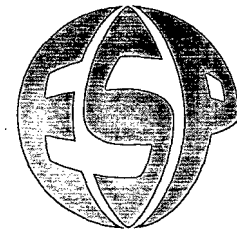


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**ENVIRONMENTAL SUPPORT
PROJECT, Component 3**

*National Water Supply and
Sanitation Master Plan*

**Sustainability in
Rural Water Supply**



DHV Consultants BV
in association with
DHV Ethiopia Plc.

Mini Workshop
Addis Ababa, 6 July 2001

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Ministry of Water Resources
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ENVIRONMENTAL SUPPORT PROJECT
Component 3

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National Water Supply and Sanitation Master Plan

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Addis Ababa, 6 July 2001

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FOREWORD

This report contains the presentations given during the Mini Workshop on Sustainability in Rural Water Supply, which was organised by the Environmental Support Project, Component 3, at the Imperial Hotel in Addis Ababa on 6 July 2001.

In as far as the text of the individual papers was available in written form, the full text is provided in this report. In all other cases a summary of the relevant presentation is included, based on notes made during the presentations. The editor apologizes for any mistakes that may have been the result of errors contained in such notes or incomplete notes.

The afternoon session of the Mini Workshop was devoted to the discussion, in two working groups, of two groups of topics, referring to the Planning, financing and implementation stage, and to the Operation and maintenance stage, respectively. A summary of the conclusions reached by the two working groups is included in this report.

The programme for the Mini Workshop is given in Appendix 1; the list of participants in Appendix 2. The issues for discussion that were the basis for the discussion in the two working groups are given in Appendix 3.

1 INTRODUCTION

1.1 Background of the Workshop

The ESPC3 Project is to advise the Ministry of Water Resources (MoWR) on a longer-term development and investment plan for water supply and sanitation.

Regarding rural water supply the Project has made an inventory of the current status in this sub-sector and has identified major issues in development. The subject of the workshop is the next step in the planning process: the identification of possible solutions.

1.2 Issues

Issues in rural water supply are manifold.

Ethiopia is very diverse, also in the availability of water resources. Tapping water resources for (human) consumption is sometimes relatively easy; in other locations it is extremely difficult and forms a major bottleneck in the development of a region.

CSA statistics of 1998 show that only few people in rural areas, less than 15%, had access to safe water. Finding and tapping an appropriate water source may be one difficulty, also settlement patterns (village-type of scattered farms) or the extent of nomadic lifestyles significantly influence the opportunity to increase access to water for the rural population.

In order to achieve significant coverage levels, country-wide financial investment requirements are enormous, and cannot be met by the Ethiopian government alone. The country will remain dependent on external support. And, while it is the government's policy that rural water users at least cover the operation and maintenance costs of schemes, means need to be enforced for water users to also pay for investments.

The main issue in rural water supply appears to be that of sustainability. There are many reports of large numbers of rural water supply schemes being out of operation for shorter or longer periods of time. National statistics of 1997 say 26% at any given moment.

Answers to this problem seem to be found in the organisational sphere:

- Firstly, it is generally understood that schemes where the user community has participated intensively in all project phases have a larger chance of success. User or community ownership is an important element.
- Secondly it is acknowledged that community-operated schemes do need support from an outside organisation in managing their system.

So, here are two aspects that we want to focus on in the workshop: Community Management and Support Organisations, elements that are basic to sustainability of rural water supply schemes.

1.3 Resource constraints

In summary, there are many constraints to sector development, which can be categorised under three main types of resources:

1. physical or technical resources;
2. financial or economic resources;
3. institutional or organisational resources.

The workshop will focus on the third type of resources and constraints therein: how to enhance ownership in community management and what support to provide.

Constraints in the other types of resource, such as poor water availability and constraints in finance, are acknowledged. It is also realised that such constraints can have significant impact on the organisational aspects. Such relations are also the subject of the workshop.

1.4 Workshop questions

The questions put forward in the workshop evolve around:

1. What are currently best practices with regard to Community Management: what are elements of success; what are potential threats.
2. What are current experiences with Support Organisations: what type of support do communities need; how is this best provided; what can be the role of the government.
3. What implications do these "best practices" have on the longer-term development of the rural water supply policy.

1.5 Structure of the workshop

After a short introduction by the ECPC3 Project the status and issues in rural water supply development, there will be presentations by professionals whose organisations have hands-on experience in the sub-sector:

- the Ministry of Water Resources is – assisted by the World Bank – implementing the Rural Water Supply and Sanitation Demonstration Project, in which pilots are undertaken of participatory planning and implementation schemes;
- Finnida is assisting the Amhara regional government with the implementation of an integrated rural development programme, where water supply is used as a means to mobilise communities;
- Oromiya Regional Water Bureau has an extensive rural water supply programme, in which community management and cost recovery issues play key roles;
- Women Aid Ethiopia, a small NGO, implements an integrated urban development programme in low-income areas in Akaki. An important concept used in the programme is economy-based sustainability, and the operation and maintenance of communal water points based on that principle.

After these presentations, there will be a series of structured working sessions in which we want to get answers to the questions posed above.

2 **OPENING ADDRESS**

(Address by Ato Gulilat Birhane, Head, Planning and Projects Department, Ministry of Water Resources)

**Honourable Guests,
Participants,
Ladies & Gentlemen,**

On behalf of the Ministry of Water Resources and myself, it is my great pleasure and honour to welcome you all to this idea exchange forum that focuses on the issue of sustainable rural water supply development.

Ladies & Gentlemen,

According to recent forecast figures, the rural accounts for about 85 % the national population. This is a strong justification and logic that holds our attention in addressing rural development including water supply and sanitation. Regardless of all the efforts made in the last 50 years the figure for access to safe water in rural areas couldn't exceed 23%. While access to sanitation facilities is almost non-existent in rural Ethiopia. National Statistics data of 1997 puts the number of malfunctioning schemes to about 26% at any given moment. Even if we refer to other sources the situation is much worse than this one.

In brief terms, the major constraints that resulted in such a low development level in the rural water supply & sanitation sub-sector include:

- Lack of awareness of the society towards Watsan;
- Scattered settlement pattern;
- Financial constraints;
- Low level of infrastructure;
- Lack of efficient and stable institutional set up, and Lack of skilled manpower & community empowerment.

These constraints are believed to be among the major causes of non-sustainable rural water supply schemes.

What I want to mention to you today at the beginning of this forum is not only the fear I have in mind, but also the dilemma, how to go about to improve the situation built-in at one hand and the challenge ahead of us on the other side.

It is clear that population growth, settlement pattern, low awareness, affordability, geophysical features of the country, limited resources, efficiency in implementation of programmes and above all the sustainability of existing schemes are big challenges we have at hand. All these and other factors have their own contribution to aggravate the unresolved problem.

According to CSA forecasts the rural population growth will not go less than 2 % for the coming 20 years. This implies that, at least to keep up the existing access for water supply and sanitation, the investment should increase at the same rate with the growth of the population. When we take the assumption of increasing the level of access to these facilities the challenge of funding is more than we may expect. I think this might remain a keen problem for a while.

The issue of private and stakeholders' participation, especially that of the beneficiaries, is another angle that needs first hand visit. Of course, the decentralisation started few years back and new concepts are emerging. They have a good indication. However, they have not yet reached the expectation. To mention Wereda level structures are weak and nonexistent. In some cases supply and maintenance problems are also still a concern.

Co-ordination of stakeholders and integration of efforts was also another area where we need to pay some attention. Both the Ethiopian Water Resource Management Policy and proclamation have given due emphasis to the harmonisation of our efforts. I believe this could be also one area where we could visit and streamline along the process of changing the situation of sustainability in the rural Watsan.

To improve such a gloomy situation, both the federal and regional government has been showing a relentless effort in making use of the limited government budget and of grants from multi-lateral organisations and friendly countries like the Netherlands.

As a result, amongst various ongoing Water Resources Development Projects, Rural Water Supply and Sanitation Demonstration Project, Ground Water Supply Development and Training Projects are expected to strengthen the endeavours in investment, capacity building and sustainability of the rural water supply and sanitation sector. These projects are in their full swing at the moment.

Furthermore, the preparation of Water Supply and Sanitation Strategy & Development Programmes which highlights the need for threefold partnership amongst the Government as the creator of enabling environment, the Community as the owner of water supply schemes and Local Partners as support organisations, are now almost at their final stage.

In complement to the water sector development programme the National Master Plan preparation that is the 3rd component of the Environmental Support Project has now reached a stage where possible solutions that contribute to better and sustainable access to safe water in rural areas are to be identified in consultation with relevant stakeholders representing the water sector.

The ultimate purpose of the ongoing water supply and sanitation strategy and master plan preparation is to pave a road to long-range investment in the sub-sector. Of course this is believed to resolve the traditional unsustainable campaign-style implementation of projects in both urban and rural settings.

**Dear Participants,
Ladies and Gentlemen,**

Personally, I believe that in today's discussion we could come up with different suggestions, alternatives and strategic ideas. These have to be evaluated against the prevailing condition in front of us. Therefore, for me it is more than logical to urge you all to forward your opinion freely on the issues you are knowledgeable in. In order to move towards the right directions resolving the problem at hand the input of our foreign colleagues, who are here with us, became the pillar even if we don't say more than that. On top of their experience sharing, their role in fund raising for investment is assumed keen.

Dear Participants,

At this juncture, it is worth to mention that the mini workshop that focuses on the sustainability of rural water supply schemes is believed to contribute its part to the identification of possible solutions in improving sustainable access to safe water in rural Ethiopia.

In view of this, I urge you all to take an active part in this workshop, in order to secure sustainable access to safe and potable water and appropriate sanitation facility for the well-being of the Ethiopian rural population at large.

Before concluding my remarks, I would like to take this opportunity to thank the DHV Consultants and all the project staffs for their efforts to create such an important forum.

Finally, wishing you all the success I declare the discussion is officially opened.

Thank you.

3 ESPC3, RURAL WATER SUPPLY IN THE MASTER PLAN CONTEXT, ISSUES AND CONSTRAINTS

(Presentation by Mr. Jaap Butter, ESPC3 Technical Coordinator)

3.1 Introduction to ESPC3

3.1.1 The Environmental Support Project

The general agreement on co-operation for the Environmental Support Project was signed between the Government of Ethiopia and the Netherlands Government in April 1999. The project is being carried out under a specific agreement between the Ministry of Water Resources (MoWR) and DHV Consultants of the Netherlands.

The ESP is divided into three distinctive components:

- Component 1 Strengthening of the Natural Resources Database and Information System;
- Component 2 Environmental Assessment and Sustainable Resource Utilization Plan for North Wollo;
- Component 3 National Water Supply and Sanitation Master Plan.

3.1.2 Component 3: National Water Supply and Sanitation Master plan

This component aims at an improvement of the national management and planning capacity of water and sanitation development. This is to be achieved through two types of outputs:

1. a technical basis for the improvement of water supply and sanitation infrastructure and operations, and
2. a national approach for the strengthening of institutions and development of human resources in the water supply and sanitation sector.

The objectives will be given shape through the preparation of a National Water Supply and Sanitation Master Plan, recommendations on legal, environmental, human resources development and institutional arrangements, and detailed designs and tender documents for water supply and sanitation in selected towns.

More particularly the project will provide:

- a National Water Supply and Sanitation Master Plan, including
 - strategies and plans for improvement and expansion of the rural and urban water supply and sanitation services in the country;
 - investment schedules for short-term programmes;
 - terms of reference for selected short-term projects;
- outline environmental impact assessment (EIA) for the National Water Supply and Sanitation Master Plan;
- recommendations for appropriate institutional, organizational, manpower and training arrangements for the water supply and sanitation sector;
- a national approach to manpower development and training in the sector;

- feasibility studies and designs for water and sanitation works in ten towns;
- feasibility studies and designs for a pilot UASB wastewater treatment plant;
- training of staff to sustain the project activities.

The activities will be executed over a period of 36 months. The owner of Component 3 is the Ministry of Water Resources (MoWR) with the Water Supply and Sewerage Service Department as the implementing agency. Also other Departments of the MoWR are involved.

Key elements of the implementation of Component 3 are furthermore:

- transfer of knowledge;
- maximum involvement of national authorities and expertise;
- emphasis on standardization and coordination at national and regional levels;
- consideration of gender issues;
- full consideration of institutional requirements, socio-economic aspects, environmental impact and long-term sustainability of the projects proposed.

3.2 Rural water supply in the master plan context; issues and constraints

ESPC3 is basically a planning project, with as outputs not only the Water and Sanitation Master Plan itself, but also improved planning capacity at the Ministry. As in any such plan, physical, financial and institutional resources are very important. The plan should be balanced in as far as these types of resources are concerned.

3.2.1 Physical resources

One of the crucial physical resources is water. As Fig. 3.1 on the next page shows, there is a wide variety in availability of water resources over the country, with sometimes far-reaching effects on the development of water supply and sanitation facilities, especially for the rural population.

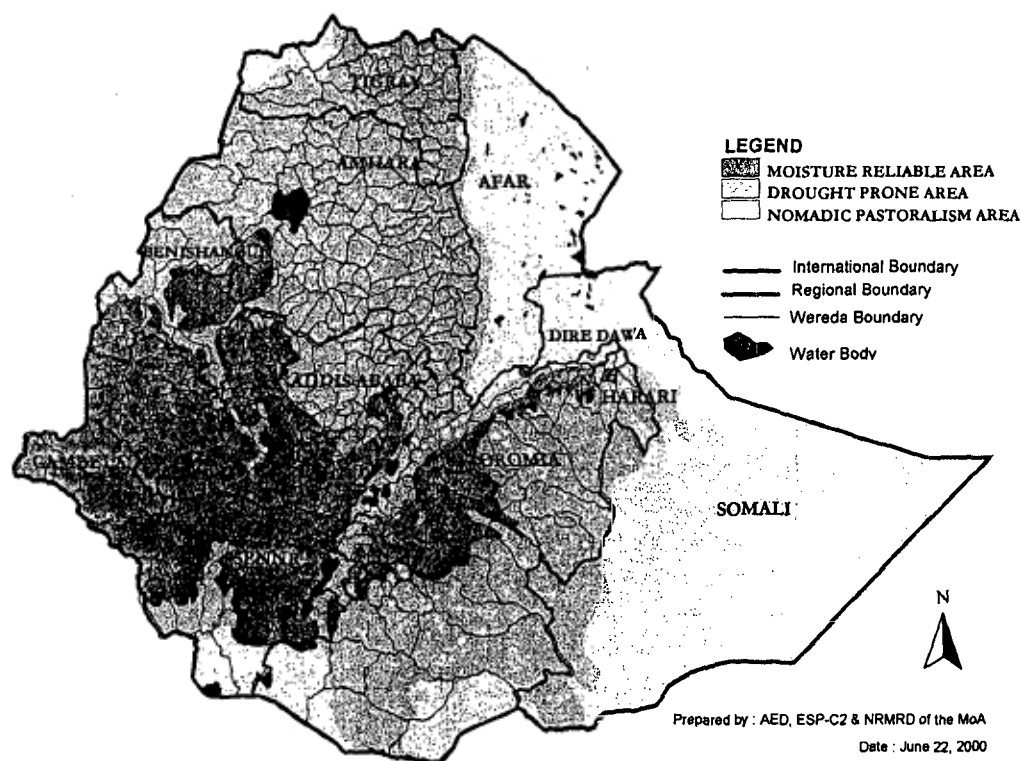


Fig. 3.1 Location map showing moisture reliable, drought prone and dry areas¹

3.2.2 Population distribution

Another important factor is “where are the people?”. As shown by Fig.3.2 on the next page, the distribution of the population over the country shows a wide variation as well. In general it may be said that “the people are where the water is”, even though this may be too much of a generalisation in particular areas, e.g. North Wollo, where the population pressure is such that people are forced to live a large distance away from water.

3.2.3 Rural water supply coverage

1998 statistics on the use of safe and unsafe water sources indicate that only 4% of the rural population has access to piped water supply, and another 10% to protected springs. The remaining 86% use unsafe water sources, either unprotected springs or wells (34%) or river or pond water (52%). Details are given in Table 3.1 on page 13.

¹ No Woreda boundaries are shown for Afar and Somali regional states, as maps showing reliable boundaries for Woredas in these regions are still under preparation. Nomadic pastoralism areas, though not clearly visible on the map, basically coincide with Afar and Somali, with isolated areas in the very north of Tigray and the very south of SPNNR and Oromiya included as well.

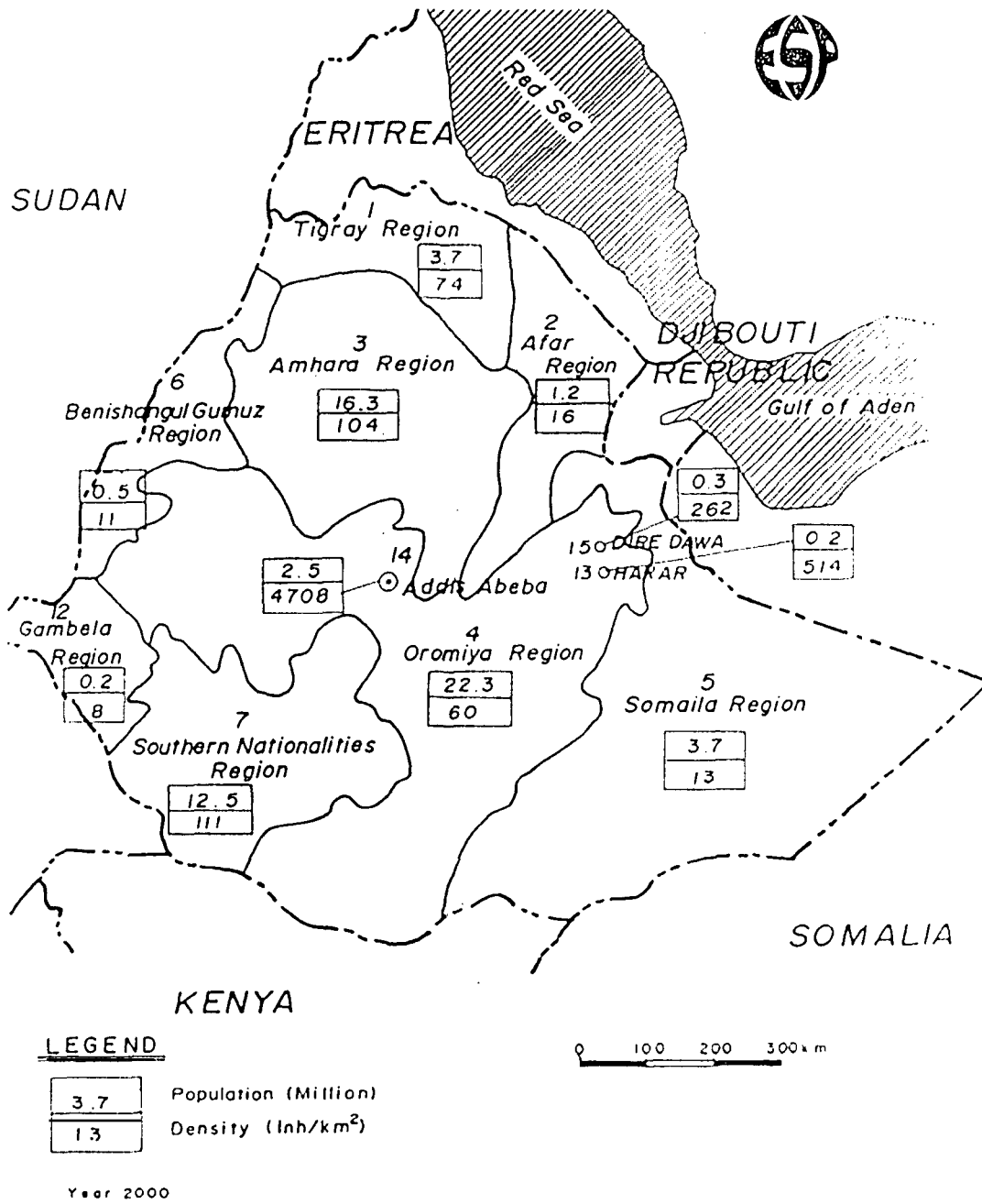


Fig. 3.2 Regional States, population numbers and densities

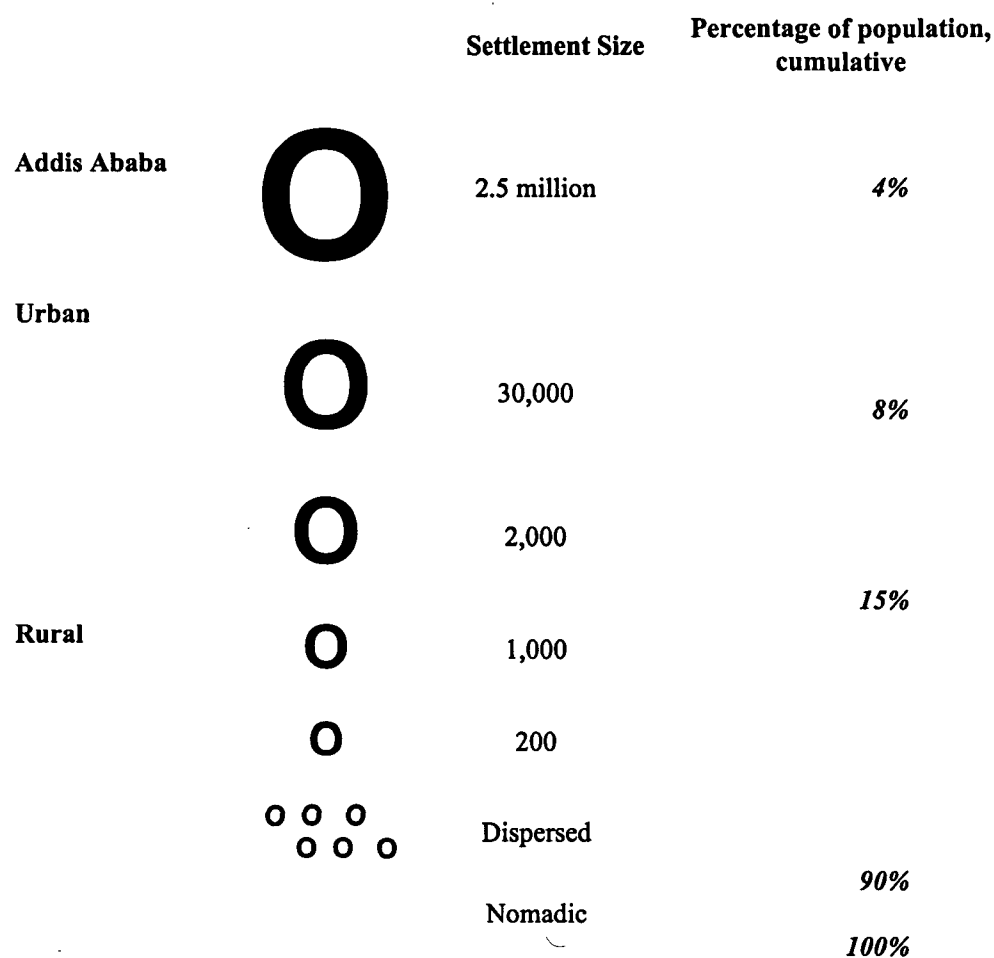
Table 3.1 Use of safe and unsafe water sources, country-wide, 1998

Type of population	Number of people (year 2000)	Using safe source		Using unsafe source	
		Piped water	Protected spring	Unprotected spring or well	River or pond water
Urban	9.5 million	73%	11%	6%	10%
Rural	54.0 million	4%	10%	34%	52%
Total	63.5 million	13%	10%	30%	47%

Source: CSA 1998

3.2.4 Population distribution over sizes of settlements

The distribution of the Ethiopian population over the various sizes of settlements is illustrated in Fig. 3.3 below:

**Fig. 3.3 Population distribution by settlement size**

As can be seen from Fig. 3.3, only a relatively small part of the population of Ethiopia lives in urban areas. According to the generally used classification, any settlement larger than 2,000 inhabitants is classified as urban, which would result in 15% of the total population being urban. Whether in practice the smaller 'urban' areas indeed have an urban type of infrastructure remains to be seen, however. Also in other countries larger settlements, up to 5,000 inhabitants and more, may still be termed rural, depending on the development and building pattern. Settlements of 30,000 are doubtlessly urban, however, which means that between 85% and 92% of the population of Ethiopia lives in areas with a rural character. This includes around 10% of the Ethiopian population that has a nomadic lifestyle.

In practice there is a difference between urban and rural water supply. The larger towns clearly have (or qualify for) an urban water supply system, which – according to the current guidelines – implies that water supply systems have to be built and operated on a full cost recovery basis (investment costs as well as operation and maintenance costs). It seems reasonable to apply this criterion to settlements with a population size of more than 20,000 - 30,000. Settlements smaller than 2,000 should clearly be considered rural, with a 'grey area' in between, where the actual local situation should determine whether the settlement should be deemed 'urban' or 'rural'.

For any specific resource there is a tendency that investment costs per capita go up as the population becomes more dispersed (although this may depend to some extent on the type of water sources, with handpump schemes being less vulnerable to this than larger spring tapplings). The lower on the scale of settlement sizes, the more expensive the water supply might thus become, which would make it increasingly difficult to achieve full recovery of operation and maintenance costs in such cases. The criterion of full O&M cost recovery for rural water supplies may, therefore, be realistic for the middle range of settlements, but not necessarily for the smaller ones.

3.2.5 Investment requirements

Extrapolating required investment levels as following from the Tekeze and Abbay river basin studies, a first estimate has been made of investments required to provide the rural population of Ethiopia with safe water supply. Starting points used were: 15% of the rural population is currently served by rural water supply systems, while about 40-50 million people would remain unserved by water supply schemes because of being too dispersed, or living in too small settlements (see Fig. 3.4 on the next page).

To achieve the above, an investment level of approximately 400 million Birr/year would be required. This includes the necessary reinvestments and replacements, since – according to the current guidelines – the rural communities are not required to contribute to investment costs. This investment level should be compared to actual investment levels: in the early nineties the total combined investment of all NGOs together amounted to not more than 25 million Birr/year (calculated at current price levels), whereas the actual investment in the rural water supply sector through the ESRDF over the past 4 years amounted to no more than 7 million Birr/year, against planned investments of 50 million Birr/year².

² It should be noted that the institutional capacity was the main constraint in reaching the planned investment level for ESRDF.

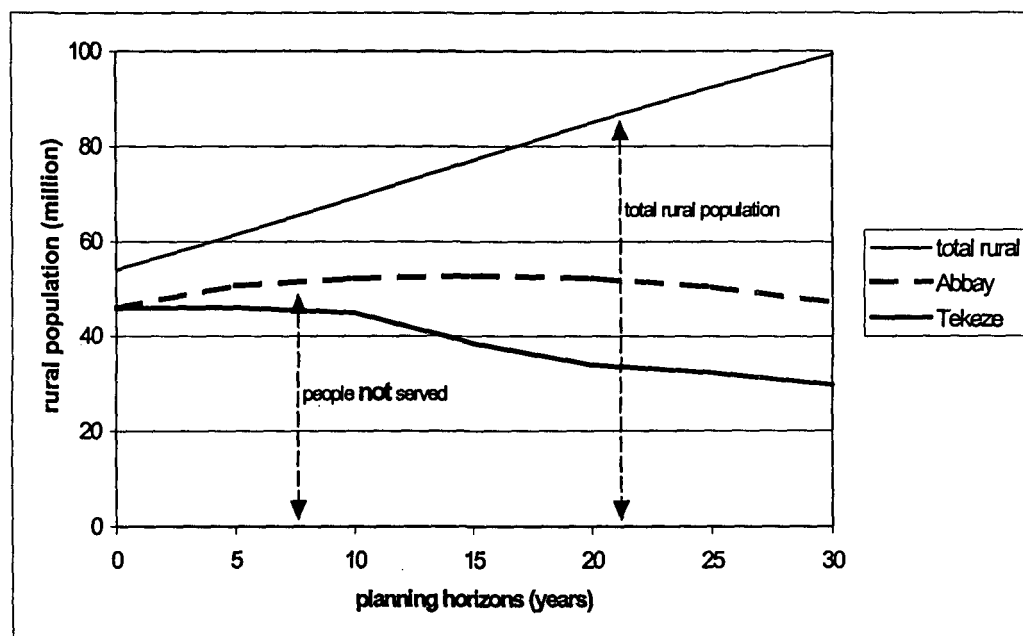


Fig. 3.4 Rural water supply - service coverage scenario³

3.2.6 Costs and benefits of clean water

Table 3.2 below shows the relative magnitudes of the various cost components and benefits included in providing clean water.

Table 3.2 Cash, time and health costs and benefits of clean water

	Consumption (lpcd)	Distance to source (metres)	Fixed costs (Birr/pm)	Water tariff (Birr/m ³)	Annual costs in Birr per person			
					Cash payment	Health benefit	Time cost	Total pp pa
Rural								
Public tap	10	500	0.0	2.5	9.1	-34.6	101.4	75.9
Urban								
Yard tap	20	10	2.0	1.5	35.0	-34.6	30.4	30.8
Public tap	10	250	0.0	2.5	9.1	-34.6	50.7	25.2

Source: ESPC3 Status Report, May 2001, Volume III - Financial and Economic Resource Base

The table shows that, for rural water supply, against a required cash payment of around 9 Birr per person per year, health benefits would be obtained in the order of 35 Birr/person/year. The table also clearly shows the importance of time as a factor: the value of time spent in fetching water, time that obviously cannot be used for other activities, including education, income generation, etc. Even though the user may not consciously realise this, he/she considers time a

³ Year 0 (planning horizons) represents the year 2000.

very important factor, as is illustrated by the fact that most consumers revert to nearer water sources once given the opportunity – with little regard for potential health consequences. It is for this reason that the success of a rural water supply scheme will depend heavily on the benefit of time saved. Without this benefit the person might not use the new source at all.

3.2.7 Institutional aspects

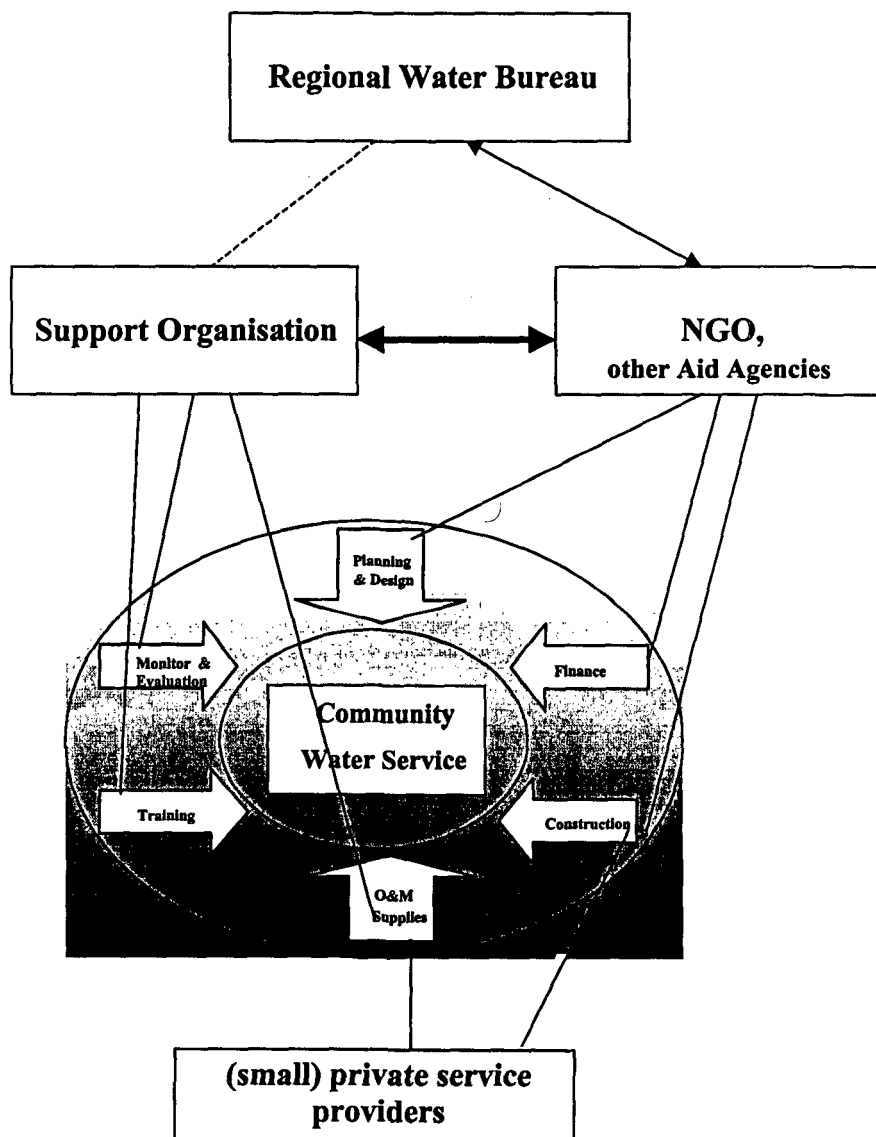


Fig. 3.5 Interaction between parties in the rural water supply sector

For rural water supply to be sustainable it must be community-based. Experience in many countries shows, however, that the community needs support to realise this. Such support may come from different sides, as illustrated in Fig. 3.5 on the previous page. It may come from the Government (the Regional Water Bureau or its representations lower in the governmental hierarchy: at Zone or Woreda level), from NGOs, and from the private sector.

The various options for support to the community will be one of the major topics for discussion this afternoon. Whatever the outcome, it may already be clear that a support organisation should be available close to the community to succeed, especially during the operation stage.

3.2.8 Discussion

Question: In the table showing the cost of time involved in fetching water, whose time are we costing, and how is it valued? Most likely it is the time women spend in fetching water, which in Ethiopia is considered a normal part of the woman's household activities. Therefore, we would certainly value it at a much lower cost.

Answer: The ESPC3 economist does certainly not agree with that statement. Time is an important factor in the equation. Also in practice people show that this is the case, by reverting to unsafe sources if these are closer.

The following paragraph provides additional information, as taken from the ESPC3 Status Report of May 2001, Volume III, Financial and Economic Resource Base (page 61):

The value of time is subjective and should be measured by willingness to pay. In practice, however, it is normally given a monetary value related to the unskilled wage rate (assumed here to be Birr 1 per hour). Some people argue that time has no real value in Ethiopia ... A survey for the ESRDF recent Impact Assessment on Social Infrastructure and Rural Water Supply (NEK July 1999, page 47) showed the following uses to which people put the time saved from carrying water (the total do not add to 100 since people were allowed to give more than one answer). The CPCs are Community Project Committees and so are the persons most likely to fully understand the benefits of the projects.

Table 5.10b *Uses of Time Saved*

Purpose	Households (%)	CPCs (%)
Income generating activities	34	57
Children and family care	56	73
Agriculture	78	86
Social events/activities	72	76
Children attending school	42	54
Rest and relax	10	38
Other	1	0

Even those who say that time has no value in Ethiopia are willing to admit that people will pay extra for convenience. Convenience benefits are in fact time benefits and the amount people are willing to pay for them indicates how much they value their time. Looked at it from the other side, if people did not value their time (for instance because they had nothing else to do with it) then they would spend even more time walking to water sources in order to obtain the volumes of water that people with house or yard connections take. They don't, because they value their time. It should also be noted that practically all the benefits of a new water scheme are time benefits; in general health benefits alone would give an EIRR of only some 2%. If the economist is not allowed to give time a value, the scheme would fail the IRR test.

Question: This question is related to the Support Organisations mentioned in the last part of the presentation. Experience in the Southern Regions shows that at least 50% of handpumps is not operational. Is the proposed system with SO's realistic, or would it only be strengthening the dependency of the community on others?

Answer: The presentation did not intend to provide a ready-made answer. Rather, it is the intention of this afternoon's discussions to come forward with realistic options for support to the community, whether this would be coming from Government, NGOs or the private sector.

Remarks:

1. *Whereas the investment level within ESRDF may have been low in the past, the current budget foresees investments to the level of 100 million Birr per year;*
2. *There is no linear relationship showing that investment costs for rural water supply increase when the size of the population settlement decreases. Small point sources serving 200 - 500 inhabitants cost Birr 70-80 per capita, whereas larger schemes, serving 1000-3000 inhabitants may cost Birr 200 per capita or more. We need a micro-level approach, and avoid too much top-down thinking.*

Answer: Differences in investment cost per capita can indeed not only be attributed to the size of the population settlement that is served by the water supply system. They certainly depend as much on the technology choice, which may be dictated by the available resources. What was meant is that when the population becomes more dispersed (and the individual settlement size smaller), the investment costs per capita have a tendency to go up when the same type of source is used. For example, the same shallow well fitted with handpump will result in higher investment costs per capita if the population it can supply – because of the scattered settlement pattern and resulting longer walking distance – is only 100, rather than the normal design population of 250.

The need to base rural water supply on a micro-level approach is wholeheartedly acknowledged.

4 THE RURAL WATER SUPPLY AND SANITATION DEMONSTRATION PROJECT

(Presentation by Ato Yohannis G/Medhin, Head, Water and Sewerage Department, Ministry of Water Resources)

Ladies and Gentlemen:

At this stage it seems to be vividly clear that the water supply and sanitation sector in our country is encountered with multi-pronged obstacles. In addition to the severe deficiency in physical infrastructure, there is a problem of chronically inadequate management to effectively administer policies, proclamations and regulatory issues. Inter alia, planning, maintaining and operating the services are also remaining perpetual, serious problems facing the sector .

To ameliorate the above mentioned situation one of the most prominent projects that was appraised and recommended by the World Bank is the Rural Water Supply Demonstration Project. This project is meant to address some of the management problems relating to the rural water supply and sanitation. Before I am going to deal with specifics, generally speaking the main aim of the project is to achieve a workable system for operating and maintaining rural water supply and sanitation schemes. When we commenced this project we recognized the need for flexibility, adaptability to local conditions, creativity and unbroken innovation. To save time, however, I will not go into detail on these cardinal points.

Now, let's see the background information on the project. Rural water supply and sanitation schemes are constructed by public organisations, NGO's and external supporting agencies throughout the country. Hence the project is launched in 3-4 Woreda's of the four larger regions (i.e. Amhara, Oromiya, SNNPRS and Tigray) to investigate options for a decentralised and more effective system for support to sustainable RWSS development and operation, using community-based O&M management, and based on our water resources management policy and proclamations. The project has attempted to widen the RWSS partner base to include local organisations and associations, as well as the various formal and informal private sector actors. The project is under implementation as four individual projects supported by hired consultants. The MoWR acts as the overall client and serves as the focal point for inter-regional exchange of information and support for regional assessment of the experiences gained. In order to enable systematic learning and to make the inter-regional experience exchange as realistic as possible, a generic MIS/M&E system to serve all regional projects, developed by a consultant hired by the World Bank, is currently at its completion stage. The core of this system is assumed to be the same, but minor modifications may be required to adapt it to regional specifics.

The take-off point for this project was the strategy framework which we developed and which was endorsed by all the Regional Water Bureaus at the ESRDF workshop which was held at Bahir Dar in May 1999. The main issues incorporated in this strategy framework are: the enabling environment, stakeholder issues, financial and economic issues, technological issues, capacity building, etc.

The project's overall objective is to enable the Regional Bureaus, in collaboration with the MoWR, concerned Woreda administrations and involved communities, to draw firm

conclusions and make specific recommendations from the RWSS Demonstration Project. Embedded in this objective is the strategy to learn systematically for improved effectiveness of support and for replication elsewhere in the project areas as well as throughout the nation.

To meet these targets the following immediate objectives are of necessity:

- a. establish systematic tracking of inputs and outputs of all identified project activities, i.e. terms of level/location, partners/actors and type of services provided, or task performed (*MIS and partly monitoring component*);
- b. establish a system of monitoring performance against defined indicators, both with regard to service provision and with regard to community organisation, partner organisations, and individuals targeted by project interventions (*monitoring component*);
- c. enable identification of critical factors for achieving results, improving performance and having impact at scheme level, based on analysis and assessment of the quantitative monitoring data, considering also effectiveness and costs of outputs (*evaluation component*).

Based on the above facts, three winning national consultants were hired to conduct the work in the four regions. Their scope of services comprises:

1. *Preparation stage*: review available data and submit options for a strategy framework covering:
 - division of roles between Government, NGO's and other agencies;
 - institutional structures;
 - development of management tools and systems for day-to-day operations;
 - capacity needs of Water Bureaus at different levels;
 - capacity building needs for community management;
 - short- and long-term action plans;
 - inventory of water schemes and spare parts requirements;
 - different options for operation and maintenance.

This stage is more or less completed now.
2. *Implementation stage* (9 months) covering:
 - community-based management system to be put in place, in collaboration with the Regional Government;
 - several workshops to be conducted in each Region;
 - Continuous monitoring of proposed structures
 - Training activities.
3. *Evaluation stage* (1 month). During this stage a final project report and evaluation manual are to be prepared and discussed at a final workshop.

Discussion

Question: *The Demonstration Project itself deals with water supply and sanitation. The link between water supply and the Ministry of Water Resources is clear. However, who is the "owner" of the sanitation component?*

Answer: The two issues are related, and we want to have a clear strategy about who is doing what.

Remarks:

1. *At Woreda level, sanitation is no longer a problem (the less of a problem, the "lower" you get).*
2. *Sanitation seems to be a no-man's land. There seems to be a clear role for the Ministry of Water Resources regarding sewer-related sanitation. At the rural level, however, the Ministry may not be suitable for this. There are about 500 sanitarians of the Ministry of Health throughout the country, who could play a role in rural sanitation. MoWR should restrict itself to sewerage.*

5 RURAL WATER SUPPLY PROGRAMME OF OROMIYA REGIONAL STATE

(Presentation by Ato Alemayu Tegenu, C/Bureau Head, RWMERB Oromiya)

5.1 General background

5.1.1 Introduction

Oromiya is the largest region in the Federal Democratic Republic of Ethiopia. According to the 1994 CSA report the total population of Oromiya is about 22,354,000, out of which nearly 19,706,000 (88.2%) live in the rural areas, while the remaining 2,645,000 or 11.5% reside in urban centres.

The total area of the land of Oromiya 353,690 km² out of which 1,061 km² semi desert, 151,026 km² mid altitude, 149,161 km² low, land 51,285 km² high-altitude and 707 km² is alpine. The average annual rainfall ranges from 400 mm to 2000 mm.

5.1.2 Water resources

5.1.2.1 Surface water

In Oromiya there are:

- 63 large and medium sources of rivers s 688-tributaries
- about 58 billion m³ of water flowing perennially

5.1.2.2 Groundwater resources

- a quantity of about 23.5 billion m³ is 90% renewable
- 2.56 billion m³ are usable.

5.1.3 Location

The near equatorial location range between 30°25'- 100°30' North, 34°05' - 42°45' East. The altitude varies from less than 600 m to more than 4,000 m above sea level.

5.1.4 Political

In Oromiya there are 12 political administrative zones, with 180 districts, 375 urban centres, and 5,300 peasants associations.

5.1.5 Population distribution

The average household size for Oromiya is 4.8 persons. The urban and rural average household size is 4.5 and 4.9 respectively. The average population density of Oromiya is 57 persons/km², ranging from 20 persons/km² (in Bale) to 128 persons/km² in (East Showa).

5.1.6 The water supply

Current accessibility figure shows to group up to 24% in rural and 76 % in urban. A total of 5,187 rural water schemes exist in the region, and 112 urban water supply schemes and their satellites operate in the region. Inventory shows that a total of 241 hand-dug wells, 331 shallow wells, and 226 developed springs were constructed within five years (1996-1999/2000). Out of the total number of schemes: 5,187, only 3,217 are currently functional, while 1,630 of them are non-functional. In general 30% of the schemes are out of service.

5.1.7 Water supply service levels

Four levels of water supply service can be distinguished in general:

1. Deficient:
 - water source is unsafe or inadequate, or return travel time is more than 30 minutes;
2. Minimum:
 - communal water points;
 - safe source;
 - adequate water;
 - adequate drainage;
 - return travel time less than 30 minutes;
3. Intermediate:
 - point source per household;
 - safe source;
 - adequate water supply;
 - metering;
 - appropriate drainage;
4. High:
 - piped connection;
 - metering;
 - safe source;
 - adequate water volume and pressure;
 - continuous supply.

5.2 Community management

Community management refers to the capability and willingness of users to take charge and determine the nature of developments affecting them. Thus, in water supply systems, community management refers to the level at which the community exercises responsibility for decision making and control over subsequent implementation of these decisions during project development, and the capability of the community to control and strongly influence the development of its water supply schemes, which has three basic components;

- *Responsibility*: the community takes on ownership of water supply system and attendant obligation to the system;
- *Authority*: the community has the legitimate right to make decisions regarding the system on behalf of the users;
- *Control*: the community is able to carry out and determine the outcome of the decisions

In general, community management is concerned with all issues pertaining to responsibility i.e.:

- ownership,
- decision making authority and
- control over project development and systems operations.

This may imply a variety of management systems, from extensive contributions of self-help labour at lower levels of service, to specialized managers at higher levels of services.

Community participation and management can be distinguished on the basis of fee-collecting activities. Community participation implies that the community performs all routine operational duties such as record keeping, accounting and payment collecting under a system predefined by an external agency, whereas community management implies that in addition the community establishes tariff schedules and institutionalises its own form of fee collection.

Important preconditions for effective community management are:

- community demand driven for improved water supply system;
- the availability to the community of information that is required to make informed decisions;
- technologies and level of service commensurate with the community's needs and capacity to finance, manage and maintain them;
- understanding by the community of technological options, and willingness to take responsibility for the system;
- willingness to invest in capital and recurrent costs;
- implement of the community to make decisions and choice;
- community has institutional capacity to manage the development and operation of the system, and human resources to run this institution;
- policy which permits and supports community management;
- external and internal support, and availability of services from government, NGOs and other donors, as well as private sector (like training, technical and credit service, etc.)

Note: These preconditions will be fulfilled if there is strong community participation in all stages of the project cycle.

In the past, community participation and management in the activity of water supply system project was conceptualised as effort of individual to implement plans already made and imposed by government or other development agencies as the "Top Down" approach, which is deductive and authoritative traditional type. This approach prescribes passivity in participation, which involves the target beneficiaries at the initial discussions, prioritisation, planning, implementing (construction), O&M as well as monitoring and evaluation of the water supply system at all cycles of the project.

In general, water resources management and environmental conservation measures must make sense to local people and build upon their own knowledge systems or their will. They should make their own regulations and develop their rules about water sources management. Communities are complex social realities; for this reason it is impossible to separate out the management of water supply from other concerns. Management capacity can only be built

successfully when there is a clear understanding of the social, economic and cultural characteristics of the community.

5.3 Community water supply management in Oromiya

The main objectives of introducing community management to rural water supply schemes in Oromiya are:

- to introduce cost coverage system in management of rural water supply schemes;
- to involve the beneficiary -community in directing, controlling and decision making process;
- to keep the sustainability of water supply system, and
- to ensure the participation of beneficiary community in management of their water supply schemes.

5.3.1 Community water management options in Oromiya.

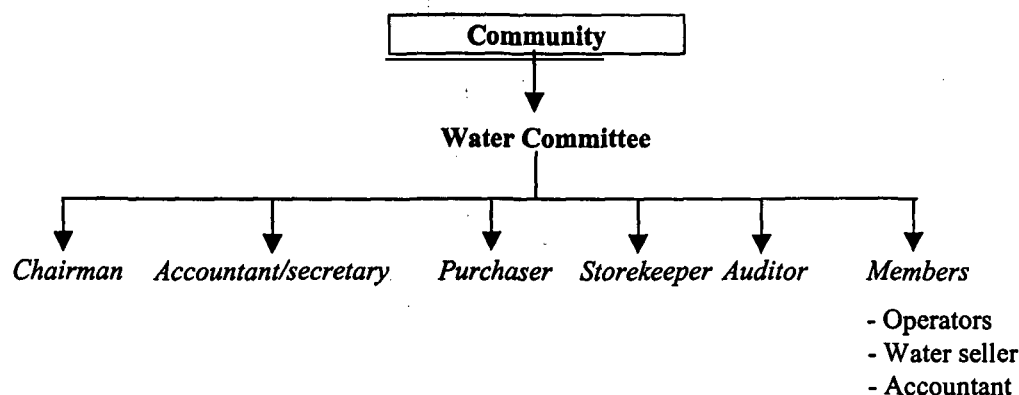
There are three management options, which are currently operational in Oromiya:

1. Water Committee
2. Water Board
3. Traditional water resources management

5.3.1.1 Water Committee

Water Committees are community members who are elected by the beneficiary community to perform the regular activities for water supply schemes. The Water Committees are elected every two years.

The organisation structure of a Water Committee is as follows:



The members of Water Committees are 5 for handpumps and springs on the spot, and 7 for motorized schemes or schemes with a distribution network. The committee members have different responsibilities, such as chairman, secretary (accountant), cashier, purchaser, storekeeper and auditor. Generally only the accountant is employed. There are no separate mechanics or electricians; the operator functions as both. Some 150 operators were trained

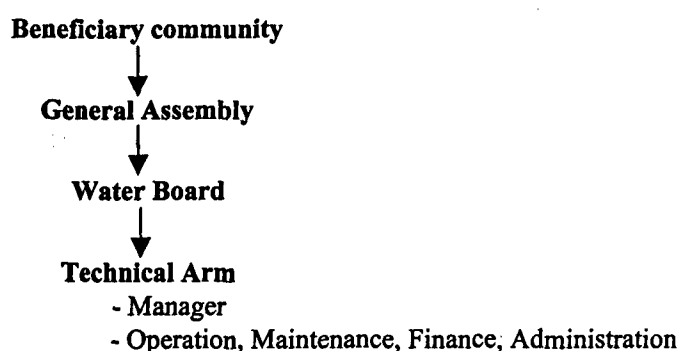
under a Unicef programme last year. The Water Committee is accountable to the community, which is defined as General Assembly in the guidelines for rural water supply management.

The involvement of at least two - three, or if possible a majority of women in the committee as a local level institution is an obligatory responsibility of the over-all management.

5.3.1.2 *Water Board*

A Water Board is elected by two or more water committees from different villages to represent these Water Committees in running a common water supply system for two years.

The organisation structure of a Water Board is as follows:



Note: The General Assembly consists of the Water Committees who are elected by beneficiary communities of different peasant associations, who have rights and obligations to supervise the activity of the Water Board in managing their water supply schemes.

5.3.1.3 *The traditional water resources management*

The Oromo society in general and the Borana in particular have their own indigenous water resources management. This indigenous water resources management includes how to effectively utilise available water resources. The water rights depend on the scarcity of water and the labour spent. Surface water such as a river, or water found in natural depressions or pools after a rainstorm, is regarded as a gift of god for all to use. Water which is contained in a pond or which is found in the *ella* (traditional well) made by man or machine, is regarded as property of a particular group (sub-clan or clan) with respect to the cost of maintenance. Temporary water found in ponds (*haroo*) that are man-made, is subject to greater regulation. Generally those who have improved or maintained the water sources have priority access.

The Borana's *ella* (traditional well) is administered by *abba Hireegaa* (father of the *ella*), who has the responsibility to oversee the operation and maintenance of the *ella*. Everybody who comes to water their livestock have to participate in desilting the *haroo* and *ella*.

The Borana's are fully aware of how to utilize their scarce water resources. During the rainy season they utilize *lolaa* (flood water), *haroo*, and *ella* accordingly. In the normal dry season the frequency of watering their animals is:

- Cattle 3 days
- Sheep 3 days
- Goat 3 days
- Donkey 3 days
- Horses 2 days
- Camel 7 - 15 days

The rangeland of the Borana's is arranged according to the availability of seasonal water resources. They divide their grazing land into *fora* (dry season) rangeland and *waraa* (wet season grazing land).

5.4 The guidelines

Depending upon the legal provision granted to the Oromiya Water, Mines and Energy Resources Development Bureau by the Regional Government of Oromiya, the guidelines for rural water supply management have been prepared. The guidelines for rural water supply management enable to keep the system sustainable as all the duties, responsibility and accountability of the Water Committee or Water Board are clearly mentioned in the document.

5.4.1 Legal entity

The Water Committees and Water Boards are legal entities that are accountable to the beneficiary community and the department. A Water Committee/Board can open a bank account and can sue or to be sued on behalf of water supply schemes.

5.4.2 Rights and obligations of Water Board/Committee

5.4.2.1 Rights of a Water Committee

The rights of a Water Committee are as follows:

- to facilitate the operation and maintenance of water supply scheme to the maximum benefit of the beneficiary community;
- to initiate ideas on tariff setting;
- to collect fees from users as per the tariff;
- to under take all necessary expenditure of water supply schemes;
- to open and operate bank accounts;
- to hire and fire technical personnel for water supply schemes;
- to decide the basic salary of technical personnel;
- to decide on expansion and improvement of the water supply scheme in collaboration with the zone department;
- to contract the maintenance and operation of their water supply scheme, and
- to create strong relation with the zone department to facilitate the day-to-day activity of water supply schemes.

5.4.2.2 *Obligations of a Water Committee*

The obligations of a Water Committee are as follows:

- to supply adequate potable water to the community;
- to oversee the operation and maintenance of water supply schemes;
- to undertake maintenance of water supply schemes;
- to keep a record of water produced and sold;
- to maintain the sanitation of water points/water supply system;
- to report quarterly to the zone and the community;
- to expend the money collected from the sale of water only for operation and maintenance of water supply schemes, and water supply development;
- to apply a cost coverage tariff;
- to keep financial transactions;
- to empower the community to use potable water supply schemes;
- to supervise the activities of the employed technical staff, if any, and
- to purchase spare parts in consultation with the zone.

5.4.2.3 *Rights of a Water Board*

The rights of a Water Board are as follows:

- to facilitate the operation and maintenance of water supply schemes to the maximum benefit of the community;
- to initiate ideas on tariff setting;
- to collect fee from users as per the tariff;
- to undertake all necessary expenditure of water supply schemes;
- to open and operate bank accounts;
- to hire and fire technical personnel for water supply schemes;
- to decide the basic salary of technical personnel;
- to decide on expansion and improvement of water supply schemes in collaboration with the zone department;
- to contract the maintenance and operation of their water supply schemes, and
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5.4.2.4 *Obligations of a Water Board*

The obligations of a Water Board are as follows:

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- to maintain the sanitation of water points/water supply system;
- to report quarterly to the zone and beneficiary community;
- to expend the money collected from the sale of water only for operation and maintenance of water supply schemes;
- to apply a cost coverage tariff;
- to keep financial transactions;

- to empower the community to use potable water supply schemes;
- to supervise the activity of the employed technical staff, if any;
- to purchase spare parts in consultation with the zone department;
- to audit the account of the water supply schemes at least once in a year, and
- to invite different professional or other water supply Boards for experience sharing.

5.5 Tariff setting and application of cost coverage

The theoretical concept of cost coverage is that all costs of a rural water supply system are covered by the revenue collected from water sales. As water is social economic good, consequently a cost coverage tariff has to ensure that all costs for future water supply system operation and maintenance are covered by future water sales.

Costs include all goods and services consumed by RWSS in a given period. Therefore cost coverage tariff setting depends on the following parameters:

- running/operational cost
- maintenance/ repair cost
- replacement cost

5.5.1 Reasons for introducing cost coverage in Oromiya

- To shift the capacity of the Regional government and other stakeholders to the remaining 75% of population of Oromiya who don't have access to safe water;
- To make the beneficiary community self reliant and the system sustainable, and
- To create a sense of belongingness and to make the communities fully concerned for their water supply schemes.

**) Before setting a tariff for a given rural water supply scheme, a survey of affordability and willingness to pay has to be conducted.*

5.6 Government structure to assist rural water supply community management

The Oromiya Water Mines and Energy Resources Development Bureau is organised into 4 departments and 6 services. Among these, the Community Participation Promotion and Stakeholder Coordination Services (CPP&SHCS) and the Operation and Maintenance Department (O&M) at Bureau level, and the zones' O&M service and CPP&SHCS are the main actors paying due attention to assisting the rural water supply schemes' community management.

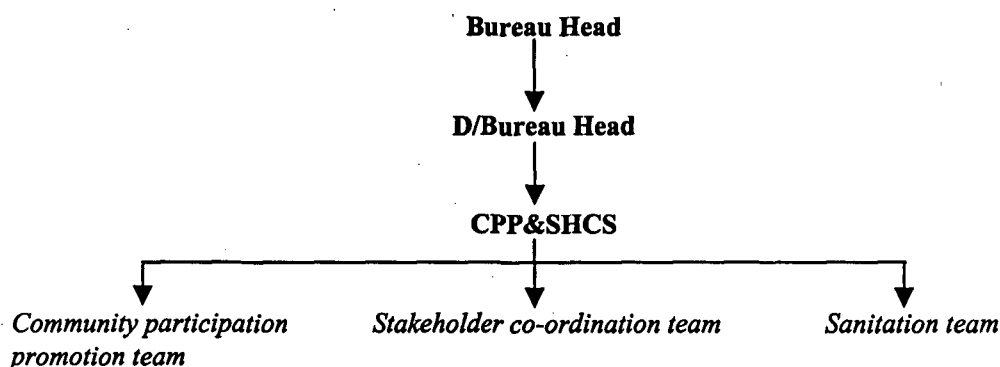
5.6.1 Community Participation Promotions and Stakeholder Coordination Service (CPP&SHCS)

The main objective of CPP&SHCS is:

- to empower the community to participate in the management of their water supply scheme and to encourage adoption of indigenous knowledge;

- to assist the Water Bureau in its water development efforts, since popular participation will lead to effective utilisation of available resources, and
- to facilitate training of Water Committees or Water Boards in:
 - tariff setting and application of cost coverage;
 - participatory planning;
 - resource management;
 - financial management;
 - administration, and
 - artesian and village-level operation and maintenance.

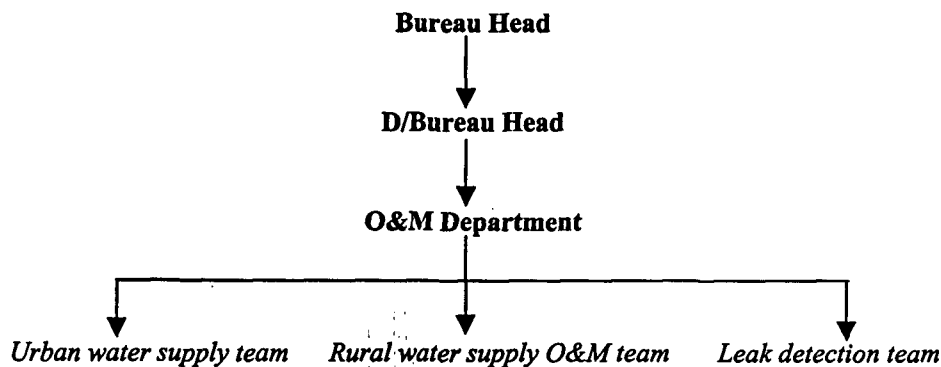
The organisation structure of CPP&SHCS is as follows:



5.6.2 Operation and Maintenance Department

- Operation and Maintenance (O&M) is a crucial element for sustainability and a cornerstone of system management.
- O&M denotes an activity by an organizational set-up that provides resources to ensure the provision of continuous and satisfactory service to the users at the least possible cost, and
- To facilitate operation and maintenance training to Water Committees, Water Boards and to the members of beneficiary communities.

5.6.3 Organization structure of O&M



5.7 Challenges and achievements

5.7.1 Challenges

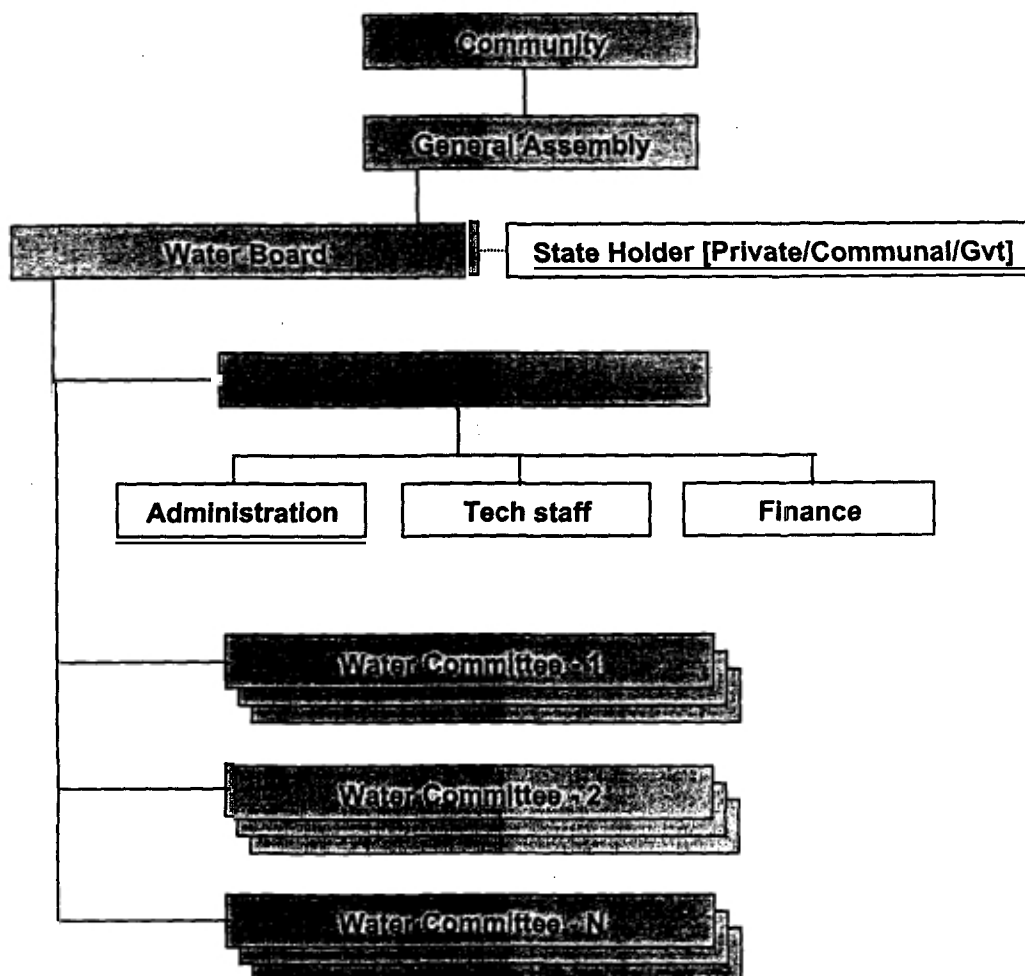
- Lack of spare parts and equipment;
- Lack of service providers in town;
- Availability of bank in the area;
- Timely auditing;
- Poor planning;
- Poor quality of bore installed equipment;
- Lack of stakeholders participation.

5.7.2 Achievements

- Good political will;
- Good Donors Participation: UNICEF, UNDP, GTZ and NGO's;
- Implementation of cost coverage;
- Operation and maintenance strategy;
- Data management;
- MIS;
- Community technicians and aerial mechanic trainings;
- Local contractors' involvement.

5.8 Example: Siraro Water Board Structure

The structure of the Siraro Water Board (see next page) is typical for the organisation of community management of a larger scheme. The scheme obtains its water from 10 boreholes, and comprises about 82 km of pipeline. There are about 21 Water Committees under this Board.



5.9 Concluding remarks

Cost recovery for rural water supply schemes has already been introduced in Oromiya, at 3 different levels:

- recovery of running/operational costs only;
- recovery of O&M costs (running/operational costs and maintenance/repair costs);
- recovery of O&M costs as well as replacement costs.

In view of the huge task still in front of us, as far as rural water supply is concerned, the Government should aim at withdrawing from the existing schemes, to be able to devote attention to starting new ones. The Government structure for assisting in the development of community management for rural water supply could be limited to around 7 persons at zone

level, while the strength of the team at scheme level would be about 7 persons as well. The guiding principle should be to create capacity in the community.

One of the main challenges mentioned in paragraph 5.7.1 is that of spare parts provision; so far there has not been any response from either the donors or the private sector.

6 RWSEP, AMHARA REGIONAL STATE

(Presentation by Mr. Arto Suominen, Programme Coordinator Rural Water Supply and Environmental Programme - RWSEP, Amhara Region)



6.1 Introduction

The Rural Water Supply & Environmental Programme (RWSEP) in Amhara Regional State is a bilateral programme implemented by the Government of Ethiopia with Finnish assistance through Finnida. It is implemented in 4 zones: South Gondar, East Gojjam, West Gojjam and Awi, covering 18 Woredas and 288 sub-Kebeles, with a population of 3.2 million.

The first phase of the programme was implemented from September 1994 to June 1998, funded with US\$ 1.8 million by the Government of Ethiopia, and US\$ 4.5 million by the Government of Finland. The second phase started in July 1998 and will run until June 2002. It has a budget of US\$ 2.3 million by the Government of Ethiopia, and US\$ 6.3 million by the Government of Finland. So far, 1,400 water points have been constructed, as well as 130 VIP school latrines and over 4000 household latrines.

The over-all mission of the programme is *to ensure, encourage and promote the communities to take the responsibility of their own development.*

To ensure that, a number of sustainability areas have been identified:

- **Technical sustainability:**
 - the constructed facilities are operational and in use. The purpose of this direct objective is to increase the availability and ensure the sustainability of the constructed safe drinking water supplies, as well as to improve the health situation of the population through rural and semi-urban sanitation, and to improve the rural village road infrastructure;
 - community-based approach improves construction potential or rural water supply schemes and increases the sense of ownership;
 - hygiene education as part of the sanitation intervention changes attitudes towards sanitation.
- **Social sustainability:**
 - the communities are in control of their own development with minimum outside support. The purpose of this direct objective is to change attitudes of the beneficiaries in relation to gender and to increase women's participation and decision making in the development work at all levels;
 - community planning, gender training and applying the IEC4 strategy has major impact on the ownership of the programme intervention by the communities;
 - organisation of the community-level gender training prior to the preparation of the community plans has remarkable impact on the participation of women in the planning, and again on the implementation and management;
 - discussions with women as users of water points have resulted in a gender sensitive design of the upper structure of water points;
 - IEC has increased efficiency and confidence at the community level;
 - experience sharing facilitates smooth implementation in new Woredas and communities;
 - RWSEP Day assists in sharing ideas.
- **Environmental sustainability**
 - the soil erosion is decreased and vegetation and forestry cover is increased. The purpose of this direct objective is to improve afforestation, food self-sufficiency and livestock health.
- **Institutional sustainability**
 - Regional Government is capable to replicate the programme without external technical and financial support. The purpose of this direct objective is to increase self-control and financing of development efforts at the community level, and increase the institutional capacity and human resource development at all levels;
 - multi-sectoral approach leads to efficient use of human resources.

6.2 RWSEP components

The programme covers not only water supply and sanitation, but different other fields as well:

1. Construction capacity building
 - 615 artisans trained

⁴ Information, Education and Communication

- 18 Artisan Associations established
- 2. Water supply construction
 - 1228 water points and 3 piped schemes constructed
- 3. Operation and maintenance management
 - regional workshop
 - O&M procedure
 - local spare parts production
 - WWD capacity building
 - only 4% of water points are not operational
- 4. Sanitation and hygiene education
 - over 4,000 Contact Women trained
 - 180 school sanitation clubs functional
 - over 3,000 household latrines constructed
- 5. Gender and community planning
 - 288 Sub-Kebele Gender Groups functional
 - 288 Sub-Kebele level development plans gender sensitive
 - 25% of the Kebele level committee members are women
- 6. IEC
 - all development partners at all levels aware of project
 - PIS monitoring and evaluation system functional
 - 180 school IEC teams functional
- 7. Environment
 - over 250 nurseries established
 - over 2000 farmers trained in animal health, forage development and IPM
- 8. Energy utilisation
 - 10 Mirt production centres established and functional
 - over 600 Mirt stoves produced
- 9. Community Skills Training Centre support
 - 18 CSTC supported with tools and training materials
- 10. Grinding mills
 - 10 women group grinding mills established and functional
- 11. Women credit scheme
 - over 1,000 women provided loans to start income generating activities
- 12. HR capacity building

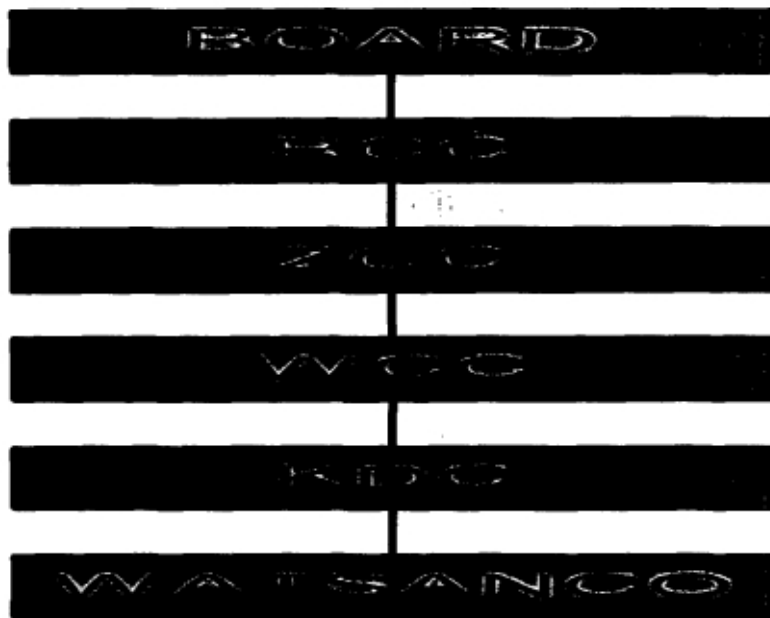
6.3 RWSEP organisation structure

The organisation structure used by RWSEP includes a Board, Coordination Committees at all Government levels (RCC, ZCC, WCC, KDC) and WATSANCOs at the community level. The Regional Coordinating Committee is chaired by the Bureau of Planning, with the Water Bureau acting as Deputy Chair. The Zonal Coordinating Committee is chaired by the Zonal Administration, with Planning as Deputy Chair and Water as Secretary. The Woreda Coordinating Committee is chaired by the Woreda Council. Since Water is not represented at this level, Agriculture acts as Deputy at this level. At Kebele level the Kebele Development Committee is chaired by the Kebele Administration, with the Kebele Programme Coordinator (KPC) as Secretary and at least 2 women from sub-Kebele level as members. The KPC often is

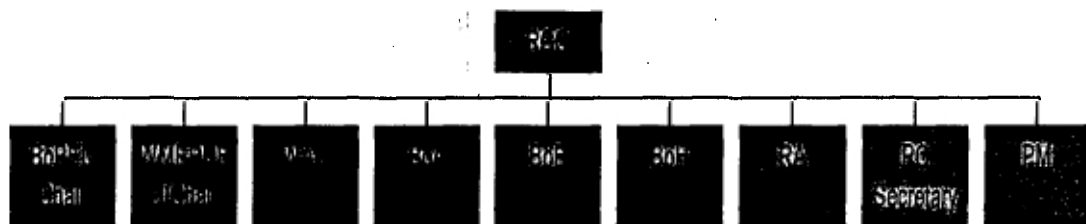
from Agriculture. The WATSANCO, finally, normally has 5 members of which at least 2 women, as well as a pump attendant and guard.

The organisation structure is illustrated in the diagrams below.

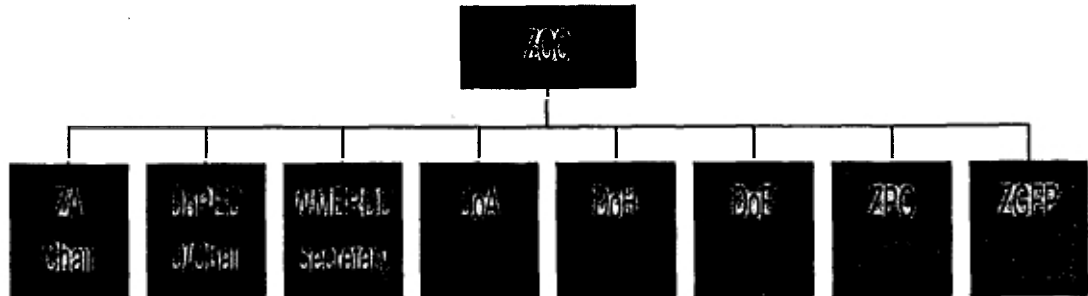
6.3.1 RWESP over-all structure



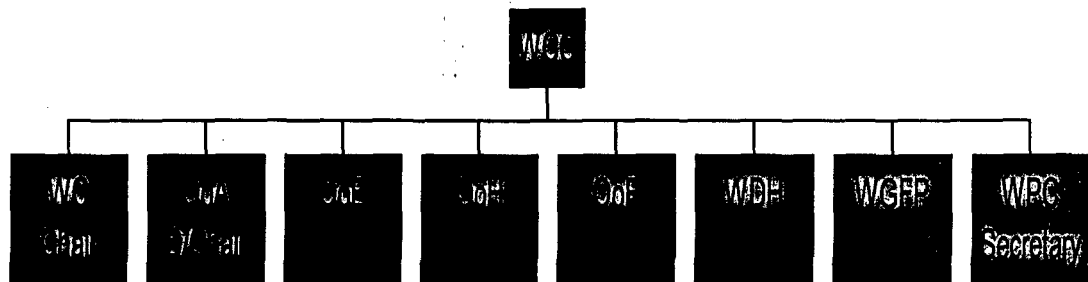
6.3.2 Regional Coordinating Committee



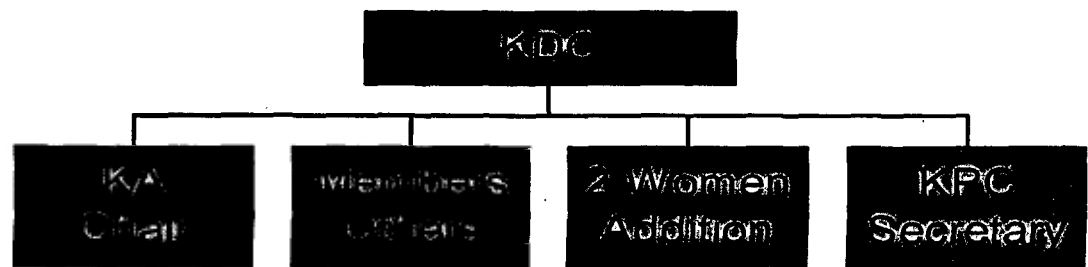
6.3.3 Zonal Coordinating Committee



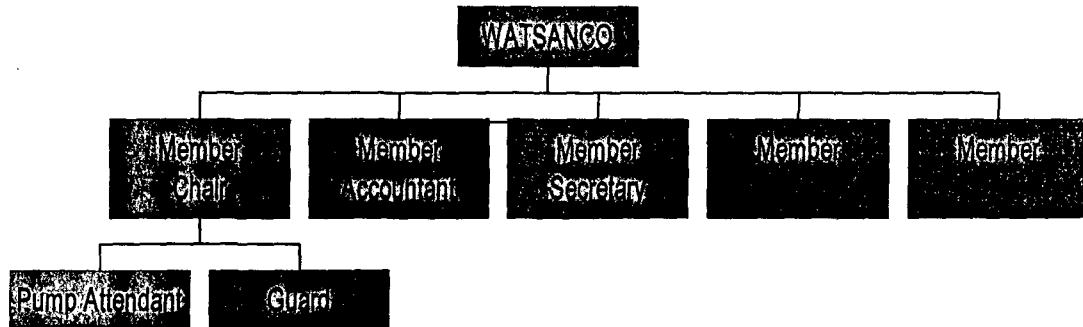
6.3.4 Woreda Coordinating Committee



6.3.5 Kebele Development Committee



6.3.6 WATSANCO



In order to coordinate the programme, there is a Programme Facilitation Office consisting of 15 staff paid by the programme, including 4 expatriates: the Programme Coordinator/Programme Manager, a Sanitation Expert, a Management Expert and a Water Expert:



6.4 RWSEP entry process

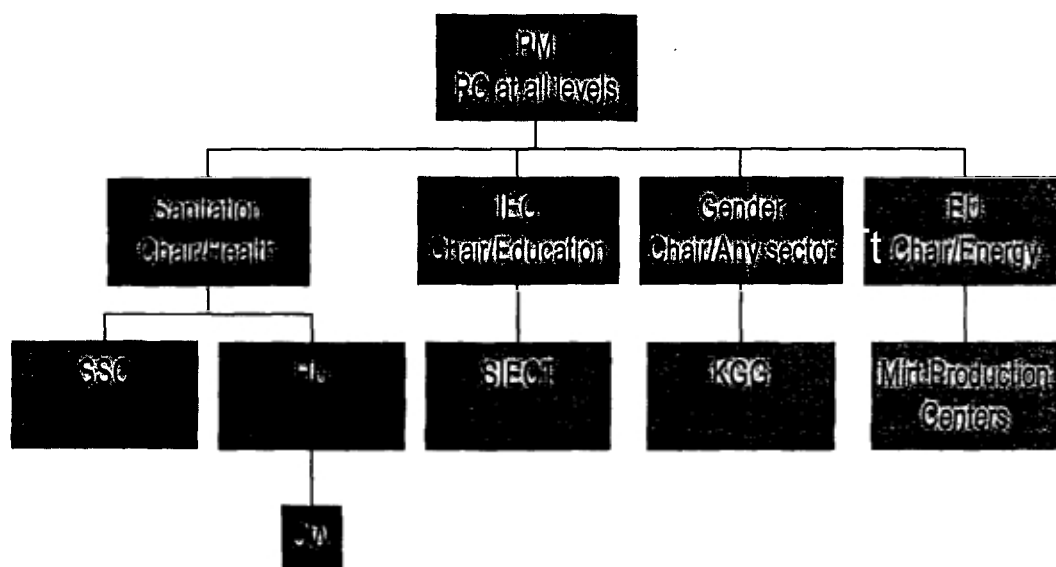
The RWSEP entry process, i.e. the approach of the programme upon starting up activities in a specific community, is characterised by the following steps:

- selection of Kebeles;
- KC sensitisation;
- DAs gender training;
- Kebele gender training;
- PRA training for DAs;
- community development plan;
- site selection;
- establishment of KGG (Kebele Gender Group), school IEC and School Sanitation Clubs, and WATSANCOs;
- construction;
- selection of Contact Women;
- training.

During and after the initial stages, an important aspect is the dissemination of information, which is done through:

- posters;
- Aggar (vertical dissemination of information);
- Mikikkir (horizontal dissemination of information);
- drama (notably through school IECs);
- Asmari and poems;
- organisation of a RWSEP Day;
- handing-over celebrations;
- training at all levels;
- experience sharing (Kebele and Woreda);
- quarterly evaluation meetings:
 - CDP evaluation at Kebele level;
 - KPC meetings;
 - KGG Chair meetings;
- networking;
- Board, RCC, ZCC, WCC and KDC meetings;
- bi-annual and annual meetings.

Furthermore, there are thematic teams at various levels:



Note: EU = Environmental Unit; SSC = School Sanitation Club; HU = Health Unit,
 CW = Contact Woman; SIECT = School IEC Team; KGG = Kebele Gender Group.

6.5 Rural water supply

6.5.1 Status of rural water supply in programme area

Table 6.1 illustrates the status of rural water supply in the programme area.

Table 6.1 Status of operational water points, June 2001

Zone Woreda	Number of Water Points Existing	Number of non-functional Water Points	%
South Gondar	360	24	7
Dera	135	3	2
Farta	106	12	11
Fogera	61	5	8
Estie	58	4	7
East Gojjam	726	29	4
Enarg	132	5	4
Goncha	134	6	4
Hulet lju	104	3	3
Shebel	94	6	6
Enebsie	48	3	6
Bibugn	52	4	8
Enemay	104	2	2
Dejen	58	0	0
West Gojjam	114	1	1
Yilmana Densa	28	1	4
Bahir Dar Zuria	27	0	0
Quarit	27	0	0
Degadamot	32	0	0
Awl	28	0	0
Ankesha	14	0	0
Guangua	14	0	0
GRAND TOTAL	1,228	54	4

6.5.2 Cost aspects

6.5.2.1 Construction costs

Typical construction costs of a hand-dug well, 16 m deep and fitted with a handpump (Afridev, made in India) are Birr 12,000.

Typical construction costs for a spring capping with a 2 m³ collection chamber are Birr 11,000.

6.5.2.2 O&M costs versus water tariff

The cost of spare parts required for maintenance of a typical water point (handpump or spring) are illustrated in Table 6.2:

Table 6.2 Annual maintenance costs (spare parts only)

	Hand-dug well with Afridev handpump	Spring tapping with 2 m ³ collection chamber
Average spare part cost required to cover the fast moving items of one handpump per year	Birr 36 / water point / year	
Estimated spare parts cost required to cover the slow moving items per water point per year	Birr 52 / water point / year	Birr 67 / water point / year

The required annual contribution to cover the capital costs is as follows:

Table 6.3 Required contribution to capital cost

	Hand-dug well with Afridev handpump	Spring tapping with 2 m ³ collection chamber
Required contribution to cover the capital cost, assuming 10 years of lifetime for a well and 15 years for a spring capping	Birr 28 / household / year	Birr 16 / household / year

Table 6.4 Required over-all tariff per household per year

No.	Description	Hand pump		Spring	
		Yearly cost per water point	Tariff to cover cost per household and per year (Birr)	Yearly cost per water point (Birr)	Tariff to cover cost per household per year (Birr)
1	Fast moving items	36	0.72	-	-
2	Slow moving items	52	1.04	67	1.34
3	Maintenance service	40	0.80	40	0.80
5	Guard	360	7.20	360	7.20
6	Total O&M	488	9.76	467	9.34
7	Capital cost	1,403	28.06	800	16
8	Total cost	1,891	37.82	1,267	25.34

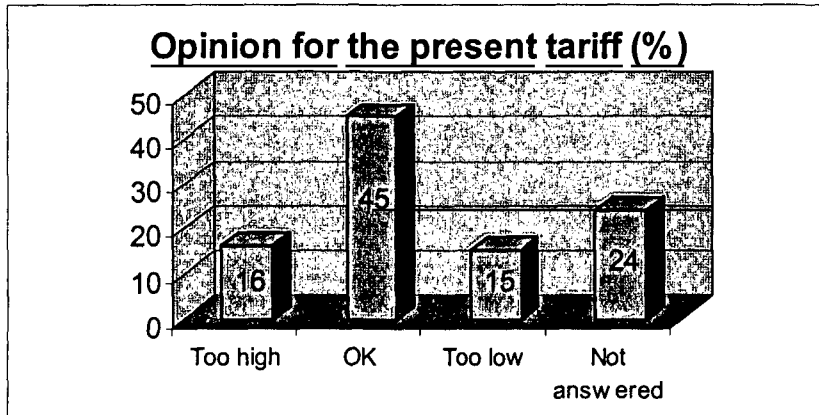
Table 6.4 indicates the tariff that would be required to cover either O&M only (approx. Birr 10 per household and per year) and in case full recovery of investment costs would be required as well, which is 2.5 to 4 times higher, at Birr 37.82 to 25.34 per household and per year.

These tariff levels should be compared to the average actually paid tariff, which is Birr 6 per household and per month. That actual affordability is likely to be higher, is illustrated by the fact that households pay around Birr 24 per year for oil.

More detailed cost information on rural water supply in the RWSEP programme is given in Appendix 4.

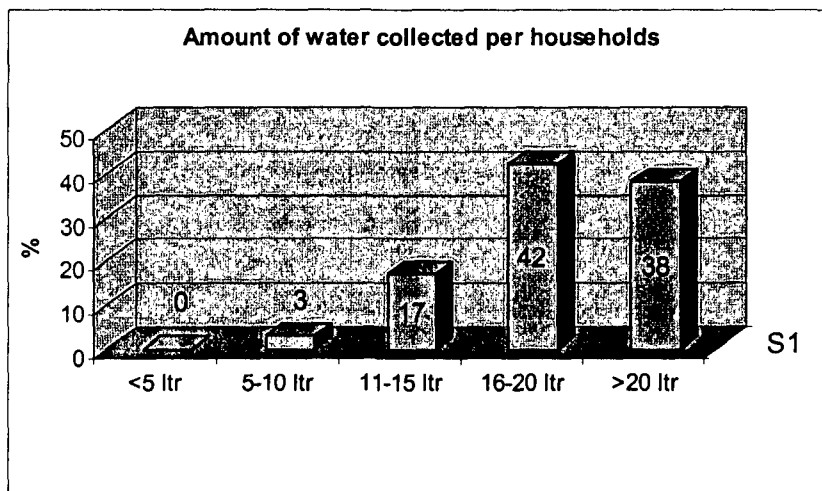
Currently, 63.5% of the rural population in the programme area pay for water. The opinion of the users on the present tariff is indicated in the graph below. It is clear that a majority of the

interviewed users considers the present tariff to be acceptable, with about equal percentages of the population considering the tariff either too high or too low. 24% of the interviewed users did not answer this question.



6.5.3 Actual water consumption

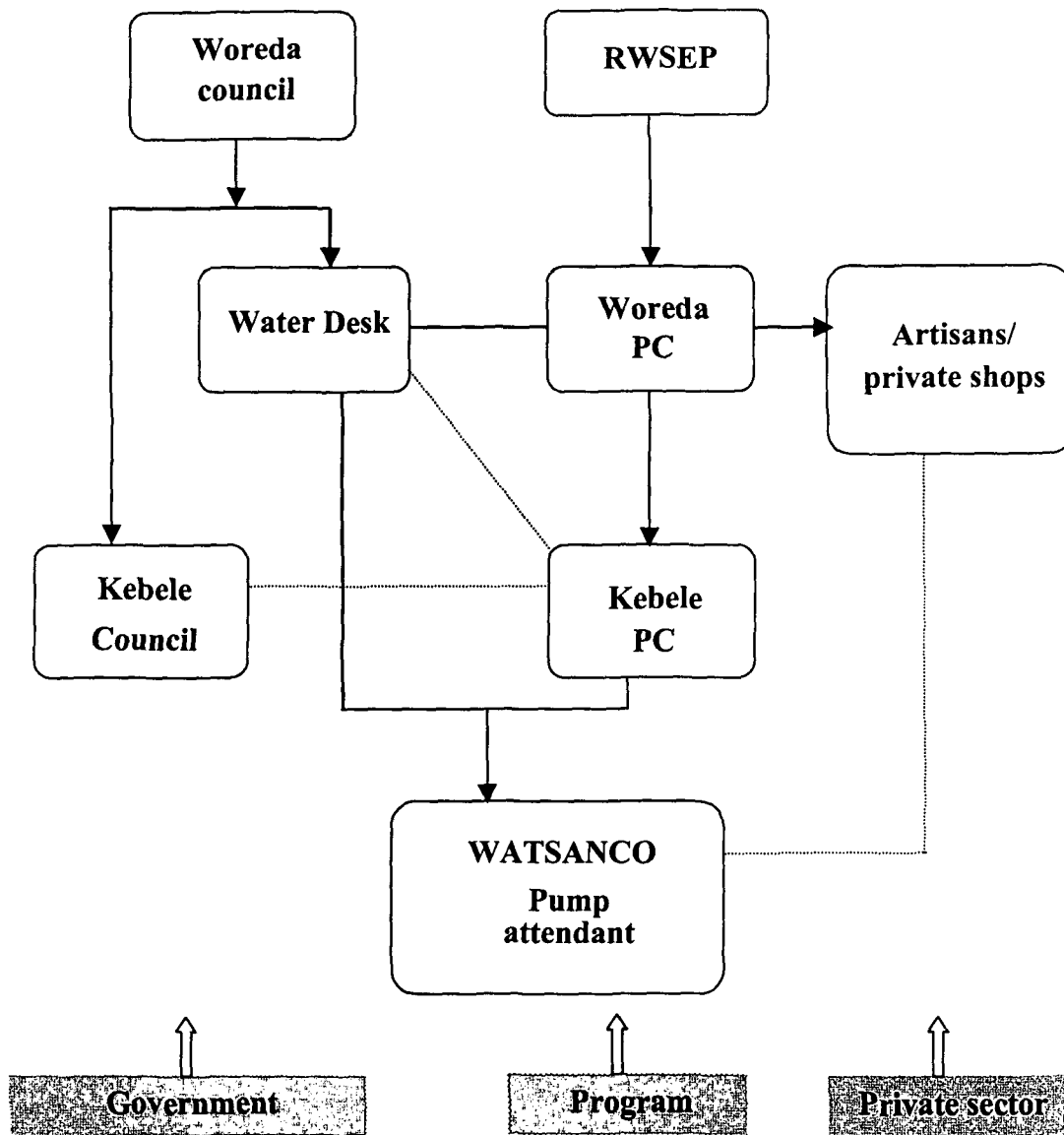
The volume of water that is collected, per day, by the individual households, is relatively low, as is shown by the following graph. Taking into account an average household size of 5 persons, the daily per capita consumption from the safe water sources is only about 8 lpcd, or less, for more than 60% of the users.



6.6 Rural water supply management

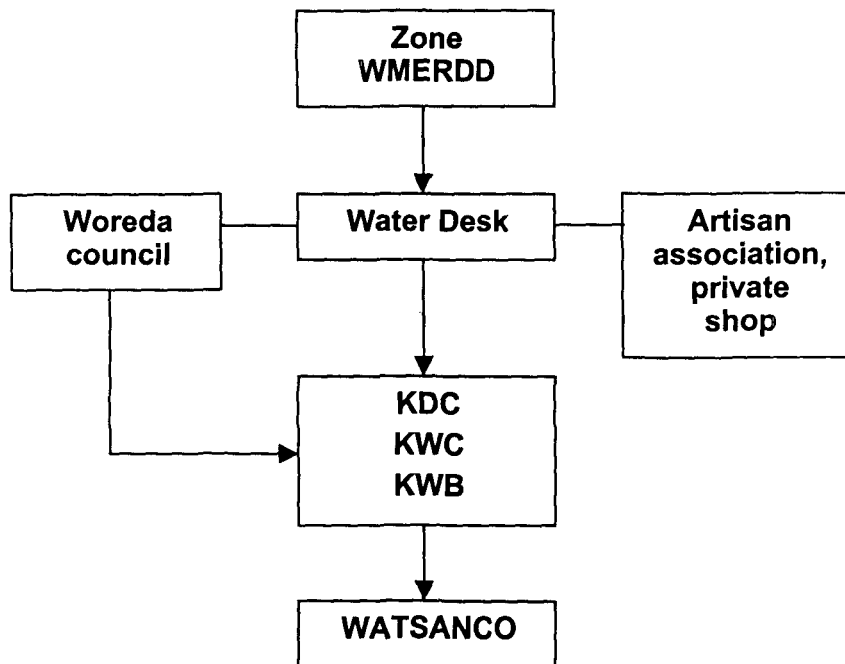
6.6.1 During programme implementaton

The organisational structure of rural water supply management during the programme implementation itself is given in the diagram on the next page.



6.6.2 After completion of the programme

The organisational structure of RWS management after completion of programme implementation will obviously be different, as shown below. For that reason, capacity building of the Government personnel and communities to take over the increased responsibilities must be synchronised with the staged disengagement of the external programme support.



For the RWS management by the community to be successful, certain conditions must be met with regard to the support structure:

- an efficient and effective maintenance and repair system to support Kebeles must be in place;
- a mechanism to subsidize the most expensive and sophisticated spare parts must be in place;
- the M&E should not cease after donor disengagement.

Programme disengagement from a certain area should be considered a positive step, which needs to be well-prepared:

- withdrawal should not be considered a punishment but a reward;
- Kebeles and Woredas should seek for withdrawal;
- every Kebele and Woreda should receive much public attention for their withdrawal. There needs to be a ceremony.

6.7 Discussion

Question: The organisation during programme implementation is now down to the Kebele structure. Certain funding will currently be done through the project. How will this be after the project will have been completed?

Answer: The Government of Ethiopia has accepted the strategy of the project, and the Regional Government will take over the structure after donor withdrawal. The withdrawal strategy was supposed to have been tested during phase 2, but this could not be accomplished because of the war. It is now the intention that such testing be done during phase 3.

Question: How many households are served per hand-dug well?

Answer: The question was put to the manufacturers of the Afridev handpump (which is currently being supplied from India). They recommended a figure of 250 persons per handpump. At an average of 5 persons per household, this translated into 50 households per handpump. There are 1000 - 2000 persons per sub-Kabele, or: 200 - 400 households, meaning an average of 4 - 8 handpumps.

Question: Regarding the organisational set-up, how is the provision of services to be sustained in the future, when the Government withdraws?

Answer: Although the aim is community management, together with an increasing level of infrastructure, we cannot jump directly from 0 to 100% realisation. It is logical that such realisation will have to be accomplished in stages. It is expected that in the longer term the Government will have a facilitating role only, but for some time it will be inevitable that it will be involved in implementation also. Consultants and NGOs can play an important role in building the required capacity at community level. For the time being, however, the best resources in place are Government resources.

7 COMMUNITY BASED MANAGEMENT OF WATER POINTS

(Presentation by Ato Sahle Mogus, Executive Director, Women Aid Ethiopia)

7.1 What is WAE?

Women Aid Ethiopia (WAE) is an indigenous non-governmental humanitarian organisation working with low income women in development for self-reliance. WAE was established in 1994 in Akaki town, Zone 6, Addis Ababa City Administration.

7.1.1 WAE development objectives

WAE's goal is to improve the economic and social conditions of low-income women by increasing their access to and control over production factors, services and facilities. WAE initiates and/or encourages various programmes of development with women with particular emphasis on the economic, social, educational, nutritional, health and environmental aspects of their lives.

Specific objectives are:

- improve women's access to basic services;
- improve women's income and employment;
- capacity building and improvement of women's productivity;
- improve women's equal opportunities and enhance their participation;
- promote women's empowerment;
- raise public awareness on the role of women and the problems they face.

7.1.2 Current development programmes

Current development programmes include:

- income generation and employment creation through the promotion of saving and credit programmes;
- water supply and environmental sanitation programme, constituting:
 - provision of clean water supply;
 - provision of communal latrines;
 - provision of common kitchens;
 - improvement of drainage system;
 - improvement of domestic garbage collection and disposal system, using:
 - horse-drawn carts and dust bins;
 - skips/dumpsters (garbage containers);
- (Women-to-women) preventive/promotive health care involving family planning (FP) and reproductive health (RH) services;
- establishment of tree nurseries and vegetable gardens in schools - environmental education/rehabilitation;

- small project (up to 50,000 Birr) funding for local NGOs through the German Ethiopian small Project (GESP) fund of the German Agro Action (GAA) delegated fund.

7.2 Women's Saving and Credit Programme

- two saving and credit cooperatives (SACC) established (first in 1995 and second one in mid-1997);
- 134 members (80% women household heads);
- 52,500 Birr seed money granted initially;
- insurance fund granted by WAE for the two cooperatives = 100,000 Birr;
- individual loan amount had increased from 300/500 - 3000 Birr (since 1995);
- total amount of loan disbursed up to June 30/2001: 360,300 Birr;
- maximum individual saving = 1,851 Birr;
- average individual saving = 421 Birr;
- group saving among = 56,446 Birr

Types of business and undertaking	No. of members
• sale of food and beverages	56%
• grain and pulse retailing	48%
• sale of livestock products	10%
• shop keeping	10%
• sale of clothing	6%
• other business	4%
	134%

- loan repayment rate = 72% (22 new members recently joined)

7.3 Water supply and environmental sanitation (WATSAN) programme

The problem, according to WAE's baseline survey results, is as follows:

Water supply situation

- 47.2% have no access to piped water
- 24.6% own private taps inside compound
- 24.0% share tap water in compound
- 4.2% get water from public taps ('bonno')

Latrine facilities

- 64.2% of population have no toilet facilities whatsoever
- 18.6% share toilet facilities
- 17.2% have own latrines

Kitchen facilities

- 43.6% have no kitchen facilities
- 35.0% own kitchens (in whatever form)
- 21.4% share kitchens with others

7.4 Waste disposal

According to WAE's survey, waste disposal is done in three ways:

- 61.7% throw away domestic garbage in any open space
- 29.9% use private dug out pits
- 8.4% use municipal waste collection

A study by the Addis Ababa City Administration's Environmental Protection and Health Bureau indicated that:

- 76% of the waste in Addis Ababa comes out of residential houses
- out of the total solid waste, about 60% of the waste is collected for disposal

7.5 Development interventions

7.5.1 Water supply and sanitation (1998 - June 2001)

- 18 public water points (each with four taps) constructed so far;
- 1016 families (4937 people) directly benefit from them;
- 14 of the water points handed over and being managed by two Women's Saving and Credit Cooperatives and 4 by the Users Committees in Kebele 06.

Financial benefits from public water distribution points in Akaki (August 1998 - June 2001) were as follows:

Year	No. of water points ('Bonno')	Water consumption (m ³)	Total income (Birr)	Total expense (Birr)	Net income (Birr)	No. of beneficiaries	
						Families	People
1998	6	13,179	25,249.70	19,707.27	5,542.43	361	1,808
1999	5	8,715	15,096.93	10,428.24	4,668.69	250	1,247
2000	7*	3,194	4,486.50	3,575.60	910.90	405	1,882
TOTAL	18	25,008	44,833.13	33,711.11	11,122.02	1,016	4,937

* Two water points are not yet operational

Note: The Addis Ababa Water and Sewerage Authority charges a flat rate of 50 cents/m³ for all public water points ('Bonno') irrespective of water consumed plus a monthly charge of 5.00 Birr for the water meter.

7.5.2 Public sanitation centre

- established: 1997
- facilities:
 - 6 shower rooms (4 for men and 3 for women)
 - 2 latrines (one for men and one for women)
 - 1000 m³ capacity septic tank underneath
 - one water point with 2 taps (for shower users and for use by the immediate neighbourhood upon payment)
 - four cloth washing stands (not functional)

- 2000 l capacity water reservoir (tanker)
- one office for the water attendant
- charges:
 - shower: @ 0.75 cents per person for 30 minutes
 - sale of water: @ 0.10 cents/45 litres of clean water

Financial benefits from one public sanitation centre (1997 - June 2001) were as follows:

Year	Water consumption (m ³)	Total income	Total expense	Net income	Total No. of users*
1997	1,263.90	5,921.95	4,489.70	1,432.25	24,286
1998	1,561.10	6,813.40	5,231.61	1,581.79	32,493
1999	1,265.40	5,208.90	4,816.17	392.73	25,238
2000	1,162.50	6,134.87	4,583.23	1,551.64	28,510
2001	589.10	6,022.55	2,808.79	3,213.76	13,439
TOTAL	5,842*	30,101.67	21,929.50**	8,172.17	123,966

* Both for domestic consumption and/or shower use

** About 50% of the expense is for suctioning

- Note: - The number of beneficiaries includes repeated users
- On average, up to 50 people are served each day (both for drinking water and for shower use)
- The tariff for this facility is as follows:
- 0 - 15 m³ = 0.15 cents
- 16 - 40 m³ = 0.83 cents
- > 40 m³ = 1.67 cents

7.5.3 Common latrines

- 20 common latrines constructed in 20 strategic locations (in five Kebeles);
- each common latrine has six rooms (120 compartments in all);
- each latrine has a septic tank underneath (36 m³);
- 593 families (2,737 people) have permanent access to these sanitary facilities.

7.5.4 Common kitchens

- 12 common kitchens constructed in different locations;
- Improved (fuel-efficient) stoves installed in them:
 - 'Mitad' (ovens) for injera-baking = 49
 - ovens for stew preparation = 49
 - facilities for roasting grain ('asharo') for 'tella' preparation = 23
- 162 families (797 people) are permanent users.

7.5.5 Drainage improvement

- 1,100 meters of open-ditch, stone-embedded drainage canals constructed.
- 275 families (1,375 people) protected from flooding and overflowing.

7.5.6 Waste/garbage collection and disposal

Objective:

- To improve the prevailing poor status of environmental sanitation so as to reduce poor community's vulnerability to the spread of communicable diseases caused by household waste (rubbish);
- 252 licensed cart operators registered in Akaki.

Two garbage collection systems are used:

- a. waste collection and disposal using horse drawn carts and dust bins - project was started in August/98 (as a pilot project);
- b. waste collection and disposal using skips or dumpsters.

7.5.6.1 a. *Garbage collection and disposal using horse-drawn carts*

Activities:

- Sign project agreement with the respective Kebele Administration, the Zonal Health Department and the cart operator;
- Organize beneficiaries and form users committee;
- Specially designed waste collection carts and dust bins are manufactured;
- Horse-drawn transport carts ('gari') bought locally;
- Supply of horse feed, and medication services for the first six months;
- Orientation and sensitisation to target community and cart operator;
- Mobilise users and start up the project implementation process;
- Train and orient the Users Committee and the users themselves, including the cart operator, on management aspects;
- Follow up and monitoring of the project;
- Sign handing over agreement with the Development Committee, the Users Committee and the users themselves, and finalize the handing over process.

Beneficiary community profile:

- Low income, poor housing condition, inner location.

Need identification: Survey

Beneficiary participation/contribution:

- Each beneficiary is required to contribute 2.50 Birr per year;
- Stakeholders: The concerned Kebele Administration, the Development Committee, the target community and the Ministry of Health.

Selection criteria of carter:

- Family size and living condition, level and source of income;
- Personal behaviour and social standing among the community;

- Availability of license and experience (10 years).

Duties and responsibilities of the carter:

- Collect solid waste for four hours each day (seven days a week);
- Save at least 5% of his income for maintenance of equipment and replacement of horses (after 6 months);
- Feed and maintain the horses (after 6 months);
- Properly use project materials (use right only);
- Daily report on the quantity of waste collected and the income obtained (to WAE).

7.5.6.2 *Garbage collection and disposal procedures*

Inputs supplied for one cart operator:

- One horse-drawn specially designed cart (each cart with a loading capacity of 1500 kg);
- One normal cart for public transportation;
- Two horses;
- 12 small dust bills (dimension 60x40x60cm);
- One cart plates;
- One horn and other accessories;
- Feed supply and veterinary service (for 6 months).

Organization and management

Monitoring and follow-up

Accomplishments (August 1998 - June 2001) = 35 months

- 2,638.3 m³ (220 garbage truck loads or garbage tankers), or 18,845 small dust bins;
- The cart operators have generated an average monthly income of 339 Birr;
- Pilot project: appropriate technology - affordable, community-based.

7.5.6.3 b. *Waste collection using skips/dumpsters*

- WAE has so far supplied 7 skips to Zone 06 Health Department/Akaki - Capacity Building;
- On the average 568 truck loads (6,816 m³) of garbage/dry waste is estimated to have been collected so far (up to June 2001) using the seven garbage tankers provided by WAE.

Provision of personal hygiene and environmental health education and training on WATSAN:

- Organization and management of WATSAN;
- Proper use and maintenance of WATSAN facilities;
- Environmental awareness and protection;
- Water use, personal hygiene and environmental health;
- Prevention of communicable diseases;

- Solid and liquid waste management.

7.6 **Women-to-women preventive/promotive health service programme**

- Objective:
 - To improve the health status of women and children by establishing women-to-women health services which includes:
 - Training of 26 RH agents;
 - Provision of contraceptives (pills and condoms);
 - Dissemination of 'health information on:
 - Family planning and RH;
 - Maternal and child health;
 - Anti natal care;
 - HIV/AIDS STD prevention and control;
 - Harmful traditional practices.
 - Mobilization of mothers for EPI programs, etc.
- Accomplishments (January 2000 - May 2001):
 - contraceptive pills distributed to 8,585 women (including continuing users);
 - 5,798 packets of condoms distributed to men and women (commercial sex workers);
 - 7,590 home visits made by the RHAs for educational purposes;
 - 10,724 people received the service in 4 urban Kebeles and 7 adjacent rural Pas;
 - 25 different kinds of educational leaflets (IEC materials) on RH/FP given to the RHAs for educational purposes.

7.7 **Establishment of tree nursery and vegetable gardens in schools**

- Objectives:
 - Establish plant nurseries for purposes -of education, skill development, awareness, etc.;
 - Promote technical knowledge and skills among pupils in the production and management of vegetables as well as tree seedlings;
 - Create links with educational institutions in the area;
 - Contribute towards environmental rehabilitation.
- Accomplishments:
 - Project started with one school in 1997. Now (June 2001) expanded to five schools in Akaki;
 - Environment clubs established in the five schools, with 700 members;
 - 62,554 students and 220 teachers mobilized and closely involved in the project;
 - In-depth skill training in production and management of tree seedlings and in vegetable production given to 48 teachers and 321 students (totally 369);
 - About 270,810 tree seedlings produced by the schools;
 - An average, 3678 Birr generated by each school from the sale of seedlings and vegetables (up to June). Two schools just started;
 - Nearly 80,000 trees planted in and around the schools. The new schools not yet started planting.

7.8 Small project funding for local NGOs - Delegated Fund

- German Ethiopia Small Project (GESP) fund is granted by German Ago Action (GAA), international NGO;
- WAE manages the fund on behalf of GAA-delegated fund;
- Program finances micro-projects (up to 50,000 Birr) implemented by young indigenous/local NGOs;
- Sectoral coverage:
 - Small scale agriculture geared towards food production;
 - Water supply and sanitation Income generation projects Saving and credit (small business promotion);
- Geographical coverage:
 - NGOs operating within 150 km from Addis Ababa;
- 36 projects worth one million Birr financed between March 1996 and June 2001;
- WAE gets institutional support from GAA for the service.

7.9 Implementation strategy for WATSAN programme

7.9.1 Sets of strategies

Three sets of strategies correspond to the WATSAN programme component:

1. Operational strategy
2. Participative strategy, and
3. Sustenance strategy

7.9.1.1 *Operational strategy*

The operational strategy embraces the means utilized to discharge the day-to-day tasks in the routine implementation of a component.

7.9.1.2 *Participative strategy*

Assigns roles and responsibilities and devises mechanisms of involvement for all the partners of WAE in the collaborative development endeavour.

7.9.1.3 *Sustenance strategy*

Sustenance strategy is the creation of links that ought to be maintained between the various social actors who have relevance to the lasting of the output as long as its inherent characteristics permit it.

7.9.2 Water supply

7.9.2.1 *Operational strategy*

- The choice of water supply points is subject to the consensus of (all) stakeholders and approval of the Ethiopian Water Supply and Sewerage -Authority, WSSA;
- The Development Committee is the principal actor in the mobilization and deployment of communal resources;
- The beneficiaries will discharge all tasks the performance of which needs little or no skill. These include unloading of pipes, digging pipelines, etc.

7.9.2.2 *Participative strategy*

- As a prerequisite for the commencement of installation works, WSSA will give permission to extend the town-wide supply line to a designated site but the cost will be covered by WAE;
- Beneficiaries will be organized into groups and committees with division of labour commensurate with their knowledge and capabilities so as to assign them' to specific participative roles;
- A hierarchical structure is to be laid for ensuring communal commitment the default of which can entail punishment and/or abrogation of access to "privileges" of the services;
- A users' committee will serve as a bridge between WAE and the beneficiaries during the implementation process and fills such an important role as supplying and improvising inputs of, or feedback from, the target community;
- By way of cultivating a tradition of transparency, the Users' Committee will be made accountable directly to an assembly of beneficiaries.

7.9.2.3 *Sustenance strategy*

- Painstaking as it will be, the determination of water tariff takes into account the goal of keeping a delicate balance between making the water supply system self-sustaining in terms of recovering operating costs and giving access to the poorest households;
- Selected members of the beneficiaries will undergo basic training on the upkeep and maintenance of pipelines so that costs incurred for the acquisition on of external maintenance skills are kept to the minimum;
- Protective deterrents, say barbed wire, will be erected around water points to fend off casual damages to the taps. A shade will also be constructed for the water attendant;
- When WAE exits from the project, the water supply schemes are handed over to the women's saving and credit cooperatives;
- As part of WAE's integrative strategy for its different components, the women's saving and credit cooperative will channel the proceeds from the sale of water into its credit fund.

7.9.3 **Sanitation**

7.9.3.1 *Operational strategy*

- The appropriate sites to place both facilities will be selected jointly by the Zonal Health Department, the respective Kebele Administration, the Development Committee and the target group;
- Target selection will also be done by this group;
- The site plan and building designs must be approved by the Zonal and/or the Woreda Works and Urban Development Office;
- As there is no piped sewerage system in the area, a septic tank must be constructed underneath each common latrine;
- The walls will be constructed out of concrete hollow blocks.

7.9.3.2 *Participative strategy*

- The target beneficiaries will provide matching inputs in the form of free labour to construct the foundations, to water the structures initially, to load/unload supplies, etc.;
- The User Committees will decide on the number of beneficiaries in each facility;
- The Zonal/Woreda Administration will provide the land (free of charge) on which to construct the facilities.

7.9.3.3 *Sustenance strategy*

- The User's Committee will take responsibility to up-keep and maintain the facilities (self management);
- Training will be provided to the users on the use and management of the services;
- The users will make financial contributions to maintain the services;
- The Kebele Development Committee and sanitation workers will conduct (unannounced) visits to ascertain the proper use of the service delivery.

7.9.4 **Garbage collection and disposal, using two systems**

7.9.4.1 *Operational strategy*

- In consultation with the beneficiaries, the Health Department and the Kebeles, select sites for the placement of the skips as well as -the small bins;
- Designing carts and bins as per the request of the operators;
- Training cart operators on the utilization, upkeep and maintenance of carts and bins;
- Waging awareness campaigns in the locality so as to bring about behavioural changes among communities in waste disposal;
- Purchase of the standard and approved skips from experienced manufacturers so that it fits with the garbage trucks of the municipality for hauling solid waste.

7.10 **Concluding remarks**

The main lesson that can be learned from the experience with community-based management of water points, is that public water supply and sanitation should not just be regarded a social service, but should be run as a business. In that way it will be possible for a scheme to generate its own income while providing services at lower cost.

7.11 **Discussion**

Question: It was shown that there is a cash surplus from running the water supply and sanitation schemes. Will these be used to reinvest in new water supply and sanitation schemes?

Answer: The community decides on where cash surplus is used. Now that the most urgent requirements have been met, the community attributes 3rd or 4th priority to water supply and sanitation programmes. The main emphasis currently is on expanding the Savings & Credit programme, to improve the loan giving capacity of the programme.

8 PRESENTATION OF CONCLUSIONS AND DISCUSSIONS

8.1 Conclusions of Working Group I, on the Planning, Financing and Implementation Stage

(Rapporteur: Ato Atnafe Beyene, EPSC3 Sociologist)

8.1.1 Coordination of donors

- Coordinate the activities of NGOs and make an agreement regarding the project at hand. The NGO may have a preference for working in certain areas, but this should be discussed and agreed upon first. Issues like standardisation could be discussed to make it easier for O&M;
- Coordination should be instituted at Regional level for uniformity, standardization and other purposes. In practice nobody has taken this job seriously and at Woreda level it would be difficult to coordinate;
- The Bureau of Planning and Development Office has a section that deals with coordination of donors. For example, NGOs working in the Amhara Region are coordinated by this office, and this could be replicated at Zonal and Woreda levels;
- How is the contact made between the NGO and the Woreda? In practice it is the NGO that decides the location of the project area. The NGO contacts the Woreda and take up the matter to the higher levels. In reality the NGO decides what to do, and it is not the government that is telling what should be done;
- In the coordination of NGOs, the Ministry of Justice, Disaster Prevention and Preparedness Commission (DPPC) at Federal level, Disaster Prevention and Preparedness Bureau and Water Bureaus at Regional level are involved before any agreement is concluded with NGOs;
- The experience in Amhara Region is that the Region selects the Zone, the Zone selects the Woreda, the Woreda selects the Kebeles and the Kebele select the specific sites. Decisions are reached by discussion. The problem has been that remote Kebeles where there are no access roads have been selected.

8.1.2 Priority setting (How to set priorities)

- Population settlement patterns – Some people live in scattered villages and others in nucleated communities. What percentage of the rural population lives in the above settlement patterns?
- Regions, Zones should study the ground water sources and potentials and provide information to donors. FINNIDA is using this approach. The problem in such type of approach is that some Regions like Afar and Somali are not strong enough to provide such types of information;
- Nomadic and lowland areas need a special approach because of the environment, e.g. addressing issues such as environmental degradation due to the water supply development. The highland areas have also problems in that some of the water sources dry up in the dry season and in addition some regions are rugged and cut by deep valleys and gorges;
- The distribution of resources (equity) among Zones, Woredas, etc. should be looked at when setting priorities;

- Some Woredas have development plans and this could serve in setting priorities. FINNIDA is using this approach;
- Prioritisation Problems - What happens if there are many requests more than the resource? The experiences of ESRDF and Finnconsult have been discussed. Finnconsult conducted a base line survey to identify priorities and priorities were set based on the study. The strategy of Finnconsult is to go from one Kebele to the next neighbouring Kebele to make it easier for future O&M support;
- Using scientific approach – this is by studying the population distribution and the available water sources in a given area. Tigray Region is using this approach;
- Use the Social Assessment principle - even though it may be subjective, to select sites of projects. This includes demarcating project sites where hand-dug wells, springs and boreholes are feasible. This is one approach. The problem is that water needs, water resources and the spread of population to be covered do not always match. For example, the only feasible source might be a borehole, which is expensive, while the people who have severe water shortage are only few in number. Alternatively, relatively low-cost hand-dug wells may be feasible and able to cover a lot of people, but the water demand problem is less serious. A case was mentioned where high per capita investments were required: 20 million Birr was for 10, 000 people, or: 2,000 Birr per head.

8.1.3 Supply of spare parts

- The availability of artisans for repair of water supply schemes was discussed and the involvement of stakeholders in supplying spare parts was raised;
- The supply of spare parts is an important issue for sustainability, since there are many different makes of generators and pumps installed in the country. This problem is serious especially when donors terminate their assistance to an area before making a smooth withdrawal strategy or plan;
- Local production of pumps and spares was mentioned as a means of solving the problem of spares. It is only when the spares are available that mechanics could come and repair. The RWSEP of the Amhara Region has contacted local manufacturers of fast moving items, and is in the process of manufacturing parts of the Afridev handpump, except for the cylinder, which has to be imported;
- Problems of information on installed pumps were mentioned in regard to past experiences where different donors installed different equipment without giving information to the concerned government office for future operation and maintenance purposes;
- The need for assigning mobile workshops for Zones, and skilled local technicians for hand-dug wells and spring projects;
- There should be one organization that should make available all required spare parts. In Amhara Region an organisation was established for this purpose. This organisation will do international procurement at central level and sell to the different water points. In the future, the Woreda water Desk Officers are going to keep the spare parts and charge the water points for any spare parts and service provided in regard to O&M.

8.2 Conclusions of Working Group II, on the Operation and Maintenance Stage

(Rapporteur: Mr. Gary Campbell, Rural Development Consultant)

For the subject: Sustainability during the O&M stage, 3 main areas of interest were identified:

1. Community management;
2. Spare parts supply and technical assistance;
3. Funding mechanism.

All three should be emphasised at the start of a project.

8.2.1 Community management in general (Information)

- Define roles at the beginning: what are the responsibilities of the various parties involved: community members, Water Committee members, etc.?
- What responsibilities does the Government/Regional Bureau have?
- Can the private sector be involved, and how?

All these issues should be made clear at the beginning of a project, allowing the community to make informed decisions. It is felt that currently the communities often do not know whom to address for support or information.

Experience from Tigray was quoted where the Water Committees were reported to be often little motivated. Reasons mentioned are: lack of facilities such as an office; the impression of the Committee members that they could spend their time better on other activities; lack of financial compensation/reward, etc. It was not clear, however, to what extent such attitude is caused by the fact that Water Committees may have been established on the basis of Government regulations alone, rather than on actually felt need.

ESRDF experience indicates that community representation has to be established from the very beginning; total failures result in those cases where intensive involvement of the community is lacking. Workshops should be conducted, showing the community where to go for certain assistance, support or spare parts. The Woreda Desk could be opened for technical assistance, as an intermediary to the zonal level. In Amhara, Woreda Desk Officers are starting to provide such assistance.

Little expenditure appears to be involved in community management so far: costs incurred are mainly for guards and for expenses incurred by Committee members when reporting to higher Government levels.

8.2.2 Spare parts and technical assistance (Capacity)

- This service should initially be provided by the Government, and reach down to Woreda level.
Currently, the Government representation in the water sector hardly ever reaches down farther than Zone level. Only in the Demonstration Project are different strategies being

developed, with the Government representation reaching down to Woreda or even Kebele level. As long as *community management* is not fully developed, and the private sector not involved in a major way, extending the community representation to Kebele or Woreda level may present a problem. It is generally felt, however, that extending the Government representation in the water sector to the Woreda level would be necessary, certainly in the beginning;

- The private sector will follow once a market has developed.
The problem with new schemes is that there will be relatively few break-downs, so that trained mechanics – if any – will have insufficient work to sustain their livelihood. This is one of the reasons that training local mechanics or pump attendants may not bring the effect that was expected. Especially at the early stages of rural water supply programmes, the coverage of the population with water supply facilities is relatively thin as well, resulting in little work and long distances to be covered for maintenance and repairs. It may, therefore, be more efficient to train locally available artisans, e.g. car mechanics, in repair and maintenance of water supply equipment, as they would not have to depend on such activities only. Once the spread of water supply facilities increases, as well as the number and age of the pumps and other components, a market for O&M of water supply related equipment will develop that will be attractive for the private sector as such. Initially, therefore, there appears to be a clear role for the Government, and that is why its role should be extended to the Woreda level. Later, step by step, when the systems go from partial to full cost recovery, also the role of the private sector can grow, and Government spare parts shops could be privatised, introducing a certain degree of competition in this market.
- Need for standardisation. The issue is important especially when the private sector involvement in water supply O&M is not yet sufficiently developed, and spare parts have to be made available through Government intervention.
- Need for information to beneficiaries (notably: Watsan Committees and caretakers): where and how can technical assistance, and spare parts and materials, be obtained, and at what cost.

8.2.3 Funding

- Funding and cost recovery are not considered a major problem; more important issues are management and monitoring, as well as major maintenance.
It was mentioned, however, that in Oromiya only the pumped schemes are run well financially, with hardly any money being collected in handpump schemes. In many places, the community apparently cannot be charged sufficiently for even partial cost recovery, especially if there are alternative, traditional sources. It appeared that in such cases there is a clear need for better involvement of the community, notably in health education. It could also be concluded that in these cases there is apparently a lack of actual demand for improved water supply, which raises the question why the systems had been built in the first place.
- Suggested funding methods include:
 - utilising Micro Credit Schemes. The examples quoted by Women Aid Ethiopia illustrate that such schemes may turn the running of water supply and sanitation

schemes into a financially sustainable undertaking. It was suggested that Water Committees should be allowed to borrow up to, say, four times the level of their savings, to finance extensions and rehabilitation works. In cash-scarce areas certain payments might be done in kind rather than cash, e.g. to pay guards;

- setting up a revolving fund at Woreda level. Often an initial stock of spare parts is supplied with the original project implementation. It might be taken into consideration to centralise spare parts stocks not at the scheme level but at that of the Woreda. As an alternative the implementing organisation could provide a certain stock of spares (or funds) to the Woreda Water Desk officer, to ensure the availability of sufficient numbers of good-quality spare parts at the Woreda level. In this way, such a stock could be made available without a major burden on the Government. By providing the spare parts to the community at actual cost, the level of stock could be retained, without major Government input being required.
- Need for autonomy at community level to determine reinvestment strategies and best use of resources. There is felt to be a lack of financial and policy guidelines indicating what Water Committees and Boards can do with any surplus generated.

8.3 Discussion

Remark: In Amhara Region it is forbidden to set up a revolving fund (Finnida experience). We should, therefore, be careful in making such recommendation.

Answer: The system with revolving funds is currently being tested in the Southern Region. It is being tried now to enable stocking of spare parts, and apparently there are no legal obstacles there.

Remark: It would appear that something is missing in the recommendations. We need to have some form of community-based management, taking into account the 3 important aspects of financial, technical and institution/legal requirements. A tripartite involvement seems to be required, with the community, Government and service providers (NGOs and the private sector) playing a role. Financial management, i.e. how does the community manage its financial matters, as well as capacity building are of paramount importance.

*Answer: In accordance with the guidelines set for the workgroup discussions, we concentrated on O&M issues as far as community management is concerned, focusing on the situation when the implementing agency is withdrawing or has withdrawn. Basically, we agree with the remarks made.
Regarding financial aspects: Funds, once collected, may disappear. Distances to banks are often long, which may be an obstacle to the development of micro credit schemes. It seems to be an unanimous conclusion, however, that we would like to see a presence of the Water Bureau at the Woreda level.*

Remarks: 1. On the shorter term the Government should extend its services to the Woreda level, as the private sector is not (yet) permanently represented there.

2. *In Oromiya it is difficult to do this at short notice. The zonal structure is used as the basis, and step by step the structure is extended downwards, even to Peasants Association level. It is our problem that we do not understand the community. There are a lot of skills in the community. Furthermore, priority setting is not a problem at all; it is done by the community.
Coordination with NGOs is not a problem either; rather, there is a lack of sectoral coordination, e.g. between Health and Water.
A major problem in maintenance and repairs is finance, coupled with weakness of the private sector to supply spare parts. Maybe the Government should establish spare parts, at least at the Zonal level.
The earlier advocated standardisation on one handpump only (Afridev) may not be realistic. In Oromiya, next to the Afridev, the India Mk. II is being used, as it is the only one of the two that is suitable for deeper groundwater tables as well.*
3. *Coordination is often lacking, even between Government institutions; it therefore remains a problem. The supply of spare parts is another problem. Whether this is a weakness of the private sector, is questionable. More likely, the demand is simply too small. The Government may take the lead, but this issue may prove to be difficult for the Government as well, as there are many very different types of spare parts. In this respect, standardisation would help.*
4. *Regarding the role of the private sector, it should be stressed that, up to a short time ago, private mechanics were not even allowed to touch the water supply schemes, even though they were very much involved in maintenance and repair of grinding mills, which use basically the same Lister engines as are found in many water supply schemes.
The physical distance between the schemes and Government support services is too wide. Possible solutions are to bring the Government structure to a lower level, or to involve the private sector.*
5. *It is recommended to decentralise the Government structure on water supply to the Woreda level. Why is the level of provision of services presently so low? We should look at a balance of the three parties. There is also a lack of guiding principles on rural water supply and sanitation development from the Federal Government. Only guidelines exist but no documents that provide further information.*
6. *In several cases manpower is being trained for repairing water supply services: training of community technicians, with spare parts available within a 2 hours' walk. Do the recommendations on extension of Government to the Woreda level imply that we want to change that?*

Answer: We certainly do not want to change that. However, most of us agree that private sector involvement will be a slow process, and that – at least for the time being – because of too small demand, private sector shops at Woreda level do not appear feasible. It is recognised that travelling long distances to obtain spare parts appears to be less of a problem, provided that it is known where spare parts are available. For that reason it is crucial that communities are provided with relevant information.

Remark: *Not all present have positive experiences with the involvement of the private sector. Because of its attitude it sometimes lacks trust. An example is that at the start of WSSA pumps and generators were brought to private repair shops in Addis Ababa for repair, with often poor results.*

9 WRAP-UP AND CLOSURE

(Address by Ato Getachew Abdi, MoWR, ESPC3 Component Coordinator)

I In this morning's presentations we have come to know that:

- 400 million Birr/year need to be invested on rural water supply;
- All NGOs together invest 25 million Birr/Year;
- ESRDF's past 4 years investment amounts to 50 million Birr/year.

We can thus observe a huge financial constraint.

Following the 1st presentation by Mr. Butter,

II Findings of the Rural Water Supply Demonstration project were presented by Ato Yohannes. The community management model being developed by the project is expected to be replicated at the National level.

III Ato Alemayehu Tegenu then started his presentation by telling participants that 1,630 schemes (30%) out of 5,187 schemes are not operational in rural Oromiya.

He continued his deliberation by informing the participants about the community water management options, i.e.

1. Water Committee
2. Water Board
3. Traditional water resources management.

He also mentioned the possibility of realizing at least partial cost recovery in rural areas.

IV The 4th presenter, Mr. Arto Suominen, came up with a broader view of sustainability by mentioning four sustainability areas:

- a. Technical sustainability
- b. Social sustainability
- c. Environmental sustainability
- d. Institutional sustainability

According to the presenter 54 schemes (4%) out of 1,228 schemes they have constructed are not functioning.

V The final presentation by Ato Sahle Moges revealed that water supply and sanitation services shall not only be treated as a social service, but as a business service as well.

VI Findings of Group Discussions

Group I: Planning, financing and implementation

This group concluded that:

- Coordination between Governments, NGOs and Communities,
- Priority setting (by the community),
- Supply of spare parts with simultaneous standardization and local production initiatives, coupled with building financial capacity,

are very important for securing sustainability in Rural Water Supply.

Group II: Operation and Maintenance

This group presented the following recommendations:

- Strengthening and extending of Water Bureaus to Woreda level;
- Provide spare part shops within a reasonable distance;
- Train sufficient manpower, i.e. electricians, mechanics, etc.;
- Move from Governmental services to private services step by step in the process of progressing from partial cost recovery to full cost recovery;
- Strengthening community management;
- Introducing micro financing systems in the form of Saving Associations;
- NGO involvement in capacity building of communities can complement the Governmental initiatives.

I herewith thank all participants for their participation in this important workshop, and declare the workshop closed.

10 COLOPHON

Client	: Ministry of Water Resources, Federal Republic of Ethiopia
Project	: Environmental Support Project, Component 3
File	: P0125.01.001
Length of report	: 68 pages
Editor	: Rob Trietsch
Contributions	: Gulilat Birhane, Jaap Butter, Yohannes G/Medhin, Arto Suominen, Sahle Mogus, Atnafe Beyene, Gary Campbell, Getachew Abdi
Project Manager	: Jan Lobeek
ESPC3 Technical Coordinator	: Jaap Butter
Date	: 14 July 2001
Name/Initials	:

APPENDIX 1 PROGRAMME OF WORKSHOP

ESP Component 3
National Water Supply and Sanitation Master Plan

Mini Workshop 6 July 2001
Sustainability in Rural Water Supply

Venue: Imperial Hotel, Addis Ababa tel. 29 33 29 fax 29 33 32

Programme

08:30	arrival and registration		
09:00	welcome word	Gulilat Birhane	MoWR
09:05	some logistic announcements	Jaap Butter	ESPC3 -DHV
Presentations			chairman: Jan Lobeek, ESP
09:10	ESPC3, rural water supply in the master plan context, issues and constraints	Jaap Butter	ESPC3 - DHV
09:30	The Rural Water Supply and Sanitation Demonstration Project	Yohannis G/Medhin	MoWR
09:50	Rural water Supply Programme of Oromiya Regional State	Alemayu Tagunu	RWMERB, Oromiya
10:20	<i>coffee/tea break</i>		
10:50	Rural Water Supply and Environmental Programme, Amhara Regional State	Arto Suominen	Finconsult
11:20	Community Based Management of Water Points	Sahle Mogus	Women Aid Ethiopia
11:50	Introduction to working group sessions	Jaap Butter	
12:00	<i>lunch break</i>		
Working Group Sessions			
13:00	Group 1: the Planning, Financing and Implementation Stage		chairman: Jan Lobeek, ESP
	Group 2: the Operation & Maintenance Stage		chairman: Rob Trietsch, ESP
15:00	<i>coffee/tea break</i>		
Plenary Session			chairman: Tesfaye Gizaw, ESP
15.30	presentation of conclusions group 1 discussions	group reporter	
15.50	presentation of conclusions group 2 discussions	group reporter	
16:10	plenary discussion rounds		
16:50	wrap-up and closure	Getachew Abdi	
17.00	<i>cocktail</i>		

APPENDIX 2 LIST OF ATTENDANTS

(in alphabetical order)

No.	Name	Position	Institution
1	Ababu Abebe	Water Supply Specialist.	DHV
2	Abebe Ketema	Hydrologist	DHV - ETH
3	Alemayehu T.	D/Head	OWMER DB
4	Alimiraha Helen	Coordinator	APDA
5	Arto Suomineu	PC	RWSEP/FINN consult
6	Atnafe Beyene	Sociologist	DHV-ET
7	Bushira Ghanzanfer	Programme Officer	UNICEF, WES
8	Daniel Zeleke	Abay Engineering C	Abay Engineering
9	David Jones	Engineer	DHV
10	Eyob Defeu	Economist	Tropics
11	Gary Campbell	Consultant	
12	Gedlu sima	Team leader, RWSS	ESRDF
13	Getachew Abdi	Coordinator C3	MoWR
14	Gulilat Birhane	Head, PDD	MoWR
15	Jaap Butter	Technical Coordinator	ESP C-3 DHV
16	Jan Lobeek	Project Manager	ESP
17	Koen Broersma	Engineer	DHV
18	Leulseged Tadesse	Hydrologist	MoWR-ESP C-3
19	Mehari Tafesse	Coordinator	OSHO
20	Mesfin Tegene	Chief Engineer	MoWR
21	Mesfn Amare	Counter part staff	ESP-3 /MoWR
22	Muluken Abate	Engineer	MoWR
23	Muna H/S	Environmentalist	MWR - DHV
24	Rahel Kaba	WSS Engineer	DHV
25	Robert Trietsch	WSS Engineer	DHV
26	Sahle - Mariam Mogus	Executive Director	Women Aid Ethiopia
27	Sebsibe Alemu	Manager	COWDO
28	Tatek Kassa	Programme Engineer	Water Aid
29	Tekka Gebru	Project Officer	UNICEF
30	Temesegen Yimer	Socio Economist	MoWR
31	Tesfaye Cherenet	Manager	AGE and COWDO
32	Tesfaye Gizaw	Advisor	DHV
33	Teshome Worku	FL. Consultant	SEIF
34	Tilahun Asmare	WSS Engineer	MoWR
35	Tore Lium	WSS Planner	World Bank
36	Tsega Tibebe	Design Engineer	DHV
37	Yadessa Gire	Programme Officer	CRDA
38	Yohannes G/Medhin	D. Head	MoWR
39	Yohannes W/M	HID Specialist	DHV - ETH

APPENDIX 3 ISSUES FOR DISCUSSION IN WORKING GROUPS

WORKING GROUP 1: THE PLANNING, FINANCING AND IMPLEMENTATION STAGE

ISSUES FOR DISCUSSION:

What is the problem? Who is the problem owner?

- **TYPICAL PRESENT SITUATION AT WOREDA LEVEL**
 - o Rural population: 100,000
 - o Area: 1,000 km² (25 km x 40 km)
 - o Presently: 20-30 WCs; theoretically 200 (10%)
 - o Mostly handpumps and springs; some motorised
 - o Difficult to recover O&M
- **INVESTMENT DECISIONS**
 - o Sponsor: Gov't or NGO? How is cooperation?
 - o Service increase: Priority setting?
 - o Application new Wpt: How to judge?
 - o Planning needs: Real needs vs. availability of water; geo-hydrological information
 - o Perennial or not? That's the question!
- **GOVERNMENT ROLE**
 - o Financing: Decision at WB, Zone or Woreda?
 - o O&M: No, private or WC, but support! Support on commercial rates!
 - o Spare parts management: Procurement WB? Storage private?
 - o Training: ?
 - o Approval of applications: Yes!
- **NGO ROLE**
 - o As above
 - o Cooperation with Gov't: On structural basis, semi-permanent, specifying:
 - Area
 - Period
 - Activities
 - Advisor role/implementer
 - Role in maintenance
- **IMPLEMENTATION**
 - o Construction: Specifications?
 - o Installation of pumps: Civil contractor or maintenance contractor?
 - o Supervision: ?
 - o Handing over to community?

**WORKING GROUP 2:
THE OPERATION & MAINTENANCE STAGE**

ISSUES FOR DISCUSSION:

1. **What is needed for successful RWS scheme operation by the community, and who should play which role to achieve this?**
 - technical and financial training of O&M staff
 - empowerment of the community for community management of RWSS
 - other, e.g.
 - Government / NGO / Consultants / private sector operators / others

2. **How to achieve a sustainable support structure for maintenance / repairs?**
 - Who should provide support (e.g. Government, NGOs, private sector, etc.), and how?
 - What should be their respective roles?
 - support for technical or financial training
 - assistance for larger repairs
 - provision of materials and spare parts
 - specialist support for scheme improvement/extension/replacement
 - other, e.g.

3. **Which steps (to achieve this) should be taken with highest priority?**

4. **Where should the Government structure meet the community structure?**
 - Down to which level is Government representation in the water sector essential / desirable (Zone / Wereda / Kebele), and in what form or nature?
 - At which level should the RWSS community management structure interact with the Government structure ?
 - Should it interact with representation of the Water Bureau (e.g. Wereda Water Office) or with Government in a broader sense (e.g. Wereda Administrative Council)?

APPENDIX 4 RWSEP PROGRAMME - ADDITIONAL COST INFORMATION

DETAILED COST INFORMATION - RWSEP

1.1. Cost recovery

Cost recovery is the process to bring financial sustainability to operate and maintain the water points. The costs required to cover the O&M cost are determined and the methods to cover the costs by the community are devised. The community should cover at least the O&M costs fully, if not the capital costs. In this procedure ways to recover only the O&M costs is recommended.

1.1.1. Operation and Maintenance cost

The operation and maintenance costs could be categorized into two as O&M cost for:

1. Hand pumps
2. Springs protections

Hand pumps (Afridev)

This procedure is developed for the implementation of village level operation and maintenance. The operation and maintenance costs of only Afridev pump is considered, as Afridev is the most common and recommended pump type in Amhara region.

Table 3 Estimated prices and time interval of replacement of fast moving items of AFRIDEV hand pump

The estimated spare part prices of one Afridev hand pump in Bahir Dar in 1993 with recommended time interval for replacements are presented below. Assumed depth = 15m and 250 users.

No.	Description	Part no.	QTY	Unit Price Birr	Total Price Birr	Time interval for replacement
1	Rod centraliser	504	5	2.40	12	Two years
2	Valve Bobbin	555	2	1.50	3.0	Two years
3	Bearing (outer & inner)	100 & 101	8	3.30	26.40	One year
4	Plunger seal (U-seal)	556	1	1.40	1.40	One year
5	O-ring	558	1	1.00	1.00	Two & half year
TOTAL					36	One year

An average spare part cost required to cover the fast moving items of one hand pump per year is 36 Birr.

Table 4 Estimated prices and required quantity for replacement in five years of slow moving items of Afridev hand pump

Estimated prices of slow moving spare parts for 100 Afridev hand pumps in Bahir Dar in 1993 required in five years operations are presented below.

No.	Description	Part no.	QTY/ 100 Pumps	Unit Price Birr	Total Price per one hand pump, Birr
1	Flapper	500	100	1.40	140
2	Plunger with pump rod fitting bottom	-	10	19.50	195
4	Foot valve with fitting	-	20	19.50	390
5	Pipe centraliser	-	50	3.90	195
6	Pump rod – Mild steel	-	300	20*	6,000
	– Stainless steel	-	50	30*	1,500
7	Riser main	503	50	63	3,150
8	Cylinder without plunger/foot valve	L-00	10	277	2,770
910	Pump head	A-00	2	267	534
11	Stand (G00 or G00b)	-	2	300*	600
12	Handle	-	3	220	660
13	Fulcrum pin	C-01	50	35	1,750
14	Rod hunger pin	C-01	20	25	500
15	UPVC riser pipe (530mm long) with bell end on both sides	-	100	70*	7,000
16	M16x30 Hex screw (class4.6)	156	100	1.65	165
17	M12x35 Hex bolt (class4.6)	19	100	0.65	65
18	M12 Hex Nuts (class 4)	20	100	0.65	65
19	M16x30 Hex Bolt (class 4.6)	225	40	1.65	66
TOTAL for 5 years per 100 pumps					25,745

The estimated spare parts cost required to cover the slow moving items per water point per year is 52 Birr.

* The costs are estimated relative to the other spare part costs, which are taken from the manufacturer's export price and converted to be the estimated price in Bahir Dar in 1993.

Springs

Table-5 Estimated spare parts requirement & prices for spring in 15 years design period is presented as follows.

No.	Description	Unit	Qty	Unit price Birr	Total Price, Birr
1	Faucet	No	16	20	320
2	G.I. pipe	No	1	250	250
3	Gate valve	No	1	160	160
4	Union 2 inch	No	1	40	40
5	Nipples 2 inch	No	1	25	25
6	Tee 2 inch	No	1	40	40
7	G.I. pipe ¾ inch	m	0.5	20	10
8	Elbow	No	1	20	20
9	Chemicals	No	-	50	50
TOTAL					915
Contingency (10%)					91.5
Grand total					1006.5

The estimated spare part costs required to cover one spring maintenance per year is 67 Birr.

The above-mentioned Operation and maintenance costs did not include the cost required for civil work. In fact the required civil maintenance on the hand dug well and springs varies according to the quality of the initial construction. Therefore, it is not possible to recommend unanimous type of work and quantity of material required for civil maintenance. The most probable problem, which demands civil work, is crack of the civil structure, which is dangerous in exposing the water source for contamination.

Therefore it is recommended that the community should not be limited to raise fund to finance the mechanical parts of the waster points, but, the community should be aware of the need for the civil maintenance which might caused at any time during the water points design period.

1.1.2. Capital cost

Hand pump (Afridev)

Table 6 Bill of quantity of a hand dug well installed with AFRIDEV
Cost estimate for construction of a hand dug well equipped with a hand pump and with an average depth of 16m is as follows:

No.	Material	Unit	Qty	Unit price Birr	Total price Birr
1	Cement	bag	48	45	2,160
2	Sand	m ³	5	200	1,000
3	Crushed stone	m ³	5	60	300
4	Reinforcement bar, diameter 10mm	kg	30	9	270
5	Reinforcement bar, diameter 6mm	kg	90	9	810
6	River gravel	m ³	5	200	1,000
7	Form work timber	pcs	2	60	120
8	G.I. pipe size 2"	pcs	1	250	250
9	Hand pump	pcs	1	4000*	4,000
10	Disinfection	l	-	-	50
11	Labour (Artisan)			2800	2,800
Total					12,760
Contingency (10%)					1,276
Grand total					14,036

The required savings to cover the capital cost assuming 10 years of lifetime is 1403 Birr per water point per year.

* Price CIF Bahir Dar incl. taxes

Spring

Table 7 The costs of an average spring development with 2m³ reservoir are as follows:

No.	Material	Unit	Qty	Unit price Birr	Total price Birr
1	Cement	bag	40	45	1,800
2	Sand	m ³	7.5	200	1,500
3	Crushed stone	m ³	3	60	180
4	Reinforced .bar diameter 10mm	kg	90	9	810
5	River gravel	m ³	1	200	200
6	Formwork timber	pcs	4	60	240
7	G.I. pipe 2 inch	pcs	12	250	2,500
8	Gate valve 2 inch	pcs	2	160	320
9	Elbow 2 inch	pcs	4	20	80
10	Union 2 inch	pcs	1	40	40
11	Nipples 2 inch	pcs	4	25	100
12	Tee 2 inch	pcs	1	40	40
13	G.I pipe ¾ inch	pcs	0.5	20	10
14	Faucet ¾ inch	pcs	4	20	80
15	Thin wire	kg	3	10	30
16	Wire mesh	m ³	0.5	60	30
17	Chemicals	l	-	50	50
18	Labour			2,000	2,000
Total					10,910
Contingency (10%)					1,091
Grand total					12,001

The required savings to cover the capital costs in constructing spring protection assuming 15 years of lifetime are 800 Birr per year per spring.

1.1.3. Tariff

The big challenge in rural water supplies is to provide the rural community the basic water supply services at an affordable tariff while still at the same time achieving the full cost recovery needed for sustainability. It is evident that the community's willingness to pay for water is high. Although, willingness to pay for water depends on their awareness & motivation.

Financial tariff

The financial tariff required to cover spare parts and; maintenance & capital cost assuming that 50 (fifty) households are using the water point is summarized below (It is also assumed that one household comprises five people). In the calculation it has been assumed that an artisan will provide maintenance service for the community two days per year. The artisan maintenance compensation is assumed to be Birr 20/day.

Table 8 Required costs and estimated financial tariff of a hand dug well and a spring

No.	Description	Hand pump		Spring	
		Yearly cost per water point	Tariff to cover cost / household/ year (Birr)	Yearly cost per water point (Birr)	Tariff to cover cost per household/year (Birr)
1	Fast moving items	36	0.72	-	-
2	Slow moving items	52	1.04	67	1.34
3	Maintenance service	40	0.80	40	0.80
5	Guard	360	7.20	360	7.20
6	Total O&M	488	9.76	467	9.34
7	Capital cost	1,403	28.06	800	16
8	Total cost	1,891	37.82	1,267	25.34

The table above indicates that a great part of the costs required for operation and maintenance is to pay the water point guard. The tariff used in the programme Woreda at the moment (3 to 6-Birr/household/year) is adequate for spare parts purchase and maintenance service costs but not for the payment of the guard, or capital cost.

According to the financial tariff analysis the tariff to cover only O&M shall be 9.76 Birr/household/year (0.81cents/household/month) for a hand dug well and 9.34 Birr/household/year (0.78 cents/household/month) for spring protections.

If the guards are excluded the tariff required shall be reduced to 2.56 Birr/household/year and 2.14 Birr/household/year to cover the spare part cost and maintenance service for hand dug wells and springs respectively.

Affordability and willingness to pay (social tariff)

The tariff shall depend on the community's affordability and willingness to pay. The social tariff (tariff set based on the affordability and willingness of the community) shall be fixed. It shall be based on the socio-economic study at the community level.

Recommendation

The recommended tariff, which the community shall presently pay, depends on the cost required to cover expenses and the affordability and willingness of the community to pay for water. Two cases should be considered

- If the social tariff of a given community is higher or the same as the financial tariff, the O&M fund raising shall be effected based on financial tariff requirement.
- If the financial tariff of a community is higher than the social tariff, cost reduction mechanism must be implemented. Different types of income generation activity to finance the O&M cost of that particular community shall be proposed by the KPC, WPC and the WATSANCO together.

It is also important that communities are informed and educated about the needs for the payments. If the tariff is too high for the community the payment for the guard can be reduced by providing the guard a privilege for using the water for income generation around the water point.