undertaken. Before the project was implemented the community collected water from the springs and rivers in the area. Due to population increase and agricultural activities these sources are increasingly being polluted. The absence of latrines and people defecating in the bushes also contributes to pollution of water sources. There are no public latrines except in schools and churches. The local markets have no public latrines, even though each shop owner provides his or her own pit latrine. Garbage is not a major problem, as little refuse is generated and the households throw their sweepings into their nearby gardens. These sweepings are mostly organic.

The *harambee*, or self-help spirit, is well understood in the area. People contribute in terms of labour and cash towards schools, churches, rural road construction and cattle dips. The area has over 18 women's self-help groups based on income-generating activities. Many are not active, as the area's overall poverty hinders meaningful contributions towards development efforts.

Characteristics of the project

The Maturu-Luandeti gravity water scheme is located in the Maturu and Luandeti sub-locations. The source used by the water scheme is the Saburra Manialo spring which flows westwards to join the river Nzoia. The spring has a safe yield of 240m³ per day and the distribution of water is 100 percent by gravity.

In 1986, on special request of local leaders and the Friends School Lukhokho, the Kenya Finland Western Water Supply Programme (KFWWSP) was asked to drill a borehole at the

school. After studying the situation it decided that a piped water scheme would be a better technical option as this scheme would not only serve the Friends School Lukhokho, but also other schools nearby and the adjacent communities. The project received full financial support, and KFWWSP constructed the water supply system.

The approach used for this project was supply-driven, whereby the programme did all the construction work. The community was not involved in the identification of needs, planning and installation of the water supply. In 1992 the project was handed over to the community to use, operate and maintain. In 1993, community members asked for some extension and this time they participated by trenching the line. The work was done by men with little participation from women. At the moment there are 5 kiosks, 8 standpipes and 24 individual connections.

The approach used has caused a lot of problems as many of the community members thought the water would be free and expected the programme to continue running the system. When the management committee was formed and rates for water were set, many households opted to go back to their traditional sources. The committee members initiated serious campaigns to motivate the community to accept the responsibility of running the project. Awareness was raised through *barazas* with the help of the administration. According to the management committee it is a slow process and it will take time before the community accepts ownership and responsibility for the project and will pay to cover O&M costs.

The Maturu-Luandeti gravity scheme is reliable and provides water throughout the year. As it is a newly built scheme no major breakdowns and leakages have been experienced. However, the scheme serves only a small fraction of the intended population. People refuse to become members of the project and continue using traditional sources. One reason for the small number of beneficiaries is that an inadequate distribution system was designed and built. Another reason is that some of the households are on higher ground than the source and thus require pumping, which was not foreseen in the initial scheme.

The households in the community that are not served by the project continue to draw water from the traditional sources, which are polluted and contaminated. They also water their livestock in the Maturu River.

Water system management

After completion of the water supply system the community bears the sole responsibility for financing and management of O&M. The local management organization of the water supply consists of:

- The management committee, which is the central body responsible for the overall management of the improved water supply. The committee is elected for a three-year term.
- The executive committee, which is composed of the chairman, vice-chairman, secretary and treasurer. This is a sub-committee of the management committee, responsible for the day-to-day running of the scheme.
- The tap committees, which are elected by the Annual General Meeting (AGM) to run individual water kiosks. Each tap committee consists of a chairperson, a caretaker, a

treasurer, a health attendant and coopted members. The tap committee is responsible to the central management committee.

The agency advised the community on the type of organization and members were drawn from the community. The programme also gave guidelines on the kinds of rules to adopt. Each tap committee is responsible for running the kiosk and submits an account of the money collected at the end of the month to the management committee. Usually they do not submit the money, as the amount is very small. Many members default on payments.

The agency maintains contact with the community in an advisory role and sometimes offers training to the committees. So far, the community has been able to run the project without any breakdown since 1993.

The Maturu-Luandeti gravity scheme serves many villages. In a sense each village is a community in its own right. The management committee is trying to coordinate all these villages with help from the local administration. Coordinated water resources management has not yet been fully addressed in the Maturu-Luandeti case and is also a matter of national priority. Moreover, the history of the project has greatly impaired the community's willingness to assume full responsibility and ownership. Three main issues are:

- Who will extend the pipeline to the unserved areas, as inhabitants of these areas are expected to contribute to the O&M of the scheme?
- How will those on higher grounds be served?
- What are the implications of ownership and especially the questions of easement of the land on which the public utilities stand?

In general the rural communities in the area use the rivers for washing, bathing, and watering livestock. A few springs are protected for domestic use. In the case of the improved water supply in Maturu-Luandeti, the source has been protected by constructing spring boxes and fencing the area. A watchman has been deployed to ensure the security and cleanliness of the source. The community has enacted some by-laws for the management of the improved water system. The management committee takes decisions on the management of the water supply system. Two male operators are in charge of operating and maintaining the system. The management committee has decided that each member shall get a sitting allowance every time the committee meets. The operators, clerk and watchman are also paid some allowance (not a salary).

Since 1993 there have been three management committees. The first two were dissolved because of wrangles between the community and the committee. The present committee is accepted by the community but has problems in consolidating its management.

Gender

In Kenya, men and women have separate economic responsibilities. Water and firewood collection are seen as a women's responsibility. About 20 percent of the households are headed by women, the main reason for this being migration of the men to towns in search of employment. Decisions about water are centred in the management committee, which is comprised of men and women. The members of the committee have to be ratified by the community. The men and the local administration (chiefs) usually have a bigger say than the

women. This can be explained in economic terms, as cash crops are owned by men, and food crops are mainly a women's responsibility.

Realizing that most of the decision-makers are men, the programme requested that women should also be included in the management committee. Women have been appointed in the management and tap committees and are the caretakers of the public water standposts (kiosks) where water is collected at a fee. All kiosk caretakers are women. However, the idea of having a woman operator was something new to those interviewed, although with time it may be possible.

Water quality and use

The water from the protected spring is said to be of good quality and consumers use it for drinking without further treatment. No regular quality checks are done. Those interviewed claim a reduction in the incidence of water-related diseases. The water operator has sufficient tools to do normal repairs. It is worth noting that while women are volunteer caretakers, men are employed as operators and watchmen. The clerical staff, who collect the bills, consists of one man and one woman.

Water from the scheme is used for domestic purposes. There are a few households that use water for their vegetable gardens and for watering their cows. Women are responsible for the provision of water. Most of the kiosks and standpipes are near the houses, so they do not have to walk for long distances to collect water. Water for drinking is stored in pots which are covered and kept on the ground. The family usually has a communal cup to draw water from the pot. Water for other uses is kept in buckets.

It takes about 30 minutes to collect water from the area's traditional sources. Thus the new water supply system does not improve on collection time but it does improve on the quality of water – even if the manner of drawing in the home brings a high risk of contamination. The proximity of traditional sources conflicts with the improved water supply, as water from the new supply costs money, while the traditional sources are polluted but free.

Skills development, training and support

Some of the management committee members have been trained in general leadership, managerial skills, simple financial management such as bookkeeping, and ways of generating funds. The operators are trained in plumbing, pipe-fitting, and plant operation. They are usually attached to the programme and given on-the-job training. The agency staff is trained in income-generating activities, training of trainers, management by results, simple management and administration skills, and Participatory Rural Appraisal (PRA). The training is usually given at seminars and workshops. With the training given, the committees are supposed to be self-reliant. If there is any retraining to be done the committee must set aside the funds and look for trainers. So far this has not been done, with the result that when new elections occur and fresh members enter the committee many of them have not been trained. The programme staff monitors the project and advises the management and tap committee.

Financing and financial management

It cost the programme KES 4 million to construct the project. According to the management committee, they collect about KES 3,000 per month which is meant for operation and maintenance, payment of the staff allowances, payment of sitting allowances and any repairs. Water is not free so everyone is supposed to pay for it. Those with individual connections pay KES 40 per month, and those who buy water from the kiosk and stand pipes pay KES 10 per month. It is usually the head of the household who pays for the water. The records the management committee keeps are: ledger books, cash books, receipt books, payment voucher books and bank statements. The management committee feels that these records are adequate and can easily be understood by members of the community who are free to go through the records at any time.

Monitoring, evaluation and information

The agency staff monitors the performance of the scheme. The staff looks at the functioning of the management committee and the tap committee. Additionally, the agency staff also creates awareness on the importance of clean water through 'consumer days'. Exchange visits are organized, so that members of the committee see other water projects in the programme area and learn how other water supplies are managed and function. The agency staff also monitors technical issues, such as water produced, revenues collected and other relevant issues. The community does not monitor the project.

Attitudes of adults and children

The agency's interest is to make sure people have clean water nearer their homes and that communities operate and manage the water supply with little or no help from the programme. Children have not been actively involved in this project, although the project has assisted them directly as they can now wash every day, especially in schools. With the exception of the chairman, the members of the management committee are not fully aware of their roles. Most of them are illiterate and have not been trained. They still look at the project as a way of getting extra income. They pay themselves sitting allowances every time they meet (KES 200 per person).

The main problem related to this project is that community members do not see the project as their own. They still identify the project with the programme, even when the project has been handed over to them. Also the locality of the project is such that there are other alternative sources nearby such as springs and rivers. People would rather go to these sources than pay for water.

When the project was initiated the concept of community participation was not explained. had it been explained and enough time given, the community would have accepted the project as theirs. The management committee feels that creating awareness is a slow process but that once members accept the scheme as theirs, pay for the water consumed and truly care for the water supply, it will be a wonderful development.

There is a need for awareness raising in the community to enhance a sense of ownership, and improve operation, maintenance and management of the project. Women and children are not really involved in any stage of decision making, and their ideas are not being considered.

They should be involved and consulted so that the water supply can run smoothly. Women should also actively participate in spreading health messages since they are the ones most directly affected.

The following, if observed, could improve the community management of this water supply:

- team spirit
- appreciation of the benefits of clean, safe water
- realization that the water supply is not the responsibility of the government or the programme, and that efforts by the community in the general O&M are needed.

There are serious constraints related to:

- financial management
- personnel administration
- water conservation
- lack of group cohesion.

The following advice could make community management more effective:

- intensify health education messages
- address the need for payment of water used
- conserve the existing water facility as opposed to looking for alternative sources
- avoid extensions unless they are discussed by the right people, i.e. technical experts
- have dedicated, devoted and honest persons in the management committee instead of members who see the scheme as a springboard or a source of money
- let the programme continue monitoring and advising the community.

Areas for further development

Community management has been introduced in rural water supply systems in Kenya in order to enhance the sustainability of these systems. Review of the implementation of the systems has shown the following bottlenecks:

- workplans and targets are based on outputs, which allows insufficient time for grooming communities to prepare for the eventual take-over of the management systems
- training is usually not sufficiently focused on management aspects
- the need for gender balance in the training, tasks, roles, and responsibilities is not being sufficiently discussed to achieve an understanding of its importance
- problems with land easement are common in rural water supply projects.

There are also other areas that need attention:

- In many rural water supply systems handpumps are used for the extraction of groundwater. During implementation agencies provide free spare parts, but this aspect has not been sufficiently developed to ensure base availability of spare parts.
- Management committees do not report regularly. This causes misappropriation of funds, leading to frequent squabbles in communities, and loss of trust and goodwill.

- The water agency needs to develop its capacity in order to effectively provide the required technical, advisory and managerial support services for improved rural water supply systems.
- As communities are often asked to collect funds for operation and maintenance long before implementation of the projects, these funds are sitting in bank accounts, losing value due to inflation.
- Even though communities are advised to collect funds regularly by way of water sales and contributions, in practice many communities only collect funds when the system has broken down and requires repairs. In the meantime people go back to traditional sources.
- Management committees are usually elected to oversee the improved water systems with little consideration of the management of the traditional water sources. It is increasingly evident that water is a scarce commodity. Conflicts between villages on the utilization of rivers are becoming a common phenomenon. Communities usually resolve these conflicts and constraints by way of a public meeting. The local administration usually plays a vital role in this respect.
- Training is not tailor-made to suit men or women. It is usually a general training in a specific area of focus. Training materials are fairly accessible but there is scope for improvement, especially in the adaptation and distribution of these materials. Recently participatory training materials have been introduced. Trainers, however, need to be sufficiently oriented and the materials need to be used as a means to an end, not as an end in themselves.
- It is assumed that the ministries of Water, Health, and Culture and Social Services will provide the necessary support services after the projects are handed over. In practice, there is insufficient capacity in these departments to cope with the support services after implementation.
- External Support Agencies (ESAs) have not adequately developed the gender approach to allow for equitable distribution of roles, responsibilities and benefits between men and women. It can be observed that women are assigned the tasks that are on a voluntary basis, such as caretaker, while men are usually assigned tasks which can be paid for e.g. repairman.
- Coordination between agencies in implementing community management is weak.

In an effort to enhance coordination of development activities the government of Kenya has:

- introduced the District Focus for Rural Development Policy
- recently introduced a 'cost sharing' policy
- reviewed the Water Act in anticipation that "community or user management of water systems" will be a major introduction into the policy
- recognized the need of exchanging experiences about choice and performance of technology, in order to improve our understanding of the issue at hand.

Several networks are being formed to help harmonize standards and provide support in this area.

For the benefits accruing from improved water supply and sanitation programmes to become sustainable there must be skilled manpower at all times, right down from the top executives (the policy makers), to the private sector and the beneficiaries. It is relatively easy to satisfy

the demand for skilled manpower within the public and private sector, as both sectors have the necessary resources for human resource development. However, to acquire within the beneficiary community the skills to equitably distribute the resources within the same group, to balance the need for new development initiatives, and to maintain and operate existing facilities requires much more effort.

Chapter 5

Drinking Water System Management in Rural Nepal

Renuka Rai and Hari Subba

Summary

In Nepal, the Ministry of Housing and Physical Planning has the overall responsibility for the water supply sector, which includes planning, coordination of budgets and programmes, and development of policy proposals. A number of other governmental departments also work closely with the water sector, among them the Department of Water Supply and Sewerage, which is responsible for improving rural and urban water supply systems. International and local Non-Governmental Organizations (NGOs) active in the sector include NEWAH, Cooperation for American Relief Everywhere (CARE) Nepal, United Nations Children's Fund (UNICEF) and SATA-HELVETAS (Swiss Association for Development and Cooperation).

Most of the NGOs working with water supply systems attach importance to operation and maintenance as prerequisites for project sustainability, and therefore ask communities to participate in collecting a water tariff and raising a maintenance fund. Usually a new committee is established to take care of the management of a newly constructed water supply system. The supporting agency is responsible for training, spare parts, other materials and technical support, even after project completion, although this seldom happens in reality. Since communities need support for major damage and repairs that are beyond their means, they feel the scheme is still owned by the agency. This is the central problem with rural water supplies. In some projects where the community has a serious water need, the people are more aware of their responsibilities and required contributions.

Women are the central figures in the management of household water and sanitation activities, but they are ignored in all the projects implemented by the agencies. In some committees women are appointed as members, but this is only done to fulfil the donors' requirements. However, women's involvement in projects is progressing, even though their role in decision making is still very limited.

Recently the involvement of local communities in all phases of water supply projects has been made mandatory by the Nepalese government. Also training is being directed more to basic level staff members, such as technical and extension workers at local and village level.

An interesting feature in the case study of Bishashaya village is that villagers have a very strong feeling of teamwork for some priority community development activities, and have a unique tradition in helping each other during important social ceremonies. Their motivation to participate in the water supply project was found to be high, although it reduced after completion.

Acronyms and abbreviations

ADB	Asian Development Bank
CARE	Cooperation for American Relief Everywhere
CHV	Community Health Volunteer
CIDA	Canadian International Development Agency
DDC	District Development Committee
DHO	District Health Office
DWSO	District Water Supply Office
DWSS	Department of Water Supply and Sewerage
EEC	European Economic Community
FINNIDA	Finnish International Development Agency
GTZ	Gesellschaft für Technische Zusammenarbeit
HMGN	His Majesty's Government of Nepal
IDA	International Development Association
LRWSSP	Lumbini Rural Water Supply and Sanitation Project
MHPP	Ministry of Housing and Physical Planning
MLD	Ministry of Local Development
MOEC	Ministry of Education and Culture
MOH	Ministry of Health
NGO	Non-governmental organization
NPR	Nepal Rupee
NRCS	Nepal Red Cross Society
NWSC	Nepal Water Supply Corporation
O&M	operation and maintenance
SATA-HELVETAS	Swiss association for development and cooperation
SNV	Netherlands Development Organization
SO	Support Organization
UC	Users Committee
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VDC	Village Development Committee
VMW	Village Maintenance Worker
WUC	Water User Committee

Rural water supply and community-managed water systems

According to the 1991 Census, the total population of Nepal in that year was 1,849,097 of which 91 percent lived in the rural areas. In 1990 the water supply coverage, or access to an improved well, spring or piped water supply, was estimated by the government to be about 66 percent in the urban communities and 34 percent in rural communities. The national average was estimated at 37 percent.

The Ministry of Housing and Physical Planning (MHPP) has the overall responsibility for the water supply sector, which includes sector planning, coordination of the budgets and programmes of sector agencies and development of policy proposals for the sector. The Department of Water Supply and Sewerage (DWSS) is responsible for improving water supply systems in both rural and urban communities. A number of additional functions closely related to the water sector are performed by the Ministry of Local Development (MLD), the Ministry of Health (MOH) and the Ministry of Education and Culture (MOEC) through its Local Development Division. MLD sometimes provides water supply in small rural communities through its Women's Development Section. Local governments consist of District Development Committees (DDC) and Village Development Committees (VDC), which are usually responsible for several rural communities.

The district offices of DWSS have some technical and extension staff members, who are directly responsible for implementation of the projects. Pre-planning often includes a technical survey and a few meetings with selected community members to identify a water source. Technical and managerial options are considered. Agency staff (technical) decide what technical options need to be considered, based on a feasibility study, and agency staff members ask the community to form a committee and provide some guidelines. Water User Committees (WUC), authorized under the decentralization act of 1983 and the local government act of 1991, are voluntary associations whose purpose is to promote, construct, operate, maintain and recover the cost of a water supply system. WUCs operate at community level.

International and local non-governmental organizations (NGOs) are active in the water supply sector, particularly in their support for small, community-based schemes. Among the NGOs involved in implementing water supply and sanitation projects in rural communities are NEWAH, the Nepal Red Cross Society, CARE Nepal, the Lutheran World Service, DISVI and REDD BARNA. Additionally UNICEF, the Swiss association for development and cooperation (SATA-HELVETAS), the Finnish International Development Agency (FINNIDA) and the German Gesellschaft für Technische Zusammenarbeit (GTZ) have all supported rural water supply projects under DWSS. CIDA (Canadian International Development Agency) and USAID (United States Agency for International Development) have supported rural water supply projects under MLD's integrated area development programmes.

DWSS has been working in the water sector all over Nepal. NGOs are working in both hill and *tarai* (lowland) areas. FINNIDA covers the Lumbini zone of western Nepal. The Mechi hill development programme, implemented by SNV (Netherlands Development Organization) works in the Mechi zone in eastern Nepal. Activities of the Nepal Red Cross Society (NRCS) and NEWAH have been spread all over Nepal.

The European Economic Community (EEC) and the Asian Development Bank (ADB) are other major agencies working in the water and sanitation sector. Whereas the EEC is concentrating its activities in the western development region, the ADB implements projects in selected districts all over the country.

Another important project at the moment is JAKPAS, the People's Water and Sanitation Project, implemented under the UNDP-World Bank Water and Sanitation Program. It is funded through the Japanese Grant facility as part of project preparation for an IDA-supported (International Development Assistance) project. JAKPAS is experimenting with alternative institutional and social-technical approaches to service delivery outside the traditional public sector framework. It contracts a variety of so-called Support Organizations (SOs). These include NGOs, community-based organizations and private firms, which will implement water supply and sanitation projects at the request of communities. It also contracts service agencies for capacity building of the SOs.

Most of the national and international NGOs working in the water sector attach great importance to operation and maintenance as a way to increase the sustainability of the projects. Therefore, as a condition of obtaining a water supply system they often require that the communities raise a maintenance fund and collect a water tariff on a monthly or annual basis. The organizations usually provide training for a village caretaker.

All the agencies have their own selection criteria, but often a project is selected because it was asked for by the community or Village Development Committee, because political pressure was used, or because the agency wanted to meet a set target for the area.

Programmes normally last two to three years and provide water for human consumption and watering of cattle. The choice of technology is usually dependent on the topography and water resources available. The different technologies are:

- piped gravity schemes
- shallow wells with handpumps
- dug wells
- spring protection
- artesian boring.

Of these technologies, piped gravity schemes, shallow handpumps and dug wells are the most commonly used. Maintenance of completed systems, whether undertaken by Water User Committees (WUCs) or the DWSS, usually consists of making only minor repairs and replacements, leaving major repairs and system replacement to be included in a new development project. WUCs have been formed to help in constructing water supply systems, but sometimes do not continue their activities after completion of the systems. The central problem is that the communities in many cases have not viewed the systems as their own.

Managerial responsibilities of communities and agencies

In general it is a prerequisite in most NGO-supported gravity flow and handpump schemes to form a Water Users Committee or construction committee before starting the actual construction. This committee is replaced by a maintenance committee once work is

completed. The maintenance committee is thus established to implement the water supply scheme and to look after its operation and maintenance.

Members for the committees are selected or elected from among the water users by the project beneficiaries. Usually the community members are selected because they are dedicated to community development activities and trusted by the beneficiaries. Most of them are men with sometimes a few women. The users committee not only deals with the management of the water supply system, but also takes part in other community development activities as and when required in the village.

To form a committee a mass meeting is usually organized by the implementing partners (NGOs, DDC, DWSS). If the committee is formed before construction begins, fewer women will participate. There will be an open discussion as to whom to assign responsible jobs and positions. Once final consensus is reached, the committee is formed and its decision recorded in the minutes by a volunteer. Some NGO-supported projects require that there be one or two women members on the committee. This has not been translated into practice, however, especially not in *tarai* handpump projects because women rarely participate in outdoor activities along with men.

It is the responsibility of the agency to:

- provide training to the maintenance caretaker and WUC members to ensure that they are able to manage their water system themselves
- provide a maintenance tool kit and spare parts as required
- facilitate the formation of maintenance committees and provide job descriptions for each position
- provide material and technical support
- provide technical backup for a number of years after completion of the project.

The latter happens only in a very few projects.

The responsibilities of the project communities are to:

- collect funds for the caretaker's salary, make general repairs, ensure maintenance and spare parts
- keep accounts of income and expenditure, tools and spare parts
- call and conduct meetings to discuss and decide on different issues regarding operation and maintenance of the water supply system
- keep the water points clean.

There is a written agreement among the beneficiaries that the operation and maintenance of the system shall be carried out through the committee, although it is not a very strong one. For it to have full legal authority the maintenance committee would have to be constituted under the local government act of 1991.

The users committee is generally comprised of influential persons who are able to mobilize people for community activities and are given due respect by the local administration. At

times VDC ward members may also be serving as committee members. On balance there is a good relationship between the community organizations and the administration.

Most of the communities supported by national and international NGOs have the tools and skills needed to take care of minor repairs and maintenance themselves. Village Maintenance Workers (VMWs) are given a few days training and are provided with a tool box to carry out their work.

In projects supported by NGOs that apply a participatory approach, communities are aware of their role and are willing to accept responsibility. However, they may be unable to manage the water supply system on a regular basis without outside help. Therefore, communities do expect some form of support for major damage to their water supply system that is beyond their means. In gravity flow schemes undertaken by DWSS, communities expect their operation and maintenance (O&M) services to be provided by the government. They feel the scheme is still owned by the agency and they should only have to pay the compulsory tariffs levied upon them. Therefore they do not contribute to the running of their system. In some bilateral and NGO-supported projects in communities with a strong need of water, the people are more aware of their responsibilities and are more willing to contribute to keeping their water system running.

For minor repairs community members contribute their voluntary labour. They also pay some money on a monthly or quarterly basis to meet the cost of the caretakers' salary or the equivalent in kind (rice, corn or wheat). The head of household pays the levied amount for the water service. The fund thus collected is spent on paying the caretaker's salary, repairs and buying spare parts. Any amount left over is deposited in the committee's bank account. Committee members collect the funds for operation and maintenance. In cases where the committee is either not functioning or is inactive, it is the maintenance worker who collects O&M funds from the users.

The payment system is slightly different from community to community or within the community itself. Some communities collect money regularly on a monthly basis, while others collect money once every 6 or 12 months. The amount of money collected varies from community to community depending upon the size of the project, the number of users, or the extent of repairs to be carried out. Some communities also collect a contribution in kind. Generally communities make their own decisions regarding the amount and system of payment. In community water supply schemes all members pay the same amount (flat rates). However, there are situations where people forget their obligation but there is no regular procedure for following up on fund collection.

It is the WUC that manages water funds. Over time some committees become inactive and one or two members will take over the committee's tasks. They do this voluntarily out of a sense of moral responsibility towards the community. Usually the incomes and expenditures are recorded by the treasurer or other members of the committee. However, in many projects there is no system for keeping proper accounts and presenting them to the general meeting or community on a regular basis.

Different roles for women and men

Women are the central figures in the management of household water and sanitation activities, but they are ignored in all the projects implemented by agencies. Men usually attend the meetings and take the decisions. Women's involvement in decision making is limited. In some Water Users Committees women may be appointed as members, but this is only done to fulfil the donors' requirements. Most of the hard work during the construction period is done by women. They dig trenches, transfer materials from the roadside to the construction site and bring water for mixing concrete. They are the labourers, the community's contribution to the project. In some NGO projects health and sanitation components are incorporated in to water projects. In this type of project women are trained as health volunteers.

In the past, even in the projects undertaken by NGOs, women's participation was not encouraged. This is beginning to change, however. Even though the role of women in decision making is very limited, they do play an active part during the construction period.

Men are assigned as fund collectors, as financial record keepers, and as watchmen for the water system, while women are assigned as caretakers to ensure the cleanliness of water points.

The caste system is deeply rooted in Nepal, with greatest impact in the rural areas. Although discrimination on the basis of one's caste is officially forbidden, a variety of caste-related behaviours and practices can still be found. Basically there are four major castes: the Brahmins, Chetris and Vaisyas are the so-called higher castes, whereas the Sudras are considered to be the low caste and "untouchable". One may find all the castes living in the same community. However, the low caste people are not influential, are less vocal in public and less approachable compared to high caste people. Because they often hesitate to raise their problems and concerns to outsiders in front of higher caste people, a special effort is needed to include them in decision making.

This is particularly important with relation to building and managing water supply projects. In some cases high and low caste people are reluctant to use the same water point and for that reason separate water points should be provided. When there is one common water point low caste people may not have enough time to fill their container or to bathe and wash. High caste people on the other hand, may not feel comfortable in using a common water point, even though there is the belief that running water remains pure after being touched by an untouchable. Projects need to take the above into consideration when working with rural communities.

Authority and skills for local water management

National laws allow communities to use water from various sources for domestic purposes, but for river water this use has to be licensed by the local administration.

In the Eighth Plan (1992-1995) the involvement of local communities in all phases of the projects, i.e. identification, formulation, implementation and operation and maintenance has been made mandatory. To delegate more responsibility to the community, major decision-making roles for planning and implementation of water supply projects will be given to the community and the user committee. Until the change of government in 1987, the head of a WUC for a system financed by the government was nominated by the government. Since

1987 WUCs have been elected by the beneficiaries. Rural drinking water and sanitation programmes will be encouraging women's involvement. There is, however, no specific policy on the division of work between women and men in water projects. The focal point for sector project planning and implementation will be at the district level.

Some agencies have introduced payment for basic services and cost sharing for minor spare parts. The Nepal Water Supply Corporation (NWSC) collects water charges from users with house connections in urban areas. The policy does not specifically describe the amount and conditions for rural water supplies.

In training and human resource development for the sector, priority was in the past given to middle and high level staff. Now, emphasis has shifted more to basic level staff members, such as technical and extension workers at village level. Even so, there still is a lack of technical skills in the communities, and this has undermined the users' confidence in their ability to cope with breakdowns. However, all the NGO gravity schemes and handpump projects have included some training for the village maintenance workers and female health volunteers. In addition most NGO projects have provided a tool box and an illustrated booklet on O&M.

The management skills most needed relate to involving communities in the decision-making process and to ensure feedback on financial matters.

A number of training opportunities are available for local staff members:

- For WUC members: elected men and women are given a short training about operation and maintenance of the water supply system.
- For Village Maintenance Workers (VMWs): on-the-job training for operation and maintenance throughout the construction period. Tools are provided to trained members. Almost all VMWs are men.
- For female health volunteers: very short practical training on hygiene and sanitation.
- For health motivators: one month's training on health, hygiene and sanitation, given to a women's group.

The training programme is always set and given by the implementing agencies with little or no consultation with the communities. Training is usually organized at the community site. Training is organized during the implementation period of the project and there are generally no follow-up sessions after the handing over of the project.

Case Study: Bishashaya Village

This case study is based on the gravity flow drinking water scheme of Bishashaya village of Nawalparasi district. Bishashaya is in ward No. 6 of Sunaul Village Development Committee (VDC). The scheme is being supported by Lumbuni Rural Water Supply and Sanitation Project (LRWSSP) and the District Water Supply Office (DWSO) of His Majesty's Government of Nepal (HMGN). The scheme was completed in April 1993 and handed over to the community.

The information was collected from different secondary sources (e.g. District Development Committee) and also employed various participatory research methods such as resource mapping, observation, using a checklist group and individual interviews, a village walk, etc. This brief report describes the main findings of the reconnaissance field visit.

The total population of the project area is 2,012, of which 603 are male, 537 are female and 827 are children under the age of 15. The total number of households is 357. Men's tasks involve agriculture, service in the Indian army, jobs in factories, teaching in the campus, and work as day labourers. Women do housework, e.g. cooking, washing, taking care of the children, collecting fuel wood and fodder, and also help in agricultural tasks. Girls usually help in household chores and look after siblings. During the school vacations boys look after the cattle. All children above 6 years of age, including girls, attend school. Children below that age remain at home.

For men, the literacy rate is 80 percent, for women above 20 years of age 10 percent. Among children, the literacy rate is almost 100 percent. It was interesting to observe that almost all the children of the new generation attend formal (primary and secondary) schools. The economic status, based on income of the households can be categorized into three classes: higher class, middle class, and lower class. All houses are built with local materials such as wood or mud. Thatch is used for roofing. Nearly all houses are single storey.

The health situation of the villagers seems, in general, to be satisfactory. Few children with swollen bellies were observed. Most people use bicycles to visit private medical clinics which are located three kilometres away from the village. Some villagers visit hospitals such as the Parasi District Hospital and the Butwai Zonal Hospital. There are four or five traditional healers in the village. Only some villagers believe in traditional healers.

The community is basically a mosaic of eight different ethnic groups such as Brahmin, Chetri, Tamang, Gurung, Kami/Damai, Tharu, and Magar. Tamang, Gurung and Magar ethnic settlements are clustered along the road, and Brahmin and Chetri settlements are scattered all over the village. Tharu houses are located in compact clusters.

Teamwork was observed to be very strong for some priority community development activities such as the drinking water scheme, irrigation, school building and furniture construction. Teamwork seems relatively stronger among Tamang, Gurung and Magar ethnic people than among others.

A unique tradition of this village is helping each other during important social ceremonies. Each household contributes 1 kg of rice and NPR 20 to the bridegroom's family during a wedding or a death ceremony. Retired soldiers have their own organization, the Ex-Service Men's Association, which is quite active in social work, such as local trail-making, afforestation and the construction of the community hall and temple.

People were highly motivated to participate in major development works. Financial contributions are made by the people according to their economic conditions, along with free labour and donation of land and materials. The local leadership consists of elected representatives of VDC and is well-established in mobilizing the community for development work. Informal and social leaders are also effective leaders in the village. Common villagers were observed to be obedient to their leaders and people do not take initiatives without the consent of the leaders.

History of the project

Before 14 shallow tube wells were provided by DWSO, the villagers were dependent on unprotected streams and springs to fulfil their drinking water needs. In those days, only a few people had their own shallow tubewells built. This water was not potable because it contained too much iron. Gradually the villagers realized that their health was being affected by the water from river and stream, and they were suffering from hepatitis, diarrhoea, dysentery and skin diseases. The villagers made a request to DWSO for a better quality water supply. Because it is the women and children who are responsible for fetching and storing water for domestic use, they were the first to realize the problem and they voiced their concern through the men to the DWSO and LRWSSP.

The project was initiated when the community demanded better drinking water at DWSO. The DWSO forwarded the request to LRWSSP. LRWSSP conducted a pre-feasibility survey and assessed whether or not the villagers saw improved water supply and sanitation as their priority. The researchers also found out if the request was supported by a large group of inhabitants or not, and whether other donors were working or planning to work in the area. Then the feasibility study, particularly on the technical, economical, health and social aspects of the scheme, was conducted. After finding the project feasible, the scheme was initiated, with support from the (LRWSSP).

The objectives of the project were:

- to provide better water to the villagers in cooperation with DWSO through two types of technology: a piped gravity scheme and shallow wells with handpumps
- to bring about health and sanitation awareness in the community in cooperation with the District Health Office (DHO)
- to promote the construction of latrines at the local schools and health posts
- to promote domestic latrine construction and proper latrine use in the community.

As a result of the project it was expected that the villagers would have not only an adequate supply of water for drinking and other domestic uses, but that some of the villagers would also have a better understanding of the importance of health and sanitation. It was expected that the villagers would build simple pit latrines and use them properly.

Since this community would get two schemes, the proposed project was approved in two ways:

1. by a Users Committee for the area with a gravity flow system
2. by a Users Committee in case of shallow tubewells.

Community motivation to participate in the project was unique. The best thing about it was that it was initiated first by the prospective users and not by the donors. Secondly, this project was requested by the villagers who felt a real need for a safer water supply in the community. These factors created high motivation to participate actively in the project and to make it successful. Both men and women participated in the formation of the users groups and the implementation of the scheme and in operation and maintenance.

Participation took the following forms:

- fund-raising: NPR 1000 per tapstand and NRs 500 per shallow tubewell
- transportation of construction materials from the roadhead to the construction site
- collection of local materials like sand
- contribution of unskilled labour (three person/months) for digging the pipeline, holes for pit latrines, etc.
- selection of a Village Maintenance Worker, a Village Health Worker, Community Health Volunteers and appropriate community members for the Users Committee
- contribution in sharing information, such as demographic data and assistance in resource mapping.

An agreement was made between the Users Committee (UC) and DWSO, using a standard DWSO form. The agreement stated the responsibilities and tasks of each party involved in the construction, operation and maintenance of the scheme. A copy of the design report and cost estimate was given to the Users Committee.

Three parties were involved in the implementation of the drinking water supply scheme: DWSO, LRWSSP, and the community. The DWSO provided technical and some material assistance. The district office provided an overseer and engineers who were in charge of quality control and supervision of technicians and galvanized iron pipes. Two technicians were deputized during the project implementation; they were not allowed to leave the project site until the project had been completed.

The Lumbini Rural Water Supply and Sanitation Project contributed 85 percent of the monetary costs of the project. The remaining 15 percent was a grant from the government. To ensure the quality of the drinking water, LRWSSP and DWSO assisted in chemical and bacteriological tests of the water. Normally these tests are carried out twice a year, one during the rainy and one during the dry season.

The community was responsible for taking major decisions, such as how many tapstands should be installed and where they needed to be located. Also the community selected a Village Maintenance Worker (VMW), Community Health Volunteers (CHV) and members of the Users Committee (UC). It is compulsory to have two female members in the UC. In difficult situations, this number may be reduced to one. The community mobilized local resources such as free labour, sand, aggregate, and land for the tapstand. Skilled manpower

was hired at NPR 80 per day, with preference given to local manpower. Community members were involved in the project throughout all stages of the scheme. In the project-related discussion meetings, the participation of one representative from each household was compulsory. Resource mapping was undertaken by the community itself, identification of water sources was done together with technicians and the feasibility study was done in cooperation with a study team. The community worked together with the project partners, on planning and implemented the scheme for maintenance of the water supply system by the beneficiaries through the Users Committee. Women's participation in the scheme was limited to the construction phase and sanitation education. Physically heavy tasks, such as transporting cement and pipes from the road head to the scheme site, collection of stones and transport of sand were done by men. Light tasks, such as digging the pipeline and assisting masons during construction, were done by women. The total cost to install the water supply system was NPR 535,221. The installation cost was borne jointly by the community (27 percent), LRWSSP (58 percent) and HMGN (15 percent) respectively. The responsibilities were continued until the end of the construction period when the community took over completely.

Community water management

After completion, the community had 7 tapstands and 14 shallow tubewells for the supply of domestic water. Since then a total of 35 households have built and use pit latrines in response to the health and sanitation awareness programme. Various local people have been trained on health and sanitation and on technical, maintenance and management aspects. The result is a team of grass roots level workers.

The Water Users Committee is responsible for the management of the water supply system. The community decided to form organizations under the guidance and assistance of the agency and DWSO. The community selected the members of the Users Committee on the basis of capability. The members are responsible for mobilizing local resources and must plan, implement, operate and maintain the water supply system in its various stages.

The strength of this Users Committee is that it can mobilize people whenever necessary. As the Users Committee members are elected representatives, they are well respected. All Users Committee members are volunteers, they do not get paid. Representatives from the Brahmin and Chetri caste are involved, though in limited numbers. At present there are no women members on the committee, because they got married and left the village. For operation and maintenance, a Village Maintenance Worker (VMW) had been selected and involved throughout the whole process of the scheme. Each member of the UC was given the responsibility for the day-to-day care of a particular tap nearby his or her home. Thus, each tapstand is taken care of by one of the Users Committee members. One woman was selected by the community as Community Health Volunteer (CHV) for community health education. The CHV is trained by the agency.

It was not felt that more training was needed to manage the water supply system. The VMW is quite able to do minor repairs and maintenance, as he had attended a one-month training course and has been involved in the project from beginning to end, which helped him to gain practical skills.

The plumber and technicians of the agency staff are also trained in the necessary skills. The agency staff provides technical backstopping to manage the water supply system. Nevertheless, the community seems to be in need of some more knowledge to increase self-reliance.

Most of the shallow tubewells and water taps are well maintained by the community. The main water source and distribution system is in good condition and tapstands and handpumps are functioning satisfactorily. Two taps were found to be leaking, but the others are well maintained and have been repaired by the community on its own.

For the groups visited no specific rules and regulations seemed to be required. However, the school tap gets broken frequently and no one appears to be responsible for its maintenance.

The source of water is used only for Bishashaya village and is fairly well protected and far away from the village. There is no possibility of washing and bathing in the source. Villagers wash and bathe nearby to the shallow tubewell and tapstands. The number of latrines in the catchment area is negligible and there is no chance of pollution through latrine seepage. The water source is barred with a wire fence and the community does not allow anybody to defecate near it. However, animals were observed grazing around the source. In the visited area, there is no possibility of industrial pollution, agricultural pollution or vandalism. The main water source is inside the forest boundary. For protection and sustainability of the source the people are planning to plant more trees and extend the wire fence. Regarding the penalties, no specific regulations have been set so far, but the Users Committee can formulate bylaws under the decentralization act. Water treatment is not practised in this community. Tap water has been found to be clean and potable and as a result water-borne diseases have been considerably reduced.

The community itself is the owner of the water supply system. It is financially self-sufficient. The users were observed to be motivated enough to pay for upkeep of pipes, handpumps and tap stands but not for a caretaker. Nor is the VMW paid a regular salary by the community as was agreed at the beginning of the project. The agency staff feels that this has negative implications for the sustainability of the scheme.

For the costs of repairs and preventive maintenance, community members raise funds on their own. For each tapstand, serving ten households, NPR 1000 is collected. For each shallow tubewell, also serving ten households, NPR 500 is collected. The funds are deposited in the bank under the name of the UC. The account is operated through two signatures, normally that of the chairperson and the treasurer. Minor repairs are done by the community with the help of the trained VMW, who is provided with tools from the agency. Expenses incurred by purchase of minor spare parts are covered by the interest generated from the deposited maintenance fund. In principle the VMW is being paid by the community either in cash or in kind as his service charge. In the case of major repair needs, help from the DWSO is requested. The drinking water system caretaker was provided with the necessary tools for preventive maintenance, but he has not kept them carefully. He has given them away to people in the village. Two financial records are kept for the administration of the water project, a personnel investment record and a financial statement on maintenance. Both are in good order. As the records are kept by the community itself, they are simple and can be well understood by all community members.

Monitoring and evaluation are carried out by the agency, using questionnaires which include technical, social and health aspects. The community only maintains the minutes of meetings. No indicators are developed or used, except objectively verifiable indicators concerning the operation of the system: Is the scheme functioning? If not, what is wrong? How can the problem be solved? The community decides on different issues through group discussions, which are democratic and based on group consensus. A clear image of the project and roles and responsibilities of the three parties (DWSO, LRWSSP and the community) enables the community members to take decisions.

Water is being used for washing, bathing, cooking, cleaning, drinking, watering the kitchen garden and watering animals. Women and girls are responsible for fetching the water. Men are seldom involved in fetching the water. After installation of water tapstands, the time needed to fetch water is not more than five minutes. Drinking water is usually kept inside the kitchen in open buckets and containers (*gagro*). When using the fetched water, water is poured from the main container into other vessels such as glasses or cups, which are kept inaccessible for children and animals.

Thirty-five latrines have been built and all are found to be unhygienic. There are no public latrines. One school latrine will be built with assistance of LRWSSP. Usually, people go to the forests to defecate and to open areas to urinate. There is no proper garbage management system. The garbage and manure are heaped into a nearby animal shed. There is no proper drainage system. Water from taps and handpumps is channelled towards a fish pond, agricultural field or the road side. A few ponds and pools caused by stagnant wastewater could be seen. Almost all households have a kitchen garden in which seasonal vegetables are grown. Cattle are taken to the riverside to drink. Local ponds are also used to provide drinking water for cattle.

Adults in the community appreciate the drinking water system because it is easy accessible, clean, and saves time. No health problems have been encountered since installation of the new water system, but children have not yet been educated about its benefits. The community has benefited physically, economically and socially from the project. Since community members have gained access to potable water, their health status has improved and they have been able to work harder and earn more for their livelihood. This in turn has helped to raise their economic and social status. As the villagers worked together they shared a sense of togetherness and better understanding of each other. It is quite true that sometimes this type of collective work may lead to disputes among certain individuals or groups, but as the time goes on, most villagers begins to understand the importance of the experience for themselves and their community. They gradually come forward to work for the betterment of all, leaving behind all their ill feelings. After the shallow tubewells and tap water were provided by DWSO and LRWSSP a considerable reduction of water-borne diseases was reported by villagers. According to the informal leader of the Ex-Service Men's Association, Mr. Purnabhadur Lama, the incidence of diarrhoea, dysentery, and jaundice (hepatitis) has decreased. During the case study no obstacles were encountered. The following were the immediate impressions of the reviewers:

- As drinking water is the top priority need for the community, the community is highly motivated to assist in the drinking water project.
- As the community is small, mobilization for participation was facilitated.

- Protection of the source was found to be inadequate. Without tree plantation the source might dry out in the long run.
- As open defecation is still practised, there is a possibility of pollution in the source.
- Users Committee members are doing well so far but the school children are still to be educated in the importance of water, sanitation, environment and their responsibility to maintain water supply and sanitation systems.
- The locally trained CHV got married and left the village. Now there is no person in the village that is trained in sanitation education.
- Frequent visits and good rapport among agency staff, HMG staff and the community have resulted in good management of the water system.
- Important factors contributing to this success are the relatively higher literacy rate, homogeneity, and timely supervision of agency and HMG staff.
- Although the landless people could not contribute financially, they contributed in labour.

Even though the users were highly motivated during project implementation, they were found to be less motivated to take care of the scheme after completion. The community does not want to pay the maintenance worker. As a result, the maintenance worker is not interested to do the work nor keep the tools properly. If anything breaks down, particularly the tapstand, individual householders pay for the parts. In the ex-servicemen settlement, the cost of buying expensive parts is shared.

On the whole, it is a successful project. The villagers participated throughout the whole process of the project, from the initial request for drinking water through planning, designing, and implementation to operation and maintenance activities. In each stage of the project the villagers took the final decision and applied it in practice. After one year of self-operation the project is fairly well maintained. However, it is recommended to take immediate action for protection of the source including afforestation around the source so that it is well-guarded from travellers, cattle, and cowherders.

For future effectiveness:

- users should be well motivated to protect the water source for safety and sustainability of the water source
- school children should be educated on the importance of safe drinking water and sanitation
- the VMWs should be paid by the community so that they get motivated in doing their work appropriately
- women must be involved throughout the process and be represented in User Committees
- women caretakers would be appropriate to see that water points are kept clean
- women should not be burdened only with the physical work involved.

Areas for further development

All the NGOs and ESAs mentioned in this paper are involved in community participation activities for rural water supply systems in the country of Nepal. Although there are different objectives and approaches in community management of rural water supply, the overall goal is to make the community itself sustain the water supply system. However, the field survey,

done in 1994 by CoWater International, Metcon Consultants and P.P Pradhan & Co indicates that out of the sampled projects, only a few were found to incorporate community involvement in any meaningful way. Problems encountered in water supply projects in the field are:

- lack of funds collected for maintenance
- lack of preventive maintenance - villagers either do not know why maintenance is needed or do not want to touch the water system as they feel it belongs to the government
- misuse by consumers - selfish and unthinking villagers have often cut pipes to irrigate their fields or to collect drinking water
- bad design of the technology, in the sense that the design was not adapted to the economic, social and technical conditions
- natural disasters, such as landslides.

Most of the organizations working in rural water supply are giving training to the communities, in order to enhance the sustainability of village water systems. However, there is a need for proper training which should be specific and practical on-the-job training. Training materials, methods and techniques are too limited at present and there is scope for improvement and adaptation.

The gender approach is still weak. That women are the key change agents in the process of improving hygiene behaviour in households and communities is now generally accepted by the major agencies. HMGN has also endorsed the initiative to involve women in the development process. But there is no equal distribution of roles, responsibilities and benefits between men and women. Women work as health volunteers while men are assigned as VMW, which is a paid job.

DWSS remains responsible for support services for the operation and maintenance of rural water supply systems after the projects are handed over, but it is very rare that it takes this responsibility in practice.

The sector development strategy clearly mentions that the role of the private sector and NGOs in the sector will also be enhanced through improved promotional and coordination efforts. DWSS, being the leading sector agency, will establish a formal linkage with the NGOs, primarily at the district level through the DDC and the social welfare council (SWC) and is charged with providing consistent policy guidelines and technical support.

General adoption of participation methods designed for community management of rural water supply and sanitation improvements, and a technical support system enabling communities to execute this management, will be crucial for the general and effective implementation of this policy.

Chapter 6

A Situation Analysis of Rural Water Supply in Pakistan

A.N. Pervaiz, Altaf Hussain and Dil Feroze

Summary

In Pakistan, government agencies like the Ministry of Local Government and Rural Development and the Public Health Engineering Department are responsible for initiating almost all water supply schemes in the country. A number of external support agencies like United Nations Children's Fund (UNICEF), the World Bank, the German für Technische Zusammenarbeit (GTZ), the Canadian International Development Agency (CIDA) and the Dutch government are also active.

The unsatisfactory condition of many existing schemes has been brought about by the lack of government resources and a traditional top-down approach, in which schemes are planned, constructed and maintained by the agencies alone. The problems in these schemes are manifold: lack of interdepartmental coordination, high rate of breakdowns, low cost recovery, improper use by communities, lack of equity in gender and power groups, lack of proper monitoring and evaluation, and inadequate staff training.

The very high cost of operation and maintenance (which accounts for over half of the budget of the Public Health Engineering Department (PHED)) is one of the reasons that the government's approach is gradually changing, and that it is now promoting community involvement in operation and maintenance of water supply schemes.

Currently the government, Non-Governmental Organizations (NGOs) and international agencies are involved in joint implementation of community-based rural water supply schemes in the four provinces and two of the three regions in the country. The level of community involvement varies, as explained in the five programmes presented at the end of the report.

The members of community organizations are male, who rarely consult with female community members. The level of training currently being provided by the agencies is extremely limited or non-existent. It is given only to men and is limited to operation and maintenance. In a number of projects, community involvement is minimal, due to the gap between elected representatives and the rest of the community, which undermines any sense of ownership and responsibility. An unwillingness to help pay for projects was found, due to the perception that this is the responsibility of the state.

Because of lack of data, no structural information is available on technical and administrative performance of community-managed water supply systems. A case study of the experiences in local water management in Madinatul Karim Village shows a lack of community interest in the maintenance and management of a constructed water supply scheme. The main reason identified is because the scheme does not provide water of a better quality than the people already have access to, close to their houses. Lack of proper training for community members is another identified reason.

Acronyms and abbreviations

ADB	Asian Development Bank
ADP	Annual Development Plan
AJK	Azad Jammu Kashmir
AKRSP	Agha Khan Rural Support Programme
CIDA	Canadian International Development Agency
ECNEC	Executive Committee, National Economic Council
FSU	Federal Support Unit
GNP	Gross National Product
GTZ	Gesellschaft für Technische Zusammenarbeit
IDA	International Development Association
KfW	Kreditanstalt für Wiederaufbau
LB&RDD	Local Bodies and Rural Development Department
LG&RDD	Local Government and Rural Development Department
MIS	Management Information System
MLG&RD	Ministry of Local Government and Rural Development
MSU	Multi-Donor Support Unit
NGO	Non-governmental organization
NWFP	North West Frontier Province
O&M	operation and maintenance
ODA	Overseas Development Administration (UK)
OPP	Orangi Pilot Project
P&DD	Planning and Development Department
PHED	Public Health Engineering Department
PIT	Project Implementation Team
PKR	Pakistan Rupee
PPH	Physical Planning and Housing
RWSS	Rural Water Supply and Sanitation
SAP	Social Action Programme
SRWSS&HP	Sindh Rural Water Supply, Sanitation and Health Project
TOP	Terms of Partnership
UG	User Group
UNDP	United Nations Development Programme
UNICEF	United Nations Childrens Fund
VDO	Village Development Organization
VO	Village Organizations
WG	Women's Group
WLG	Women Leaders Group
WO	Women's Organization
WSC	Water and Sanitation Committee

Country profile

According to the United Nations Development Programme (UNDP) Human Development Report, 1994, Pakistan has been experiencing a fairly high economic growth rate of over 3.2 percent annually for the last decade. However, delivery of social services and expansion of social infrastructure have not been able to meet some of the most basic needs of the population. It is on the basis of the existing social sector services that Pakistan has been placed at a dismal 132nd by the UNDP Human Development Index. Only 38 percent of the population is literate; and this figure includes those who are merely functionally literate. Clean water is available to only half the population and sanitation facilities to a mere 11 percent. Furthermore, this fortunate part of the population is concentrated, disproportionately, in the urban centres.

Pakistan occupies about 803,944 km² of land and has a population of 124 million with a per capita Gross National Product (GNP) of USD420. It borders Iran on the south-west, Afghanistan to the west and north, China to the north-east, India all down the east and the Arabian Sea on the south. Pakistan is divided into four provinces, The Punjab, Sindh, North West Frontier Province (NWFP) and Baluchistan. Two other regions, the Northern Areas (Gilgit, Hunza, Chilas and Skardu) and Azad Jammu Kashmir (AJK) are politically and geographically separate from the provinces and are administered by the Federal Government.

Geographically Pakistan falls into three main regions: the mountainous north, where the Pamir, Hindu Kush, Karakoram and Himalayan ranges meet; the vast but sparsely populated plateau of Baluchistan; and the Punjab and Sindh plains of the Indus River and its five main tributaries. The Indus plain apart, Pakistan is mostly mountainous deserts and arid plateaux.

Pakistan's economy is heavily dependent upon agriculture, which accounts for 32 percent of the GNP and employs nearly three-quarters of the country's population. Wheat is the main food crop, followed by rice, millet, maize, barley and pulses. Cotton is by far the most important cash crop and accounts for 5 percent of world production. Textile manufacture is Pakistan's most important industry, followed by light engineering, food processing, cement, pharmaceuticals, fertilizer, leather and rubber.

Pakistan is a federal parliamentary democracy where the president is the head of state. The administrative structure of the country is as follows:

Federal Administration: The Azad Jammu and Kashmir, Northern Areas and Tribal areas are directly administered by the Federal Government appointing one or two federal ministers, and the Capital territory by an Administrator/Chief Commissioner.

Federal Government: is elected through universal franchise and is headed by a prime minister who presides over a cabinet of federal ministers. The prime minister is answerable to the parliament.

Provincial Government: is headed by a chief minister who is elected through majority vote in the provincial assembly. The provincial chief secretary is the most senior administrative officer in the province.

Division (4-8 per province): a division, after the province, is the largest administrative unit and is headed by a commissioner.

District (4-5 per division): the second largest administrative unit is headed by a deputy commissioner.

Tehsil (3-5 per district): is headed by an assistant commissioner.

Union Council (for every 8-12 villages): is an elected body working at the *tehsil* level and is headed by an elected chairman.

The lack of clean water and sanitation facilities is one of the main reasons behind the high child mortality rate in Pakistan, 99 per 1000. Diarrhoea accounts for 45 percent of all child deaths in Pakistan and is the single largest cause of child mortality. The need is not only to increase coverage of Rural Water Supply and Sanitation (RWSS) schemes but also to improve the manner in which they are planned, constructed and managed. Improvements in water supply will not only reduce child mortality but also improve the quality of life in the rural areas. Women, who are the principal users and managers of water in the households, would, for example, benefit by saving time spent in water collection.

The technologies applied to improve conditions in the RWSS sector depend on the geographical conditions of the region. However, most of the schemes in Sindh, Punjab and Baluchistan consist of ground water extraction (boreholes), whereas in the hilly areas of AJK, NWFP and the Northern Areas gravity flow schemes are most common.

Inadequate provision of clean drinking water to the rural population has been exacerbated not only by lack of government resources, but also by the traditional top-down approach adopted by the agencies implementing RWSS schemes. The agencies build, operate and manage the schemes implemented by them. The consequence of this mode of working has been that with current trends in costs for operation and maintenance (O&M) of RWSS schemes, the Public Health Engineering Department alone will require resources to the tune of PKR.600 million annually for O&M of schemes from 1994 onwards. The problems confronting the RWSS implementing agencies are manifold: lack of interdepartmental coordination, high number of breakdowns, low cost recovery, improper use of schemes by the communities, lack of equity – both in relation to gender and power groups – lack of proper monitoring and evaluation, inadequate staff training and insufficient staff, to name the most important. The present situation, however, can be corrected. There are some examples of a few programmes or institutions that are trying to fill these gaps: the Social Action Programme (SAP), the International Development Association (IDA) project in AJK, and the Water and Sanitation Section of the Local Government and Rural Development Department of Baluchistan (LG&RDD) etc. The way forward has been shown by many development programmes, projects and agencies in the developing and developed world. The phrase used for redeeming the past practice of the failed top-down approach is: community participation.

People, it is contended, are rational decision makers. They are willing to assume responsibility for managing whatever is of importance to them, provided they have control and/or influence over factors affecting them. It is now a well established fact that – in any given situation – participation of intended beneficiaries is vital to the appropriateness and sustainability of any

scheme aimed at social development. The impact of the community participation approach – and by extension, community management – becomes visible not only in better management of schemes but also in improved efficiency in delivery and organization of social sector concerns. To repeat an oft-mentioned phrase, the government has to change its role from that of provider to that of a facilitator. In Pakistan, the Aga Khan Rural Support Programme (AKRSP) and the Orangi Pilot Project (OPP) are the two pioneers in this philosophy of development through community participation.

This changed approach to social sector delivery is gradually gaining currency with the government. International donors are also pressing for the adoption of practices which lead to the people becoming partners – with the government – in their own development. International donors and NGOs like CIDA, GTZ, ODA, The World Bank, UNICEF, UNDP and many others are currently involved in providing assistance to government agencies for strengthening of their technical and community mobilization capacities. The Federal Support Unit (FSU) established jointly by the World Bank and UNDP with the above mentioned objectives in mind was discontinued in early 1995 by the Ministry of Local Government and Rural Development. At present the Multi-Donor Support Unit (MSU) is coordinating the Social Action Programme (SAP) all over the country. Under SAP there are four priorities: water, sanitation, education, and planning. The government of Pakistan has provided 75 percent of the financial resources and the remaining 25 percent has been provided by the World Bank for the implementation of SAP. The MSU is assisting the government at federal and provincial levels in the planning and implementation of SAP.

It is hoped that the future will see better delivery, coverage and management of social services and infrastructure in Pakistan. This paper will highlight the traditional operational methodology of agencies implementing RWSS schemes and provides examples from community-managed RWSS schemes.

Agencies involved in rural water supply in Pakistan

The coverage of rural water supply and waste disposal facilities in Pakistan is 59 percent and 11 percent respectively. Under the Eighth Five Year Plan (1993-98) it is envisaged that 75 percent of the population will have access to safe and adequate water supply and 32 percent will have access to sanitation facilities. The government is involved in rural water supply and sanitation at the federal, provincial and local levels. Government agencies are responsible for initiating 95 percent of all water supply and sanitation schemes in Pakistan. The private sector (NGOs and international aid agencies) are also involved in implementing water supply and sanitation schemes, albeit on a much smaller scale.

Federal agencies

At the federal level, two agencies have a role in the rural water sector. The Physical Planning and Housing (PPH) section of the Ministry of Planning and Development is responsible for processing water supply and sanitation investments as part of the Annual Development Programme, prepared for the entire country by the Federal Government and for the provinces by provincial governments. The PPH assesses the preliminary proposals for projects above a minimum size and then seeks approval from the Central Development Working Party and the Executive Committee of the National Economic Council (ECNEC).

The Federal Ministry of Local Government and Rural Development (MLG&RD) is responsible for coordinating between the provinces and federal government. Project proposals for the implementation of rural water supply and sanitation projects are first sent to MLG&RD for approval, which then forwards the proposals to the Planning and Development Department (P&DD) of the Federal Government.

Provincial agencies

Provincial agencies dealing with rural water projects are the Planning and Development Department and the Public Health Engineering Department (PHED). The Planning and Development Department (P&DD) is primarily an administrative and coordinating body. Its task is to prepare the Annual Development Plan (ADP) for the provinces and to monitor the execution of all development projects. P&DD is also responsible for releasing funds to PHED and LG&RD departments which provide P&DD with monthly and quarterly progress reports based on which P&DD releases funds to the two agencies.

The PHED has a representation in each province. These are the main implementing bodies in the RWSS sector. Their main activity has been in the water supply sector, followed by sanitation and drainage. PHEDs are responsible for the implementation of large RWSS schemes (villages with a population of more than 1,000), whereas medium (population of 500 to 1,000) and smaller sized schemes (population under 500) are implemented by the LG&RDDs. PHEDs are concerned mainly with the physical engineering and execution of works and have no social organizational component in their approach. PHED undertakes work for repair and/or expansion of existing RWSS schemes.

Local Government and Rural Development Department (LG&RDD) *

The LG&RDDs are involved in implementing water supply and sanitation schemes in small and medium sized villages as well as in construction of primary schools, basic health units and link roads. The departments operate at the provincial, divisional, district and *tehsil* (sub-district) level. The departments are headed by a director general at the provincial level. Divisions are headed by a divisional director assisted by assistant directors, and districts have an assistant director supported by assistant engineers and sub-engineers. The latter are responsible for project feasibility, site inspection and certification of payments.

Local agencies

At the two-tier local level, district and union councils are involved in the RWSS sector. District councils (first tier) are responsible for disbursement of Annual Development Plan (ADP) grants and their own funds for proposed projects, promotion of waste disposal and public health, disease control, water supply and drainage works. At the second tier, union councils – covering between 10 and 18 villages – are responsible for provision and maintenance of water supply schemes, prevention of contamination of water supply sources and regulation of water use.

Private sector

The private sector consists of contractors, manufacturers of equipment, well drillers, local artisans, masons and homeowners themselves. The main area of activity for the private sector

* In the Northern Areas of Pakistan the Local Government and Rural Development Department (LG&RDD) is called Local Bodies and Rural Development Departments (LB&RDD).

has been in regions with abundant groundwater supplies. The technologies most applied are sinking of tubewells and installation of handpumps.

Non-governmental organizations

The NGO experience of RWSS in Pakistan has been negligible. The Orangi Pilot Project (OPP) and a few other organizations are working in the RWSS sector but their range of operations is limited mostly to a few areas within a city – as is the case with OPP in Karachi – or a few villages in each provincial district.

External support agencies

UNICEF, UNDP, the World Bank, GTZ (Germany), CIDA (Canada), KfW, ADB, IDA, the Netherlands Government and some other external support agencies are currently involved in the RWSS sector in Pakistan. Their involvement ranges from technical, managerial and social organizational support to actual implementation of RWSS schemes in select areas. The World Bank-funded AJK RWSS extension project being implemented in conjunction with the LG&RDD in Azad Jammu, Kashmir (AJK) is the only project which has gone to scale.

Projects introducing community involvement in water supplies

The government, NGOs and international agencies are currently involved in joint implementation of community-based rural water supply schemes, in all four provinces as well as in the AJK and Northern Areas of Pakistan.

UNICEF-assisted projects

LG&RDD, with assistance from UNICEF, has implemented a number of community-based rural water supply schemes in Baluchistan, the Punjab and AJK. The department has installed tubewells and handpumps in Baluchistan and the Punjab, and gravity flow piped systems in the mountainous regions of AJK and Northern Areas. The projects are being implemented in smaller communities so as to make systems management less complex for rural communities. The main problem facing LG&RDD is in the implementation of gravity flow piped water supply systems; the department lacks the engineering capacity to carry out the task. On top of that we see a lack of departmental coordination and a tendency toward inflexible approaches. For construction of water supply schemes, the department requires the formation of a project/water committee of four to seven male members from the community. These individuals are mostly local notables and are headed by a member of the union council. Participation of ordinary members – men and women – in the project or water committee is often neglected. The project committee ceases to exist after the scheme has been constructed and the functions for O&M are then taken over by the union councils.

Baluchistan*

The Baluchistan rural water supply and sanitation cell of LG&RDD, in collaboration with UNICEF and the Dutch government, is helping rural communities to gain access to safe drinking water and sanitation facilities. The department is concentrating mainly on improving traditional well systems by installing communal handpumps, introducing a sanitation

* Water and Sanitation Cell LG&RDD Quetta, Baluchistan

component and disseminating hygiene education for men and women. The organization has aimed to develop local institutions and community management structures and to speed up the physical process of the water supply and sanitation projects. The projects were implemented in a systematic way by encouraging community participation. Subsidies were gradually reduced and community contribution has increased over time. As of October 1995 1,000 water and sanitation projects out of 2,000 had been completed. A unified policy is being adopted by LG&RDD for effective participation of the intended beneficiaries in planning, site and source selection, construction and management of RWSS schemes.

Under this policy, the community shares the cost (ranging from PKR 2500 to 3000) of the scheme and provides land, unskilled labour and local materials for construction. The community is also responsible for managing the system, and nominates a caretaker. The department provides training in plumbing to the caretaker. All decisions related to setting user charges and management are the responsibility of the user group. The user group (UG) is comprised of one member from each household in the village. The UG in turn nominates a committee whose responsibility it is to supervise the system and the caretaker. LG&RDD is also conducting an assessment of the community's willingness to construct latrines at the household level on a cost-sharing basis with the department. In addition to the provision of communal handpumps, the department is also distributing sanitation components for individual households.

North West Frontier Province

PHED is responsible for implementation of water supply and sanitation schemes in urban and rural areas of NWFP. In 1984, with financial assistance from Germany, a drinking water supply and sanitation programme was initiated in the Afghan refugee camps. Later, this project was extended to the local population. Since 1991, PHED has also initiated water supply schemes for Chitral Town and roadside villages with the help of experts from Dorsch Consultants. In the implementation strategy, the factor which has been most stressed is community participation. The community is involved in planning, construction and O&M of the system. To achieve this goal PHED is gradually transferring responsibilities for O&M to the users.

Azad Jammu Kashmir

In the mountains of Kashmir LG&RDD, with technical and financial assistance from UNICEF, has implemented a large number of community-based small water supply schemes (gravity flow and gravity flow and pumping system) in the villages of AJK. This project was initiated in 1976. The criteria adopted for identification of intended beneficiaries were: the presence of a school and/or a request from a political personality. O&M of the scheme is the responsibility of the user group which comprises four to eight villagers. Maintenance and repair of the water-lifting motor is the responsibility of the user group. Although the amount and mode of cash collection for the maintenance fund differ from village to village, most households contribute some amount. In UNICEF-assisted projects, UNICEF imparts free training to villagers in plumbing and also provides a tool-kit.

LG&RDD, with funding from the International Development Agency (IDA), is implementing a project with technical and hygiene education assistance from the Binnie, Hunting, Techred Joint Venture Technical Advisory Unit in AJK. The department has initiated ten pilot schemes and, based on the experiences drawn from these schemes, the department will implement

1,600 additional water supply and sanitation schemes in the next six years. These schemes comprise simple gravity flow systems from springs or channels and water-lifting systems. The methodology of the project is to involve the community in the planning, construction and management of the scheme. The department thought that targeting 266 schemes over a year would be quite a high number to achieve. The cost of schemes ranged from PKR 10,000 to 8 million, depending upon the size of community and technologies adopted. By October 1995 nearly 40 percent of the population had been covered.

Scheme identification is a joint activity of politicians, communities and LG&RDD staff. Whoever was responsible for identifying schemes, the department ensured that the community fulfilled the designated criteria for getting the scheme. The communities are now aware from the beginning about their responsibilities for the operation and maintenance of the water supply schemes, and are ready to shoulder them. The department has constituted project field teams at the district level whose function will be to: a) conduct a socio-technical survey of the villages; b) form water and sanitation committees composed of male community members, and; c) impart hygiene education to male and female members of the community. The project has also formed village level female committees in completed schemes for maintenance and hygienic use of water from communal standposts.

The Northern Areas together with the Aga Khan Rural Support Programme

In the early 1980s LB&RDD, with financial assistance from UNICEF, started a community-based rural water supply and sanitation project in all five districts of the Northern Areas. The locations for schemes were identified by the district council and implemented through union councils. The department required the formation of a project committee for managing the RWSS schemes after completion. The original plan envisaged full community participation in all aspects of the project cycle. However, most of these water supply schemes are presently in need of extension and/or rehabilitation; pointing again to a certain failure in involving the intended beneficiaries of the scheme.

An important institutional constraint, especially with respect to maintenance, performance and acceptability of water supply systems, is the nature and mode of community involvement. In the past, in UNICEF-assisted schemes, LB&RDD have relied on district and union council members for identification and implementation of water supply schemes. Village project committees have generally been headed by union councillors and have consisted of selected village notables. Working through elected representatives, but without broad participation, does not create the sense of ownership and responsibility in the community that is needed for success.

LB&RDD recognizes the weaknesses in its earlier methodology and is keen to rectify the situation under the government's Social Action Programme (SAP). LB&RDD plans to establish 350 rural water supply schemes under SAP with assistance from the Aga Khan Rural Support Programme (AKRSP) in social mobilization. This scheme was initiated in August 1994 in the villages of the Northern Areas.

Sindh

The Sindh Rural Water Supply, Sanitation and Health Project (SRWSS&HP) under LG&RDD is being implemented in District Sukkur and Larkana. Project implementation arrangements rely on the network of people composed of the Rural Development

Department's regular, incremental staff and consultants. Communities are approached by Project Implementation Teams (PITs), each team consisting of three to four members (male and female). The major role of the PIT includes motivation for community development, assistance in the formation of Village Organizations (VOs), Women's Groups (WGs), and a Women Leaders Group (WLG), and assistance in identifying need, hygiene and health education, infrastructure development, installation arrangements, repair, maintenance and related tasks. The role of VOs, WGs, and WLG revolves around overall development of the village, including operation and maintenance of water and sanitation projects, and health education activities. These groups have been developed in such a way that they can represent the village, approach the government departments and undertake any kind of development that they wish.

Organization and performance of community water management

Procedures

The PHEDs do not follow particular criteria when selecting a village for a RWSS scheme. Most of the PHED projects in the RWSS sector, except those being implemented with technical and financial collaboration from international extension and aid agencies, are initiated and identified by the communities themselves and followed through by their elected representatives. In existing schemes, the process of planning and execution is carried out entirely by the PHEDs without any input from the communities, men or women. The projects are executed by hired contractors with the community having no say in their selection. After completion of the project, PHED is responsible for O&M for two years without any contribution from the community. After this period of two years the project is handed over to the union council for operation and maintenance, which is funded by revenue collected from users. However, having received no training for plumbing or accounting, the community management system is not functioning very well.

O&M accounts for almost 60 percent of PHED's yearly budget. The increasing O&M cost has placed a heavy burden on the PHEDs and they find their time and resources stretched to the maximum. The majority of the RWSS schemes implemented by PHEDs use community standposts – which are exempt from cost recovery – which exacerbates the financial shortfall of PHEDs. PHEDs have attempted to bridge the gap between allocation of resources to and demands from consumers by cutting O&M expenditures. As a consequence, service levels have deteriorated and the number of proposed schemes has been reduced.

Due to continuing financial constraints, the PHEDs have formulated plans to involve the communities in the operation and maintenance of projects in the future. At present this entails handing the RWSS schemes over to the village water committees, under direct supervision of the union councils, for operation and management. This has not proved to be successful, as a large number of schemes become non-functional within a short period of time. This, again, is due largely to the lack of financial and managerial capacity in the union councils. In Punjab – the province with the greatest number of RWSS schemes – 26 percent of the schemes are currently non-functioning.

LG&RDD departments work differently in the respective provinces. In the provinces of Sindh and Punjab, for example LG&RDDs either do not involve the community in any phase of the

project cycle or reserve a minimal role for villages. Typically this would mean that the village is expected to provide free unskilled labour and/or materials.

The involvement of the private sector by the implementing agencies in RWSS schemes is limited to PHED contracting the construction of the scheme to private companies. In the Punjab, Sindh and Baluchistan, communities are not consulted when selecting the contractor. However, under the IDA project in AJK, communities are given the opportunity to select the contractor. In summary: where the community is more involved in the selection of the contractor, the accountability of the contractor is higher in terms of construction lag periods, quality of construction and costing of schemes.

In AJK and the Northern Areas, LG&RDDs include social mobilization as a part of their operations. Before a project is initiated by LG&RDD, a project committee composed of intended beneficiaries, who are almost always male members of the community, is formed. Upon approval of the project by the chairman of the union council, the project committee signs a legal Terms of Partnership (TOP) with the LG&RDD. The functions of the committee include responsibility for provision of labour and material, supervision of construction, and management of community funds, if any. After completion, the project committee is dissolved and replaced by a water committee. The existence, effectiveness and the process of selection of the water committees varies from village to village.

Water management organizations in the communities

All agencies which promote community-managed water systems encourage communities to involve existing community organizations in the water management or to form new community water management bodies. Different names are given to local organizations by provincial departments in water supply and sanitation projects. LG&RDD uses the term 'user group' (one person from every compound/household). The members of the user group are male but are advised by the department to consult with the females in the community before selecting a water site. However, experience has shown that in practice the committee members rarely consult the female community members for anything. The user group is responsible for sharing the cost of the project and for nominating a person (male caretaker) for its operation.

In the IDA-funded project in AJK, a Water and Sanitation Committee (WSC) is formed by the department's field team after completion of the socio-technical survey and prior to construction. The WSC is organized at the village level under the stewardship of a member of the union council. The department also forms small sub-committees organized at the *mahallah* (settlement) level. One representative from the sub-committees is appointed as a member of the WSC. After completion of the water supply scheme, a village committee, comprising one female representative for every communal standpost, is organized. The committee is responsible for managing the use of standposts.

PHED is in the process of forming Village Development Organizations (VDO) through its social organizer. The VDO is expected to be strong enough to address other village development needs besides management of the water and sanitation scheme. The VDO must represent at least 25 percent of the village households; every member of the VDO will spend a minimum of two years on the committee. All members will have to pay a membership fee and will be responsible for operation and maintenance of the water supply scheme including any other responsibilities assigned by PHED. This programme is in its preliminary stage and it is

too early to comment on its viability. It is, however, necessary to add that the minimum required representation of 25 percent of the village households in the committee is extremely low. Genuine participation of the community cannot be achieved with such a small segment of the population.

Under the Social Action Programme of the government, the Northern Areas LB&RDD plans to use the AKRSP-fostered Village and Women's Organizations (VO or WO) for implementation of water supply schemes. In villages where there are no VOs or WOs, the field team (comprising a male and female social organizer and sub-engineer) will form a user group. In the village-wide meetings of the VO and WO a committee of four to six persons including a female member will be formed for O&M of the scheme.

Payment for operation and maintenance

Both PHEDs and LG&RDDs require that the community pay charges for use of the water supply. In reality, however, this is rarely the case as there is a very high default rate. Revenue collection stands at 50 percent or less for all the provinces. The main reason cited for the community's unwillingness to pay is the perception that delivery and maintenance of social sector services is the responsibility of the state. This attitude is sometimes validated by elected representatives, when seeking the support of their constituents.

Union councils are, in principle, the responsible body for revenue collection and scheme operation at the village level. However, what the communities pay and how they pay varies from community to community. The water charges to be collected are decided in an open village-wide meeting, a meeting with selected representatives from the community, or simply by the agency in question. For example, the incidence of communities deciding what amount to collect as water charges was 78 percent in AJK, while it was only 35 percent in the Punjab. Revisions in water charges are also determined according to the three modes mentioned above. Payment is usually uniform and is collected on a household basis by an individual – invariably a male – who is either a member of the union council or its appointee.

The funds collected by the union councils are used for O&M and repair of the scheme as well as payment of salaries to plumber or technician as the case may be. Most union councils, however, are perpetually in a financial crisis as their expenditures far outweigh their receipts. There is no formalized system in any of the provinces or Northern Areas whereby expenditures on the RWSS schemes are accounted for and made public. Moreover, union councils usually find themselves incapable of maintaining proper accounts. However, where the level of community participation is high, as in AJK, it has been seen that the community ensures transparent financial operations.

Development of skills and know-how

The need for imparting timely, efficient and relevant training is essential for ensuring the sustainability of RWSS schemes. The kind of training provided will have a direct impact on specific project outcomes. The levels of training currently being provided by the agencies ranges from extremely limited to non-existent. Formal training was provided to only 20 percent of the schemes in the Punjab and to 25 percent in AJK; the situation in Sindh, Baluchistan, Northern Areas and NWFP is similar.

Typically, the training imparted is for valve repair, pipe joints, or the operation of motor pumps. No training is provided for accounting, bookkeeping or management. The training provided is on-the-job and almost exclusively for men; no refresher courses are provided and in a case where the trained person becomes unavailable for the job, the community has to bear the responsibility of identifying and training a new person, something communities rarely do.

Legal and policy issues

The government has started to promote the concept of community involvement in O&M for social sector schemes. In the Northern Areas, LB&RDD has prepared a legal document which will serve as a Memorandum of Understanding between the department and the community (project committee or village organization). In this document are clearly mentioned: the responsibilities of each, the agency and the community; and the time frame for completion of the WSS. If the project committee or village organization does not complete the scheme within the stipulated time period or if the scheme is left incomplete, the agency will have the right to take legal action against the community.

In the absence of national laws governing use of water, it is necessary to formulate laws at the community level. Experience has shown that issues related to use of private property need to be legally defined among the village organization, the project group, the users group and property owners before implementation of an RWSS scheme. These agreements are necessary in order to utilize private land or water sources for communal water supply systems. In most RWSS schemes, the community designates communal land for the installation of a handpump or a water tank in the case of piped water supply schemes. Sometimes, however, due to unavailability of communal land, the project committee and the user group will strike an informal agreement with private land owners for the use of their land. It has been observed that such non-legally binding agreements have the potential to create problems which can affect the viability of the scheme. For example, in the Ghanche district of the Northern Areas, the project committee in one village had a verbal agreement with a member of the community for the use of his land for construction of a water storage tank. But after the completion of the scheme the owner of the land asked for compensation. After an altercation with the project committee he closed the tank for use by the villagers. To avoid similar problems, the user group in Baluchistan is preparing a legal document called the 'Wakf' agreement. Under the Wakf injunctions of Islamic law, the owner of private land must allow use of his or her land for communal benefit, free-of-cost, upon oral or written agreement.

Performance of community management: monitoring and results

Even where RWSS schemes are managed by the union councils no monitoring activity is undertaken. Both PHEDs and LG&RDDs conduct project monitoring activities which are, basically, exercises in data collection of indicators for tracking the physical and financial progress of functioning schemes. The departments collect information on a quarterly and monthly basis using forms developed by the Planning and Development (P&D) Department. The information gathered pertains to physical progress, total cost and total expenditure incurred by the scheme. Neither of the two departments maintain any information on operation, maintenance, coverage, environmental impact or any other variable of importance for comprehensive and effective monitoring. In short, the process of evaluation is completely absent.

The main purpose behind the information which the agencies collect, appears to be a fulfilment of standardized procedure rather than a means by which to gauge the efficiency of the scheme or improve the operational methodology of the agencies. The agencies collect only that data which is required by the P&D Department before release of any development funds. Furthermore, no field visits are undertaken by the personnel from P&D department to verify the data provided by the PHED and LB&RDD departments.

The two main problems with data collection in RWSS implementing agencies are:

1. **Incompatibility of information:** There is no uniformity in the type of information which is gathered by the same agency working in different provinces. For example, the proforma used by PHED in the Punjab is different from the one used in AJK or Sindh. The consequence of this incompatibility is that there is no interdepartmental possibility for information sharing and monitoring, nor is a sectoral assessment possible.
2. **Lack of proper information storing methods:** Although the departments do have their own Management Information Systems (MIS), these are not up to modern-day standards. Most of the information gathered is stored manually in files; where the departments do have computers, they remain under-utilized for data storage, analysis and report generation.

Because of this lack of data, no structural information is available on the technical and administrative performance of community-managed water supply systems. An in-depth case study in one village revealed a number of problems with the management of the participatory process and the resulting community water supply.

Case Study: Madinatul Karim, Gilgit, Pakistan

The team which prepared this country study chose Madinatul, one of the hamlets in the village of Nomal, for an indepth study of the process, execution and performance of community water management. This community is situated at a distance of 17 km from Gilgit town. The water supply project in Madinatul Karim was selected for this study because:

- it was close to Gilgit so it could be studied in the short time that was available
- the beneficiaries of the scheme encountered technical, social and management problems during implementation, operation and maintenance of the scheme
- according to the government department, several water supply schemes are operational in Nomal.

The research team spent three days in the field. On the first day, the whole of Nomal village was visited. The various water supply schemes were thoroughly inspected and the team had informal discussions with the beneficiaries. The objective of this first visit was to identify one water supply scheme for the study. After discussion back in the office, the hamlet of Madinatul Karim was selected. On the second day, the team used the technique of village mapping with seven participants in the hamlet. The participants included the ex-VO president and manager, shopkeepers and other villagers. In addition, the group discussion and individual interviews with key informants were conducted with the help of a checklist. On the same day, the research team walked through the streets of Madinatul Karim to make personal observations about the water supply and sanitation conditions. On the third day, the pocket chart technique was used with nine participants. During this exercise again, group discussions and individual interviews were conducted, guided by the checklist.

Characteristics of the community

There are 700 households (families) in the whole of Nomal village. About 90 households are settled in Madinatul Karim. The population of Madinatul Karim is nearly 1,000, comprising 550 adults and 450 children. Agriculture is an important source of income. Generally, at least one member of the household has an income from government services, wage labour or from small retail shops. The majority of the women work on the farms. Very few women are employed in the education sector. The people interviewed reported an estimated maximum annual income of PKR 120,000 and a minimum of PKR 20,000. The average annual income was reported to be PKR 40,000 per household.

According to the inhabitants of Madinatul Karim, this hamlet is the most prosperous one in Nomal. The inhabitants are migrants from the Hunza valley. Some 85 percent of the households belong to the Ismaili sect and 15 percent belong to the Shia sect of Islam. They speak respectively Buroshasky and Shina languages. According to the people interviewed, the literacy rate for the old generation is 20 percent. The present enrolment rate for both the boys and girls is 100 percent.

There are no fatal diseases prevalent in Madinatul Karim for adults. The older men and women, however, complain about severe pains in their knees. The majority of infants suffer from diarrhoeal diseases, which are very common in Madinatul Karim.

Traditionally, the people collectively manage common resources and communal projects. The people of Madinatul Karim collectively maintain and manage irrigation channels, link roads, water storage tanks, Diamond Jubilee Schools, Mosques, Jamat Khanas and Health Centres. However, the level of participation varies from project to project, depending on the magnitude and the perceived value of the benefits to the community and the number of actual beneficiaries. People give top priority to the management of irrigation channels, Diamond Jubilee Schools and religious institutions. The communal teamwork, however, depends on the level of benefits the common resources produce for the community.

Apart from participating in the management of communal resources, the people in Madinatul Karim assist each other in their daily and seasonal peak farming activities. In the local language, this assistance is called *harashary*. Under this system, the relatives, friends and neighbours help each other in sowing crops, weeding, harvesting, threshing and constructing and repairing houses. These services are rendered free-of-charge, but the households using these services will occasionally arrange lunch, afternoon tea and, on some occasions, dinner for the participants. The people interviewed mentioned that the spirit of traditional *harashary* teamwork is declining. Wage labour is gradually replacing this communal support system. Presently only about two out of every three community members are willing to participate in communal work. The others come to do communal work just because they fear the sanctions applied by the community if they do not participate.

In 1983, AKRSP started its rural development programmes in the Northern Areas in Nomal; it established a village organization (VO) with the men, and a women's organization (WO) with the women. The VO was very active until 1987, but its performance has slowed down since then. In 1988 the VO split into two separate Vos.

Water sources and sanitation facilities

The major water source for Madinatul Karim is the Nalter *nullah*. The water from this side valley flows into a main irrigation channel that has been built to distribute water for irrigation and domestic use. This channel supplies water to the whole of Nomal village. Apart from the Nalter *nullah*, there is a small spring located up the main irrigation channel in Nomal. Water from this spring is used for irrigation of a small area where agricultural crops are grown.

The main channel has been destroyed several times by flood water from the high mountains. On many occasions, the village has been without water for more than seven days. The people, mainly women, had to transport water from the Hunza river, which flows below Madinatul Karim. There is a natural spring from where clean water could be supplied if a water storage tank were constructed. This spring currently irrigates a vast area where alfalfa, fruit and forest trees are grown. The people who own the land where the spring is located will not allow a water storage tank for supplying water to the households to be constructed. They fear that they will not get sufficient water for their cultivated land if this spring is used for drinking purposes.

In case of damage, all people from Nomal work to repair the main irrigation channel. If repairs are delayed, domestic water is difficult to obtain and yields will decrease, which affects the village economy. This is in addition to the routine annual cleaning and maintenance of this channel. The subsidiary channels are repaired and cleaned by the inhabitants of Madinatul Karim. The water in the main channel and subsidiary channels is

disrupted by floods almost every year. Flood debris is removed immediately by the villagers so as to maintain a regular supply of water for their crops and for drinking and other domestic purposes.

The women in Madinatul Karim are responsible for collecting water from the streams, *gulks* (water pits) and taps, and for carrying it to the kitchen. The water is kept in open buckets, cooking pans and in the traditional vessels made of pumpkins. The stored water is used for cooking, drinking, washing of clothes and dishes, and bathing. The younger men and children above 12 usually bathe in the channels, whereas the older men and women, and children under 12, bathe in the houses.

There are no public latrines. The people, usually men, use open fields for defecation when they are working away from their homes. The people in Madinatul Karim have now started constructing flush latrines, but the adoption rate is very slow. For example, of the 90 households in Madinatul Karim, only 10 rich ones have built flush latrines inside their house compounds. The older family members do not use these latrines, as they believe that defecation is a very private activity and must be performed in a solitary place away from the residence. There is no environmental problem caused by the spread of garbage and litter. The households usually stall feed a milking cow or a goat. The organic garbage is fed to livestock.

The VO in Madinatul Karim has banned clothes-washing near the water sources, such as streams, channels, and *gulks*. People are also not allowed to discharge kitchen-, latrine-, and other wastewater into the sources of drinking water. However this practice is not followed everywhere in Nomal area. The VOs of Madinatul Karim have formed groups of volunteers to pay surprise visits to houses and ensure that the VO members do not contaminate drinking water sources with wastewater from their homes. Those who are found violating these rules are fined on the spot. The VO members have dug out small pits to dispose of the wastewater in their compounds.

The animals in Madinatul Karim persistently contaminate the drinking water sources. In the summer, the animals are taken to grazing fields through the streets. The water channels invariably pass along these streets. Cattle walk through the channels and drop dung and urine into the water. They also drop dung in the grazing fields which, along with human faeces collected from the *chukans* (latrines), are used to manure field crops. These fields are then irrigated. As there is no proper system to absorb the surface run-off in these fields, the drainage water flows down into the sources of drinking water.

Characteristics of the rural water supply project

In the Northern Areas, normally, a lump sum amount is allocated for water supply schemes in the Annual Development Plan. The plan is approved by the Northern Areas Council. Part of this fund is used by the Local Bodies and Rural Development Department (LB&RDD) who work through the elected union council members for construction of water supply schemes. UNICEF provides pipes to LB&RDD. Every year the LB&RDD identifies about four villages in each of the five districts in the Northern Areas.

The LB&RDD includes social mobilization as part of its strategy. For example, the project manager deals with the social issues. The union council member of the selected village

informs the community about the funds earmarked for the construction of the water supply scheme. He asks the community to form a project committee before the scheme is initiated. In Madinatul Karim, the union council member informed the VO that the hamlet was selected by LB&RDD. He also told them the amount allocated for the scheme and asked them to form a project committee. The VO was, in fact, the decision-making body and so the VO formed a committee of six members. The president and manager of the VO were also members of the project committee. The VO, through the project committee, submitted an application to the LB&RDD. The application was also signed by the union council member. The objective of this scheme was to supply clean drinking water to the 90 households in Madinatul Karim. The male members of the community expected that a regular supply of clean water would improve the health of the adults in general and of children in particular. The distance to the water was not perceived as a problem, as water is easily available in the streams passing very close to the houses in Madinatul Karim. Also the women in the village do not consider collecting water as a time-consuming activity.

After final approval of LB&RDD the project committee signed an agreement and initiated construction work in April 1987. Not all of the six committee members were active in the implementation process. The overall responsibility for implementation of the project was shouldered by the VO president, Mr. Israr, and the VO manager, Mr. Mirza Aman. Of the 90 households in Madinatul Karim, only 25 households worked on the project. These 25 households have now got individual water supply connections. The work on the project was undertaken by groups working in rotation. The president and the manager of the VO were responsible for deputizing members to work in rotation on the project. The project was completed within a very short period of two months.

Implementation strategy

The union council member informed the VO of Madinatul Karim about their share in the overall annual development budget. He asked the VO members to simply go through official formalities to receive a lump sum for the construction of this project. The then-president of the VO, Mr. Israr, raised this issue for discussion in the weekly meeting of the VO general body. He explained all the aspects of the project, its objectives and the procedures the VO had to follow to get this project. The members discussed all the aspects and benefits of the water supply scheme in detail. They expected that they would be able to have an easy access to clean drinking water and that the availability of clean water would reduce health hazards in the long run. They also thought that getting water from the standposts very close to their houses would save time for women and reduce their work load. An agreement was then jointly signed by the project committee and the LB&RDD in order to clarify their individual responsibilities for implementation of the water supply project.

The project committee agreed to provide:

- land for the water storage tank and public taps
- sand and stones
- unskilled labour
- operation, maintenance and management services.

In turn, the LB&RDD agreed to provide:

- financial assistance
- payment for the skilled labour
- water supply pipes
- services of a trained plumber during construction.

Both parties agreed to the terms and conditions mentioned above and the project was initiated. The main benefit expected by the users was improved health. This objective has so far not been achieved, because the water of the main irrigation channel that feeds the water storage tank is continuously contaminated by the surface run-off water from the fields.

Managing the water supply system

The VOs of Madinatul Karim formed a project committee for the implementation of the scheme. The VOs expected that this committee would accept responsibility for management of the water supply system when the project was completed. However, after completion, the committee became dormant, and the scheme has never functioned properly.

At present, there are no proper means to maintain the water supply system. The scheme is maintained in a haphazard way. No single community member has been given responsibility for maintaining the scheme. People are asked in the Jamat Khana to help work on the scheme only once the scheme has suffered serious breakdown. The initiative is usually taken by the ex-president of the VO, Mr. Israr, and the ex-manager of the VO, Mr. Mirza Aman. Only the 25 households who have got water supply connections participate in the maintenance work. The people interviewed mentioned that, of the 25, only half of the beneficiaries take any interest in the maintenance work. A small water storage tank has been constructed for another 25 households under the second subsidiary channel. The women in Madinatul Karim are not involved in the repairs and maintenance of the project.

The question arises why the people do not take interest in the maintenance of the scheme. The answer is very simple. According to the people interviewed the scheme has failed to supply clean water to the whole hamlet. The main objective of the scheme was to supply clean water to the 90 households of Madinatul Karim. Water is in abundance in Madinatul Karim and flows nearby every house through channels. There is no difference between the quality of the stream water and the quality of the tap water. The only difference is that the same water is available either through streams or through pipes. This was realized by many households at the very beginning of the project and they did not participate in the construction of the scheme. These potential beneficiaries take no interest in maintaining the scheme because they think this is a useless effort.

The people interviewed asserted that water flowing through small streams from the main channel is cleaner than the tap water. The stream water flows down towards the houses and filters through the gravel, sand, soil and herbs. This is not the case with the tap water. Secondly, every household has its own *gulk*. In the *gulk* water is kept cool and this provides the households relatively cooler water in the summer.

Skills development, training and support

As mentioned in the earlier sections of this report, LB&RDD is the main agency for facilitating the implementation of small rural water supply schemes. The project manager, the sub-engineer and the plumber from LB&RDD are directly involved in the implementation of these schemes. The project manager tackles social issues and the sub-engineer and plumber address technical aspects of the schemes. The sub-engineer holds a diploma for technician, and the plumber is trained by the LB&RDD in Gilgit.

LB&RDD has not trained anybody in Madinatul Karim to operate and maintain the water supply scheme. The project is not functioning properly; therefore, the VO does not keep any management records of it. The community feels strongly that a member from the VO should be trained in plumbing and a complete tool-kit should be provided to the trained plumber, so that repairs can easily be done in time.

The LB&RDD staff are not very effective in providing follow-up. Once the project is completed, the project staff disappears. In the case of the Madinatul Karim project, the department staff has not once provided technical assistance to the community to help them in maintaining the project.

Financing and financial management

The LB&RDD provided an amount of PKR 10,000 to purchase cement and pay for skilled labour. The community spent this amount to purchase land for the water storage tank, to buy cement and to pay for the skilled labour. In addition, the department arranged to receive water supply pipes from UNICEF. The pipes were intended to serve all the 90 households in the hamlet, but part of them were taken back by the department because of the withdrawal of 45 households from the scheme. AKRSP has, however, trained a VO member in accounts and bookkeeping. The VOs have the capacity to maintain all types of records related to the project.

The community has provided unskilled labour and locally available materials for the project, yet the community does not have any records of implementation and maintenance. Even the department does not bother to ask the community to keep records, so that, at a later stage, the project could be monitored and evaluated.

Suggestions by the community to improve the water supply system

The upper area of Madinatul Karim near the main irrigation channel is highly vulnerable to floods from the high mountains. The water supply tank has been built in this area. The community tried its best to identify a safer site away from the danger area. Unfortunately, the next year, after the completion of the scheme, the flood water changed its course, moving closer to the water storage tank and flooding it. Therefore, the community suggests that:

- the water storage tank should be rebuilt in another, safer place
- the size of the water storage tank should be increased
- a system should be developed to keep the source water free from contamination by surface run-off water from the fields and by cattle dung
- an effective water supply committee should be formed

- a member from the VO should be trained in plumbing and operation and maintenance of the scheme
- a basic tool kit and some basic spare parts should be provided to the trained plumber.

Conclusions and impressions

In the Northern Areas of Pakistan, a top-down project planning process is followed. LB&RDD was established with the intention of involving the grassroots population in the planning process through their elected members at the provincial, district and union council levels. However, this system has proved ineffective and the desired results have, so far, not been achieved.

The community of Madinatul Karim was, in fact, not involved in the planning process of the water supply scheme. After the funds (in proportion to the population) had been allocated to the union council, the union council member informed the community of the share of funds available to them for a small water supply scheme.

The community opted for this project without giving due consideration to the technical, social and management aspects of the scheme. Basically it only applied for this project so as not to lose allocated funds. Neither the union council member nor the responsible people from the LB&RDD discussed the factors that could make the scheme sustainable. In this respect, we would say that the LB&RDD staff do not know what happens to the project after its completion. Even during construction, the LB&RDD staff did not give proper attention to the project. For example, the community dug out the footings for constructing the walls of the water storage tank. The community informed the department and requested that the technical staff visit the community to give technical advice for laying the foundations. The department staff delayed their visit and, during that time, the earth from the four sides of the excavation collapsed. The community then had to remove all this material, putting in once more the labour that they had already invested.

Since completion the water storage tank has been destroyed several times by floods. The beneficiaries repaired the tank but not in a proper way. The drainage pipe of the tank is still blocked by mud brought down by the floods. The beneficiaries took off the galvanized iron sheets from the roof of the tank to allow access for removing the deposited materials, but they have so far not fixed these sheets back again. The water storage tank is now open to dirt and dust and other contamination. This indicates a lack of motivation in the community to manage the scheme properly. To date, the community has still been unable to develop a proper management system for the scheme.

The successful and sustainable management of water supply schemes inevitably depends upon the magnitude, value and distribution of the social and economic benefits that the users gain from the scheme. The community evaluates benefits according to its felt needs. The felt needs for a water supply scheme depend on:

- the shortage of water in the community
- the long distance from the existing source of water to the point of use
- the level of contamination in the existing source of water
- the rate of incidence and severity of water-borne diseases.

In Madinatul Karim, the community does not take interest in the management of the scheme, because the scheme does not provide clean water. Water is increasingly contaminated at the source, but the community does not know how to protect the source.

A large part of the solution to the problem lies in the concept of organization of communities. The people interested in conveying their message to the communities can easily contact them in their regular meetings. In these meetings, the constraints and potential benefits to the communities are not only identified, but also discussed and decisions are taken on the spot. However the community is sharing the water source with other hamlets of the village. There is a need for collective efforts for protecting their stream water from contamination, and for installation of a water treatment plant to get safe water.

Areas for further development

In the rural areas of Pakistan there are many problems and issues in community management of RWSS schemes which can be addressed by implementing agencies and the communities collectively. The areas in the RWSS sector which need urgent attention are:

- training in social organization for staff of RWSS implementing agencies
- involvement of local people, and especially women, in the process of planning, executing (site selection) and managing the RWSS schemes
- the need for female extension staff
- provision of skills training in management, including training in accounts, monitoring, plumbing etc., for community members; and also training for trainers
- sectoral evaluation of RWSS schemes by agencies
- dissemination of and training in hygiene education
- development of a sense of ownership among communities
- dissemination of successful attempts at community and broader levels in the water supply sector.

Chapter 7

Conclusions and Lessons Learned

The country reports and case studies described by the six country teams give a very rich overview of practices and experiences related to community management in the water supply and sanitation sector. We gain some insights into the strengths and weaknesses of community management practice at present. At the same time the document's comprehensive approach highlights some general trends and practices out of which emerge several conclusions. What are the lessons learned?

In all countries efforts are being made to involve communities in the construction, operation and maintenance of their drinking water supply facilities. However, this involvement is usually limited to operation and maintenance, mainly to reduce costs and increase long-term functioning. Some water supply agencies still limit community participation to a voluntary contribution in material and labour.

Due to high costs and the incapacity of national governments to address technical problems, the responsibility for operation and maintenance of water supply schemes is moving from governmental and agency level to municipalities and communities. In a number of countries this development runs parallel to the governmental decentralization process, which gives local authorities more responsibilities.

Many communities still do not consider drinking water facilities as belonging to them, due to their dependence on external agencies for big repairs and lack of training.

The different cases show that communities that are involved from the beginning of the project, not just in the implementation but also in planning and decision making, have a stronger feeling of ownership of the constructed facilities, and are therefore more willing to take up management responsibilities. The cases from Pakistan and Nepal show that it is even more important that water supply facilities be constructed only when there is a demand from the village itself.

In several projects analyzed, the establishment of an elected community committee worked out well. In a number of cases, however, difficulties were encountered because of a gap between the elected persons and the community, or because committee responsibilities were overshadowed by political interests.

Very few agencies promote a balanced division of physical work, decisions, functions and training between men and women, although all agree that women should be involved, as water is primarily a women's issue. Women's involvement varies from almost none in most cases to an active participation in financial management and other responsibilities. However, the presence of women in water committees or other management structures is no guarantee that a gender balance in influencing and making decisions will be achieved.

The protection of catchment areas and the preservation of water quantity and quality are increasing problems, and recognized as such by a number of agencies and communities. Activities in this respect are usually limited to source protection, the installation of sanitary facilities, and at times, water treatment.

The performance of community-managed schemes is not being monitored systematically, and existing monitoring is usually done by planning or implementing agencies, and not by the communities themselves.

Training which is given to communities is often limited to technical capacity building for operation and maintenance. In only a few cases does capacity building on other managerial aspects such as bookkeeping, water quality control, reporting, communication and administration.

Some highlights from the country reports

Each team prepared a country report which contains very interesting data on the condition of rural water supply facilities, and the role of communities in keeping these systems functioning. Each report gives an overview of the main actors in the drinking water supply and sanitation sector, and the legal framework in which they are operating. The teams investigated to what extent the various water agencies consider communities as managers of their own water supply systems. Using staff interviews and review documents, they assessed how these agencies involve the communities in their work, and how they address them as the future managers. They also found out if data are available on the performance of existing community-managed water supply systems, and did an indepth case study in one community that has been involved in water supply management.

The reports show that the involvement of communities in rural water supply systems is an accepted national policy in most countries. However, the type of involvement and the implementation of community management principles vary tremendously. Each agency has developed its own policies and procedures. In some cases communities become involved only after facilities have been constructed, and their involvement is often limited to operation and maintenance. Others involve communities in earlier stages of the project, such as during planning or construction of the water supply facilities. Ways of community participation vary from voluntary labour inputs to involving community members in decision making throughout the project. In general, in none of the countries is it normal practice for communities to be treated as the real future managers of their own water supply system. Too often, they still cannot make their own choices from a range of options, with clear insights on all advantages and disadvantages of the different alternatives. Also in many cases, community members are not sufficiently trained to carry out all needed management tasks.

In Cameroon, after independence the new government immediately started with a programme to supply potable water to the urban and rural areas of the country. Overall, however, due to poor planning and management and lack of involvement of the local population, these projects have not been very effective. Recognizing the importance of community involvement for ensuring sustainable operation and maintenance, the Cameroon government has come up with a number of guidelines to incorporate community involvement in rural water supply projects. A case study describing the historical development of a water supply system for the village of

Bomono-Gare highlights the role of the community during planning and construction, and shows the importance of having a water committee that really represents the community.

In Colombia, a new national law lays the responsibility for the construction and management of rural water systems at municipal level. Elected water committees are now compulsory and have a legal status. Although there are differences in approach of governmental and non-governmental agencies, they both see the administration of water supply systems, which includes operation and maintenance, as a community responsibility. Other activities, such as the choice of technology, planning, design, construction, management of the catchment area, monitoring and control of the water quality, community mobilization and training are considered by the government agencies as their exclusive responsibility. NGOs see these more as a shared responsibility, which gives the communities the power of knowledge and helps them to control and sustain the local systems on their own. Where community involvement is prevalent, women are especially involved in financial management. Topics that have been identified as important for further development are water source protection, increased credibility of local management organizations, capacity building, supply of materials, coordination, credit and support services, and gender.

In Guatemala, the Ministry of Public Health and Social Assistance is one of the most significant agencies in the water sector, representing almost two-thirds of the total rural water investment in the country. Furthermore, over 200 national and international NGOs are implementing rural water supply projects. But human resources in these institutions are very few in number, and almost completely focused on the realization of construction works. Capacity building is very limited. There are no laws pertaining to community management of water supply systems in Guatemala. Although all agencies subscribe in principle to community management policies such as the one drawn up by the National Plan for Water Supply, in reality this is often reduced to contributions of labour and local materials. Training for management focuses on operation and bookkeeping being given to men, while women may receive hygiene education. The problems obstructing effective community management of water supply systems include a shortage of water, legal problems with source ownership, lack of skills training, limited financial resources and limited institutional capacity.

In Kenya, governmental agencies and external support agencies implement a large number of water supply programmes with community involvement, although it is still usually the agencies that decide who takes what responsibility. Communities normally have their own traditional management structures, which are almost never utilized by the projects. When communities have been adequately involved during the implementation phase, including the choice of appropriate technology, they are able to organize the operation and maintenance of the systems. But they often lack adequate information on project requirements in terms of financial arrangements, spare parts, and the need for routine preventive maintenance. Nevertheless, a number of projects are known where communities are managing their water systems adequately.

In Nepal, the Ministry of Housing and Physical Planning has the overall responsibility for the water supply sector, but a number of international and local NGOs are also active in the sector. Most of them understand the importance of operation and maintenance for long-term sustainability, and therefore ask communities to participate in raising a maintenance fund and a water tariff. However, since communities still need to call on outside support for major

repairs that are beyond their means, they tend to feel the scheme is still owned by the agency. This is the central problem with rural water supplies in Nepal.

In Pakistan, rural water supply schemes have usually been planned, constructed and maintained by the government. However, due to such problems as the lack of interdepartmental coordination, the high number of breakdowns, poor cost recovery, and the improper use of schemes by communities, the government approach is gradually changing towards more community involvement, especially in operation and maintenance. Another problem identified in currently implemented projects of community-based water supplies is the lack of gender balance. There is also the minimal level of community involvement due to the gap between elected representatives and the rest of the community. Furthermore, the unwillingness of communities to pay, owing to their perception that this is the responsibility of the state, encourages only a poor sense of responsibility and ownership. The case study on local water management in Madinatul Karim Village reveals a lack of community interest in the maintenance and management for another reason: the scheme does not provide water of a better quality than the people already have access to, close to their homes.

Assessment of the case studies

As part of the country report, each country team carried out a case study on one example where a community is involved in the management of their water supply facility. The cases give another insight into some of the strengths, problems and other experiences of community-managed water supply schemes.

Small community-managed rural water supply systems, while not yet working as well as is hoped for, seem to be a workable solution to get more reliable water services, as many of these systems do at least give water to a substantial part of the rural population. The case studies show, however, that the supply does not always cover the complete community, and that administrative and managerial aspects of the work give more problems than the management of technical repairs.

Technology

In all villages, non-traditional water supply facilities have been constructed, with help from the government or external agencies. Five of the six cases are villages supplied with water through pipes by pumping (Cameroon) or by gravity. In one case (Nepal) the village has both handpumps and a piped system. One village (Colombia) also has a treatment plant (slow sand filter). All systems are operational, but they suffer from various operation and maintenance problems such as leaking pipes and taps, and inadequate storage tanks. In the case of Cameroon, the system does not supply water throughout the year, while in Kenya and Pakistan only a part of the community receives water. In Kenya this is due to an inadequate distribution system, while in Pakistan most of the 90 village households did not perceive any benefits from the water supply system to be installed, and decided not to participate in the project.

Community involvement

The involvement of the community during the planning, construction, and operation, maintenance and management of the water supply facilities varies in the different case studies. In the case of Kenya, the community was involved only after construction was finalized, at

which point it received full responsibility for its management. The community from the Cameroon case was involved earlier during construction, when its members were asked to contribute with labour, cash and materials. In Pakistan the community was selected by the government and involved from the moment the project was identified. In Nepal, the project was requested for and initiated by the community itself, and their motivation and involvement was very strong throughout the construction, they themselves being responsible for all major decisions taken during the process.

Management

The communities in all case studies have been managing their water supply facilities for one to eight years. All villages also have traditional sources, but their management is not included in the management structure of the new system. In the villages in Cameroon and Pakistan a traditional structure of communal management of community resources exists, which includes the management of the drinking water supply facilities. All installed water supply facilities are managed by elected committees, which in general seem to function well. In Kenya the members of the committee do not seem to have a sufficiently broad view of the role of the water committee, and they use it primarily to earn some money through the sitting allowance they receive for attending meetings. The Kenyan project was initially not based on the concept of community management. This now hinders the development of a genuine feeling of ownership among community members. In two cases (Colombia and Guatemala), the water committees have grown into basic services organizations: a community enterprise for water supply, sewerage, solid waste collection and postal service in Colombia, and a grassroots organisation for education, water, women's development and health in Guatemala. In Nepal, the community is in complete control of the water supply facility, including doing all the operation and maintenance, and keeping all the records. Only monitoring is done by the agency.

Human Capacities

In most cases, it appears that managerial capacities and the managerial infrastructure in local communities is not strengthened. Sometimes, local management structures are even ignored, as was the case in Kenya. Accountability to the users for the performance of the system and for financial management, if present at all, is quite limited. When the committee is not representing the community in a satisfying way, abolishing the existing committee and electing a new one is a regular procedure. Training, if given, is often limited to technical training on operation and maintenance and bookkeeping, and usually only for male community members. Follow-up training or the assurance of continuously addressing training needs (staff turnover) is not taken care of in any of the communities investigated. Only in the Nepal village do people at community level not perceive any need for additional training.

Gender

Mixed committees were present in the cases in Colombia, Kenya, Nepal and Cameroon. However, the influence of women in decision making is not guaranteed by their presence. In some cases, it is not clear how many women participate in committees at community level, leave alone their role and influence. In the cases in Kenya and Colombia, paid jobs are held by men, while women's work in caretaking, fee collection and replacing the operator is voluntary. In the Colombian case, female committee members were not trained, while males were. In

many cases it is felt that gender sensitivity and balance can and should be improved in the drinking water supply and sanitation sector.

Finances

In five of the six cases water tariffs have been set and people pay for water, which is registered through simple bookkeeping. A wide range of tariff systems exists. In Nepal a group of households share a fixed amount per water point, the exact amount for each household depending on the size of the group. In Cameroon, each adult in a user family pays a fixed amount, whereby females pay 60% of what males pay, and households which launder or have other special water uses pay extra. In Guatemala, each household pays a flat amount per month or year for daily operation and maintenance costs, while fund raising is organized for large expenditures. In Kenya, households pay a fixed tariff for house connections, which is four times that for standpost use. In the Columbian case each household pays according to consumption through metered house connections. The Kenyan water committee is the only one to have a bank account. In general the collected money is used for day-to-day operation and maintenance costs; in general there is no long-term planning. Action against defaulting is not always taken, including in cases where those not paying continue to get regular service.

Environment

Some work is being done, especially fencing off the source and tree planting. Water quality preservation, excreta disposal and wastewater disposal and drainage are not systematically addressed. In many of the cases the need for environmental protection and water source management are mentioned.

Final remarks

Communities are willing to undertake management of water supply systems if they perceive the improvements as desirable and belonging to them. An important condition is that support given to communities be similar. A situation where one community receives more support from the government or external support agency than other communities in similar conditions causes apathy. Furthermore, communication, information and routine involvement of the communities in decision making are crucial if community management is to be effective. The successful and sustainable management of water supply schemes inevitably depends upon the magnitude, value and distribution of the social and economic benefits that the users gain from the scheme. Proper community organization holds a large part of the solution to these problems. Other areas for further development include better training for project staff and communities, proper involvement of men and women in all project phases, sectoral evaluations, and the development of a sense of ownership among communities.

The development of a true sense of ownership by the community proves again and again to be vital for the successful functioning of a water supply facility. The main reasons why a sense of ownership may be missing are the lack of genuine participation by the community in planning and decision making; the lack of clarity about what financial and technical contributions would be required from the community; and the failure to develop the skills and resources at community and local level needed to manage the water supply system.

During the workshop where the teams presented their country reports, it was found that community management:

- Goes beyond community participation, and equips communities to take charge of their own water supply improvements.
- Involves a long-term and changing partnership between communities and supporting agencies. It strengthens the capacity of each partner and enables their combined resources to be used more effectively.
- Can mean more widespread implementation of sustainable water supply systems;
- Means a new role for support agencies as facilitators rather than providers, demanding new skills and offering greater opportunities.
- Means that agencies have to adapt their pace of working to that of the community.
- Means that agencies have to make an effort to really understand communities, their vision, their logic, their ways of learning; their ways of decision making, etc..
- Brings benefits which can extend beyond water into other development activities;
- Extends its scope beyond rural water supplies to peri-urban supply.
- Can be monitored and evaluated using slightly adjusted conventional progress indicators, because capacity building is a major component.

Both the study and the workshop results show that while progress has been made in the community management of water supply systems, there is considerable scope and need for further development. It is clear that understanding about the dynamics of community management is incomplete, and many communities are unable to benefit fully from their water supply systems. Problems include: insufficient capacity building; only partial coverage of communities; lack of effective and equitable financing systems; absence of suitable management tools; environmental degradation of watersheds; and not having a proper gender balance in planning for, contributions to and control over the established water service.

As follow-up to the workshop and the literature review, the project 'Participatory field research and the development of strategies, methods and tools' is being carried out by the six country teams and IRC. The project comprises research in different communities that already have functioning and self-managed water supply systems of various types. A number of typical problems in community-managed water supply have been assessed and are at present being addressed in a participatory way, involving the community, local agencies, and IRC. This will result in an increased understanding of how different types of communities can effectively manage different types of rural water supplies. It should also help the participating organizations to offer better support to communities in establishing and carrying out their management responsibilities.