IRC International Water and Sanitation Centre

Space for ILO logo

Managing a small-scale piped water supply system as a business

Final draft

Part one: trainers notes

Table of Contents

Preface

Acknowledgements

This package has been designed and developed with the support of many oraganisations and individuals from Zambia and from the ILO office in Zimbabwe.
The concept of this training package was designed by Arjen During from ILO Zambia with the assistance of CARE Prospect. After which some of the sessions plans and technical handouts which have been used for the package have been worked out by Arjen during. The package was finalised by Leonie Postma from IRC International Water and Sanitation Centre, under guidance and advice of Arjen During from ILO Zambia and Tomas Sternstrom from ILO ASSIST, Zimbabwe, with the help of the following persons: Obed Mbuzi of CARE International PROSPECT, Astrid Choongo – Banda of Lusaka Water and Sewage Company, and Rees Mwasambili of the National Water and Sanitation Council and materials that have been provided by CARE, LWSC, NWASCO and SLP.
During the whole process, Litumelo of the Sustainable Lusaka Programme, organised meetings with the various stakeholders in Lusaka, stakeholder meetings to discuss the management structure for the water supply systems in Linda and Ng'ombe, a visit for the consultant to familiarise herself with the situation in the compound Linda and a meeting with the master trainers.
Finally, Tomas Sternstrom, Arjen During, Wilma van Esch form ILO ASSIST Zimbabwe and Astrid Banda are thanked for their review of the materials, which now incorporates most of their comments.

Leonie Postma

September 2001

How was this training package prepared?

Why is this training package produced?

Lusaka is the capital city of Zambia and the seat of government. It is estimated that at least 13% of Zambia's population live in the greater Lusaka urban agglomeration. Like many other urban cities of Africa and the developing world, Lusaka is faced with environmental problems which include air and water pollution, insufficient water resources, ineffective solid waste management, undeveloped water borne sanitation systems, traffic congestion, open quarrying and limited urban planning capacities. The perennial outbreaks of diseases like cholera are constant reminders of the presence of some of these problems in Lusaka.[1]

Sustainable Lusaka Programme (SLP) is a programme being implemented by Lusaka City Council (LCC). It is part of the Sustainable Cities Programme (SCP) being implemented globally by the United Nations Centre for Human Settlements (UNCHS-Habitat). The Sustainable Cities Programme facilitates the strengthening and improving of planning and management capacities in Municipal authorities and their partners in public, private and community sectors.

SLP's development objective is to support measures aimed at poverty reduction in the communities of high poverty levels who reside mainly in the low income settlements, and to promote environmentally sustainable socio-economic development in the short, medium and long term in Lusaka. This objective will be fulfilled through the institutionalisation of the environmental management and planning process.

Sustainable Lusaka Programme therefore aims to support a long term sustainable growth and development of Lusaka through an integration of environmental planning and management and project implementation activities at community level directed initially at disadvantaged communities in order to reduce poverty and enhance overall economic development. At this stage three urban settlements have been selected in Lusaka: Ngombe, Kamanga and Mandevu/Marapodi.

The programme involves communities and all main stakeholders of Lusaka in the formulation and implementation of issue strategies and action plans resulting in prioritised utilisation of internal and external resources. Throughout the execution of SLP a systematic effort will be undertaken to institutionalise the programme within Lusaka City Council for it to be able to facilitate the implementation of environmental infrastructure and service improvements. The project is funded by Ireland Aid and the UNDP and started operations in the end of 1997.

The objective of the ILO involvement in the Sustainable Lusaka Programme is defined as:

At the end of the project the main public and private stakeholders have the capacity to deliver basic services such as solid waste management and water supply management, in order to improve the living and working conditions in selected low-income settlements in Lusaka.

The ILO support to SLP is specified as:

- assist in establishing a community based solid waste management strategy in 3 pilot peri-urban settlements;
- assist in the preparation for incorporation of this strategy into city-wide implementation;

[1] The text of this paragraph has been taken from the ToR that have been drafted by Arjen During in October 2000, for the consultancy.

- propose procedures for community based and labour-based infrastructure development in peri-urban settlements; and
- strengthening, through training and workshops, of the capacity of the main stakeholders in entrepreneurial skills and community contracting procedures, primarily for solid waste and water supply management, but with the intention of extending to future urban infrastructure works.

One of the outputs that was defined for the ILO input to achieve the objective specified above was the development of this training package.

How is this training package produced?

At the end of last year (2000), Arjen During from ILO together with Care International, made start with drafting the technical training material for community management of a small-scale-piped water supply system. The development of the materials was based on the assumption that a Community Based Enterprise would be responsible for the operation and minor maintenance of the system. Also for the business management part of the course, draft materials have been developed.

The completion of the training material was temporary postponed due to uncertainty of the policy on community water supply, and due to the lack of agreement on the management system for the small-scale piped water supply systems in Linda and Ng'ombe.
The finalisation of the technical handouts and the trainer notes was done by a consultant, under guidance of Arjen During from ILO and with the continuous support from representatives of CARE Prospect and Lusaka Water and Sewage Company (LWSC). As basis for the finalisation, the draft materials that have been prepared earlier by the ILO/Area Office, Lusaka and CARE Prospect has been used.

During the process of finalisation, the consultant has had meetings with the main stakeholders: Sustainable Lusaka Project (SLP), LWSC, the RDC(s), NWASCO and CARE. Furthermore a workshop has been conducted with all main stakeholders together. During this workshop, various possible scenarios for the management of the small-scale piped water supply systems have been discussed. Based the information that was provided during this meeting, and further discussions with LWSC, SLP together with ILO has decided that the water supply systems in Ng'ombe and Linda will be managed as businesses, by Community Based Enterprises (CBE).

As a result these training materials have been developed in order to train CBE on how they can operate a small-scale piped water supply system as a business.
In the technical part of the training, the members of the CBE will start with identifying the problem, and clarifying the roles and responsibilities of the main stakeholders. This will be followed by sessions on Hygiene and sanitation, Customer relations, the components and the operation and maintenance of a small-scale piped water supply system and monitoring. During a fieldvisit, the CBE will be able to familiarise themselves with the different components as well as to discuss with an existing committee the main issues they will have to deal with when operating their system. At the end of the technical part of the course, the contract the CBE will have to sign will be introduced and the legal issues will be explained. This will be followed by a business training during which the CBE will have to develop a business plan in which will be explained how they will operate and manage their system.

What is the structure of the package?

This training package is designed to be a guide to trainers and facilitators who are going to conduct courses for Community Based Enterprises who are responsible for the operation and maintenance of a small-scale piped water supply system in towns. Its structure is flexible enough to be adapted to local circumstances, by shortening certain sessions or extending others, as well as adding existing locally available information. It has been divided into two parts: 1) a trainer's guide; 2) technical handouts for the participants.

The trainer's guide provides guidelines and hints on how to best facilitate course sessions as well as back ground information. This information is prepared for the facilitators and trainers who do not have an extensive knowledge of the water and sanitation sector. **The technical hand outs for the participants** focuses on the main issues which are discussed during the course and which are relevant in order to manage a a small-scale water supply system as a business. Issues which are covered in these handouts are: water, sanitation and hygiene; public relations; the operation and maintenance requirements of a small-scale water supply system; monitoring; and the components of the system.

The handout on roles and responsibilities of the stakeholders as well as the contract arrangements will need to be adapted for each specific management structure for which the course is used.

About the training package

What is the target group and its size?

This training package is designed for members of a Community Based Enterprise who will be responsible for the operation and minor maintenance of a small-scale piped water supply system in one of the compounds of Lusaka town. More especially this training package is designed for the Community Based Enterprises that will be responsible for the operation and minor maintenance of the small-scale piped water supply systems that have been constructed under the supervision of Sustainable Lusaka Programme but can also be used by others, when adapted.

The ideal number of participants, which permits intensive exchange of experiences, is 15 to 20. Larger groups will need at least a team of two facilitators, because the work will have to be divided frequently into two groups, some presentations and lectures being given to the whole group and participatory exercises to smaller groups.

How can we ensure that a water supply is sustainable?

A water supply system is sustainable if it continues to function as it was designed to long after the support of outside help from engineers, consultants, and funders has ended. The sustainability of a water supply scheme does not only rest on technical issues – such as whether the pump still works – but, more importantly, on the management structures. For example, there should be a person in place who takes the responsibility for seeing that the pumps are properly maintained and that the necessary chemicals and fuel are available. But there should also be someone who responsible to assess whether the users are satisfied with the system and whether they continue to pay for the water they use; and there should be someone that will make sure that the finances of the scheme are healthy and that the scheme can be repaired or replaced when needed. All these people will need the necessary skills. This training package is designed to train those who will run the operation of a small-scale piped water supply system as a business and who will be responsible for the minor maintenance of the system; a Community Based Enterprise.

For which management options of a water scheme can this package be used?

This training package can be used in case the small-scale piped water supply system is managed by a Community Based Organisation, the Residence Development Committee (RDC), a trust or by a management team and in case cash, tokens or monthly charges are being used as payment system.

However the management structure will need to be clear and well defined before all or part of the members of the team that will be responsible for the operation and minor maintenance of the small-scale piped water system can be trained, as the materials need to be adapted accordingly. Especially the sessions Operation and maintenance, Monitoring and Roles and responsibilities of all stakeholders will be need to be adapted.

What cost need to be covered?

Tariffs are the amount users must pay each month for the water they use. Usually user tariffs must be set at a level that covers both the day-to-day running, and the long term cost upgrading, extending, and replacing parts of the supply system. So a water supply scheme has two types of costs:

- The capital cost --which cover the planning, construction, and establishment of the water scheme.

- The operating cost – which cover the staff administration, chemicals, pump, running costs, spares and repairs, and wear and tear on equipment which will eventually be replaced.

In some cases it might be decided that either some households will get water for subsidized prices, and or the CBE will not be responsible to cover full capital and operating cost. [2] In the case of the water supply systems in Linda and N'gombe, SLP together with NAWASCO and the LWSC will have to decide on the cost that will need to be covered by the users and the cost that will covered by LWSC as well as the amount of users that will receive water for a subsidized price. Thus they will have to decide on the tariffs the users will have to pay for the water.

One problem which, the Community Based Enterprises will face during the preparation of the business plan, is the calculation of the maintenance requirements (routine, periodic and emergency maintenance) of the borehole system. It will be difficult for the trainers to find reliable data on maintenance requirements and to provide guidance to the CBEs on the expected maintenance costs. Although principles of costing the systems must be established, the maintenance responsibilities will need to be negotiated on a case to case bases between the CBE and LWSC as the various water supply systems differ too much for a general approach. Moreover, the viability of operating the water supply as a business will differ from system to system, and it is suggested that LCC develops a policy that enables community managed systems to be put in place even when they are not generating enough revenues from within the communities to be sustained.

What is the proposed management structure for the WSS in N'gombe and Linda?

After consultation with the main stakeholders it has been decided that the proposed water management system for the small-scale water supply systems which have been constructed by SLP in N'gombe and Linda compound now is as follows[3]:

- In both N'gombe and Linda the community water management related to one borehole will be used as starting point. One CBE will manage the water supply of one borehole and therefore will have responsibility for the borehole, the pump, the water reservoir and the taps.
- In N'gombe the recently constructed borehole (with SLP support) only serves 10 taps while in Linda the borehole serves 28 taps (14 water points).
- Based on the business plan the CBE will enter into a contract with the LWSC that entitles the CBE to manage the water supply related to that borehole and to sell the water. The CBE will submit a business plan on how they intend to manage the system and how they established the water tariff. The business plan will also indicate the costing of routine maintenance and operation costs. Part of the funds (as calculated in the business plan) will be deposited into a maintenance bank account on which both the CBE and LWSC are signatories. LWSC will be technically responsible for major maintenance repairs and will cost share in the cost of major repairs in the first years when the maintenance bank account does not have sufficient funds (this arrangement must be further discussed and agreed with LWSC). The CBE will be responsible for day-to-day operation and minor (routine) maintenance.

---

2 Source of the whole paragraph: Mission report of Wilma van Esch (ILO) – July 2001

3 Source of the whole paragraph: Mission report of Wilma van Esch (ILO) – July 2001

What tariff structure that can be put in place?

There are various ways of charging the users for the water they use. For the purpose of this manual three ways which are all three common practice in Lusaka town, will be described: flat rate regardless the amount used, a flat rate entitling to a defined amount per day or per volume used. During the preparation of the business plan, the Community Based Enterprises will have to choose and work out one of the options, which in a later stage will have to be discussed and agreed upon with LWSC and with the RDC of the compound.

A flat rate regardless of how much or little water is used. This assumes that everyone will pay, and that everyone is using roughly the same volume of water. The problem is that it can lead to waste, because users pay the same amount regardless of whether they leave the tap running or use far more than they need. When there is a limited supply of water, which is the case in most of the compounds of Lusaka, this system is probably not suitable.

A flat rate per month which entitles a household to use a defined amount of water per day. This is a system which can be found in many of the compounds in Lusaka, for example in Ng'ombe where a household pays 3000 to 3500 Kwacha per month to be able to collect 120 liters per day. The problem of this system is that not all people will be able to afford to pay once a month the 3500 Kwacha. At the moment, they probably pay their water per bucket and will therefore have to pay a much higher price for the few buckets that they can afford. This can be as much as 6 times more expensive. Furthermore the system is not flexible. Larger households which are in need of more water than 120 liters will need to buy two cards or will have to increase the amount by buying per container.

Water meters provide the fairest method of charging users for water and will increase the accessibility of water for the poor. Meters should be installed where water is supplied to each house, so that the house can be charged accurately for the water it uses. Metered systems require the committee or management team to determine how often the meter must be read; who will read the meter; who will work out the billing; and how to ensure that everyone pays for the water they use.

How could fees be collected?

The most effective payment system to recover the operation and maintenance costs are those that enforce an up-front payment before the water is used. An important issue is whom to pay? Since the experiences with payments directly to the RDC have not been very positive, the option to introduce a direct payment to the LWSC who is or will be the owner of the scheme might be more effective and might reduce instances of abuse.

The simplest way of arranging payment is for users to pay for this with a plastic token, or disc, which they have paid for already. The tap attendant hands over all the tokens to the CBE or management committee. With this system the tap attendant does not have to manage money, and someone else is made responsible for selling the plastic tokens.

The CBE or the management team, or the LWSC or LCC could be responsible for the selling of the tokens. This way, they as owners of the scheme will have received the money for the services delivered and will be in control over the payment of the CBE or the management team.

The tap attendant could get a percentage per token he or she has collected from the users, to cover her or his labour. The CBE or the management team will monitor whether the amount

of tokens handed in by the tap attendant are agreement with the volume of water distributed trough the particular tap this tap attendant is responsible for.

What are the objectives of the course?

The general objective of the course is to give the participants the skills and knowledge which are necessary to operate and maintain a small-scale piped water supply system At the end of the course the participants will:

- be able to operate a small-scale piped water supply system;
- be able to identify irregularities in the system such as break downs, or illegal connections and to able to correct these;
- be able to carry out the minor repairs on a small-scale piped water supply system;
- know the roles and responsibilities of all stakeholders;
- have a basic knowledge of the different scheme components and the operation of the system;
- be able to explain reasons for disruption in the water supply;
- be able to repair a leaking tap;
- be able to monitor the functioning and break downs of their system;
- be able to register and monitor the payments/contributions of the clients;
- have basic financial management skills;
- have a basic knowledge on hygiene and sanitation;
- understand the contract which they will have to sign with the Lusaka Water and Sewage Company and all other legal issues and arrangements that are relevant.

What is the duration of the course?

The course is designed for a duration of 32 hours of class (6 hours a day, excluding breaks and lunch) and a field visit of half a day. The completion of the course is feasible within a period of 4 days.

What is the course methodology?

The course in this package makes use of participatory learning methodologies, as far as possible, but also includes background information and overhead sheets for lectures and presentations.

When learning people remember 20% of what they hear, 40% of what they hear and see, and 80% of what they discover themselves. This calls for a participatory approach.

The participatory approach to training is based on the concept that professionals learn more effectively when they presented with activities which take into account their knowledge and experiences and which meet their needs. By being involved in this process, both individuals and the group gain awareness of their potential, develop greater self-confidence, and see new possibilities. They also becomes more critically aware of the reasons that underlie their perceptions, attitudes and actions.

The training also proposes the use of a video film, "Prescription for Health", a produced by IDRC[4] from Canada, which can be bought or hired trough any Canadian Embassy or High Commission, or by sending an order to National Film Board of Canada. (WHO, 2000)

---

[4] IDRC, P.O. Box 8500, Ottowa ONK1G3H9, Canada. Tel: +1 (613) 236 6163; e-mail: info@irdc.ca

What should be the knowledge and the skills of the trainers?

The trainers should be familiar with participatory techniques, have some basic knowledge on the operation and minor maintenance of a small-scale piped water supply system and on hygiene and sanitation and should have familiarised themselves with the video that will be used during the course. The trainers should be able to get most of this through the reading handouts prepared for the participants, by reading the back ground materials which have been selected especially for the trainers who have no background in water and sanitation and during a field visit.

Especially the trainers who do not have any background in urban water supply should get a briefing from a technician from the Lusaka Water and Sewage Company. During a field visit this person will explain the operation and minor maintenance requirements of the various components of a small-scale piped water supply system, such as the ones that can be found in the compounds of Lusaka, and in more detail the operation and maintenance requirements of a public standpost. During the field visit the trainer will also learn how to chlorinate the water, how to repair a leaking tap (replacing of a washer), how to read the meter etc.

Furthermore the trainer should be informed about the situation in the compounds where the participants vendors will work. The facilitator should know:

- which water sources are used and available in the compound;
- for which small-scaled water supply system the participants will work, and how the system looks like (source, reservoir, number and location of public standposts);
- the management structure that is put in place for the system;
- the payment system that is put in place (whether the users will have to pay per bucket or a flat rate per month – and the amount) and the expected number users per standpost;
- the problems that do exist in the compound: with for example the existing water sources, the operation, maintenance and management of these and the prices that the users have to pay for these sources.

What should the organising institute provide to the trainer?

The organising institute will need to provide some basic materials as well as knowledge to the trainers. The materials that need to be prepared before the course can take place are training materials such as a flipchart stand and sufficient flipchart papers, markers and cards of different colours, files and copies of all the handouts for the participants and the different pictures and picture sets and the video which are proposed to be used during the training course. In order to make sure that the trainers receive all the necessary materials that are needed during the course, it might be advisable that the trainers are asked to make a list of the materials they need well in advance of the course, and that the materials are provided one week before the start of the course.

Furthermore the organising institute will have to make sure that the trainers are well informed on the issues which were listed in the previous paragraph and that the trainers have the opportunity to visit different sites in order to familiarise with the situation on the ground.

What would the time-table look like?

	Monday	***Tuesday***	***Wednesday***	***Thursday***
		Recap	*Recap*	*Recap*
Session A	Course introduction	Water, sanitation and hygiene	Field visit	Managing a WSS: Operation & maintenance
Session B	Problem identification	Continued	Field visit	Continued Monitoring and evaluation
Session C	Problem identification	Managing a WSS – Customer relations	Presentations	Continued Contracts and legal issues
Session D	Roles and responsibilities of all stakeholders	Continued Preparation of the field visit	Presentations Components of the water system	Continued Evaluation
	Daily evaluation	*Daily evaluation*	*Daily evaluation*	*Closure*

Acronyms

CBE	Community Based Enterprise
ILO	International Labour Organisation
IRC	International Water and Sanitation Centre
LCC	Lusaka City Council
LWSC	Lusaka Water and Sewage Company
NWASCO	National Water and Sanitation Council
RDC	Residents Development Committee
SCP	Sustainable Cities Programme
SLP	Sustainable Lusaka Programme
UNCHS-Habitat	United Nations Centre for Human Settlements

Reference materials

Bolt E. and Fonseca C., *Keep it Working: a field manual to support community management of rural water supply*. IRC International Water and Sanitation Centre, 2001.

Brikke F., *Operational and Maintenance of rural water supply and sanitation systems. A training package for managers and planners*, WHO, 2000.

Davis J. and Garvey G., with Wood M., *Developing and Managing Community Water Supplies*. Development Guidelines No. 8, OXFAM, Oxford, 1993.

The Mvula Trust, *Guidelines to community water and sanitation services*, The Mvula Trust, 1997.

Pricewaterhouse Cooper, *Consultancy to Review the Prospect Approach to Community Management of Water Supply. Second Draft.* CARE Prospect, Lusaka, November 1999.

Shordt K., *Action Monitoring for effectiveness. Improving water, hygiene & environmental sanitation programmes. Part 1, IRC International Water and Sanitation Centre, 2000.*

Unit 1: Course introduction

Day 1: Session A

Duration: 1 ½ hour – 2 hours

Objectives of the session

- To make participants feel welcome
- To inform the participants about the institute where the course is being held, and its rules and regulations
- To familiarise participants and facilitators with each other
- To familiarise the participants with the institution(s) organising and/or facilitating the course
- To review the participants fears and expectations
- To set ground rules for the course
- To select the members of the welfare committee
- To reach a common understanding of the course objectives and structure

Content	***Method***	***Materials***
Word of welcome	Lecture	Stationary
Introduction	Lecture	
Expectations and fears	Brainstorm and group discussion	Flipchart and cards
Formulation of some ground rules for the course	Plenary exercise	Flipchart
Course objectives, methodology and programme	Interactive presentation	Flipchart objectives and programme

Handouts

- Stationary for each participant, including note pad, binder, pencil, eraser, pen and marker
- The binder could contain the following: the course objectives and programme, full list of participants and their addresses, and practical information concerning food, lodging, transport, recreation areas, access to telephone, medical help, and contact person for emergencies. This only needs to be prepared if the participants will be staying at the accommodation where the course is organised.
- Optional: Information on the place where the course is being held

Notes to the facilitator

Word of welcome

The word of welcome can be given by the organising institution. This will be followed by the introduction of the facilitators for the training institution. They will use the opportunity to welcome participants and to inform them about what they do, where they are located, the number of staff they have, what their role is in training etc.

Introduction

Quite a number of introductory methods and games exist. One way is to ask the participants (and facilitators) to pair up and spend some minutes introducing themselves to each other, whereby they interview one another and present the information in the plenary. The participants are asked to ensure that others come to know about: the name of the person they introduce, the area of residence in Lusaka, the water scheme they represent, their experiences with the operation and maintenance of a water scheme and their experiences with the running of a business. Something not related to their work can be added.

Hopes and fears

Participants will be asked to voice their course expectations and fears. These can be related to anything, from course contents to the wish to make new friends. The same can be said concerning the fears. It is a matter of making an inventory, without immediately reacting to what participants bring up. It is useful that facilitators take part in the exercise.
The facilitator will hand out six cards per person in two colours (each colour three cards) and markers and ask people to write their three major hopes on one colour and their three major fears on the other. The participants will be explained that they should write only one hope or fear per card and that they write legibly, using key-words only. The cards are gathered and stuck neatly and separated by colour on flipcharts or wallpaper by using removable tape. The facilitator will go through all the cards, while clustering the cards addressing the similar points. In case the text on a card is not clear, the card will be discussed with the group to understand on what the meaning could be and agree on a reformulation.
When discussing the clusters reference can be made to the course programme to explain whether expectations will be dealt with or not or whether fears are justified or not. In some cases slight adaptations to the programme help to fulfil expectations or remove fears.[5]

Ground rules for the course

Some expectations and fears can be dealt with by formulating (and adhering to) ground rules with the group. The ground rules could deal with issues such as showing respect to each other, not smoking in the class room, not interrupting someone who is speaking etc. The ground rules will be formulated by the group during a plenary brainstorm exercise.

Welfare committee

A welfare committee can be formed at the start of the course. This committee will have the responsibility to look after the welfare of all the participants and will be the link between the participants and the facilitators. Members of the welfare committee are a chairperson, a health person and a time keeper. The participants will choose their own representatives for this committee and define their roles and responsibilities.

---

[5] The text of this section is an adapted version from a text of: Bolt E. and Fonseca C., *Keep it Working: a field manual to support community management of rural water supply*. IRC, 2001.

Course objectives, structure, methodology and programme

The facilitator describes the course's objectives, structure, methodology and programme using flipcharts. In this process the participants' expectations, which were discussed earlier, should be related to the programme's objectives. It is very important that the facilitators allow enough time for questions and clarifications so that the programme and the objectives of the course are clear to all.

Table 1: Timetable

	Monday	***Tuesday***	***Wednesday***	***Thursday***
		Recap	*Recap*	*Recap*
Session A	Course introduction	Water, sanitation and hygiene	Field visit	Managing a WSS: Operation & maintenance
Session B	Problem identification	Continued	Field visit	Continued Monitoring and evaluation
Session C	Problem identification	Managing a WSS – Customer relations	Presentations	Continued Contracts and legal issues
Session D	Roles and responsibilities of all stakeholders	Continued Preparation of the field visit	Presentations Components of the water system	Continued Evaluation
	Daily evaluation	*Daily evaluation*	*Daily evaluation*	*Closure*

Unit 2: Problem identification

Day 1: Session B and C

Duration: 2-3 hours

Objectives

- To get an overview of the problems related to drinking water which exist in the compound(s) where the participants live
- To gain an insight into how these problems can be inter-related

Content	*Method*	*Materials*
Introduction and explanation of the exercise	Lecture	Flipchart
Problem identification	Brainstorm	Cards
Building of a problem tree	Group exercise	
Presentation	Plenary	

Handouts

If feasible, after the session a copy of the problem tree(s), (this would mean that either the facilitator or a secretary will have to type or draw the results on A4 and copy them for all participants)

Notes to the facilitator

Introduction for the facilitator

Looking for problem solving strategies that provide sustainable solutions requires a thorough analysis of the problems identified and their inter-relations. Technical problems often have an underlying managerial cause. Solving these so-called root-causes, have wider and more sustainable impact on a problem situation.[6]

The problem building tool helps the participants to find their way to the root-causes of the water problems which they experience as an inhabitant of the compound. Through visualisation it allows all participants to participate and to give their input in the discussion. It offers scope for a discussion among the participants about their perceptions on how certain problems came into being and how they could be solved. The problem tree resulting from the exercise also helps the participants to realise that managerial problems are often at the root of technical problems and that solving technical problems through technical activities is only a short term solution.

As a facilitator you should allow the participants to come up with additional problems if they feel that the list is incomplete. You should also be able to accept relationships indicated by them, even though you do not fully agree. Probing will probably help understand people's logic.

The exercise will at least take two to three hours. More problem cards means that more time will be needed. For better time management it would be better if the group participating in the exercise is not bigger than around 10 people, otherwise managing the discussion will become difficult. Therefore it would be best that the group is split in two and that each group will briefly present their problem tree to the other group. In case of working with a group of participants from two compounds, the group can be split per compound.
The discussion following these presentations should be limited as both trees might be very different and so might the logic which has been followed building the tree.

Building a problem tree

Explain the purpose of the exercise. Ask people to think about all the problems related to the management, operation and maintenance of the water supply system in their compound. Ask the participants not only think from their own perspective, but also from the perspective of the other stakeholders. These could be the old men and women, the small children, the widows, sick people, the management committee, the operator of the scheme, the Lusaka City Council (LCC), the Lusaka Water and Sewage Company (LWSC), the donor, or any other institution or person involved in the water supply of their compound.

Ask the participants to write each problem separately and clearly on cards and display them on a wall in such a way that they are visible to everyone present. And make sure, before you start building the tree that all the participants understand the content of each of the card the same way.

---

[6] The text of this section is an adapted version from a text of: Bolt E. and Fonseca C., *Keep it Working: a field manual to support community management of rural water supply*. IRC, 2001.

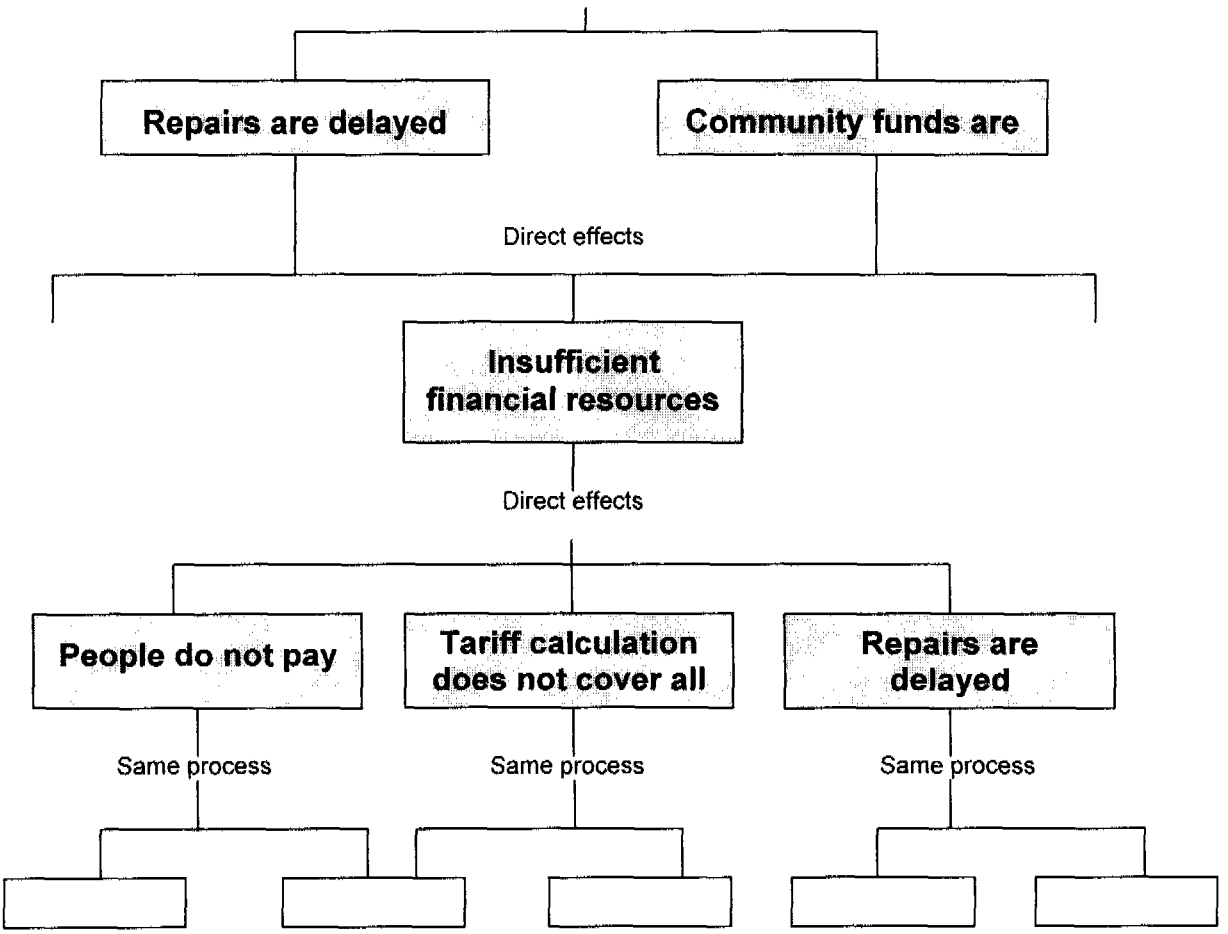
Put up a large sheet of wallpaper, pick out one of the problems and place it with a piece of tape in the middle of the wallpaper. Ask participants to identify direct causes of the selected problem from among the list of problems and to indicate their inter-relation. Then ask participants to identify direct effects of the selected problem and look for their inter relations also. Place them at the appropriate place on the wallpaper. Repeat the last two steps for the remaining cards and look for cross-linkages. Visualise the interrelations by drawing arrows between the cards. (see example of a problem tree)

Presentations and group discussion

After the groups have presented their problem trees to each other, discuss the outcome by taking a look at the nature of the problems at the bottom of the tree and of those higher up and link these to the objectives of the training course. This is followed by a discussion on which actions can be taken to solve some of the problems, that will lead in to the next session, which deals with the roles and responsibilities of the tap attendants/water vendors. The tree should be kept on the wall during the rest of the training course. In the different sessions the facilitator can link the content of certain sessions to the problem tree.

Summarise the main issues that came out of the discussions and refer to the sessions that are to come, where these issues will be dealt with in more detail.

Example of a problem tree



Alternative exercise for the building a problem tree

The alternative for the tool: "Building of tree a problem tree" is a guided discussion. For this guided discussion the questions below can be used.
In a brain storming session the participants will list the problems they see with the water supply situation in their compound. Answers could be given to the following questions:

What is the water problem?

- *What are the existing problems with the water supply in our compound?*
- *What are the impacts of these problems - what problems does it lead to?*
- *Who is affected by these problems?*
- *How are they affected?*
- *To what extend are they affected?*

What is the water problem?

- What is the cause of these problems? Why do we have this water problem?
- What problems have led to it (historical reasons)?
- What are the immediate causes, and the underlying causes?

What is existing?

- What options do people have now for getting water?
- How could these be improved?
- What is the sanitation situation in the compound?
- Are people aware of hygiene?

As a facilitator you should make sure that the following issues are being dealt with during the discussion:

- *impact on health*
- *economical consequences*
- *time spent to collect water*
- *physical and social consequences*

After the group has brainstormed about the problems, and the causes of the problems, a group discussion can shortly focus on "what can be done" to solve these problems. During this discussion the facilitator can indicate that some of the actions which can be taken will be the future responsibility of the participant as a tap attendant or a water vendor and will be thus discussed in more detail during the rest of the week.

What can be done?

- *What actions can be taken to change the situation?*
- *What can residents do for this?*
- *How can we avoid the problems from the past?*
- *What can we do as tap attendant/water vendor?*

Background materials for the facilitator:

- **Jan Davis and Gerry Garvey, with Micheal Wood**, Chapter 1: Water and Environmental Health, from: *Developing and Managing Community Water Supplies.* Development Guidelines No. 8, OXFAM, Oxford, 1993

Unit 3: Roles and responsibilities of all stakeholders

Day 1: Session D

Duration: 1 ½ - 2 hours

Objectives

- To know and understand their roles and responsibilities as a Community Based Enterprise and its different members
- To understand how the roles and responsibilities are divided between the different stakeholders (NWASCO, LCC, RDC, LWSC, community, tap attendant or water vendor, etc.)

Content	***Method***	***Materials***
Introduction	Lecture	
The roles and responsibilities of the CBE and its members	Interactive discussion	Flipchart
Identification of all the stakeholders	Brainstorm	Cards
Defining the roles and responsibilities of all other stakeholders	Group exercise	Flipchart
Presentation of results and discussions	Presentations of groups	
Concluding remarks	Lecture	Programme

Handouts

- Overview of the roles and responsibilities of all stakeholders

Notes for the facilitator

The roles and responsibilities of the CBE and its members

At the end of the previous session the group might have already started a discussion on which actions can be taken to overcome some of the problems which are related to water. During this session the participants will look at their own roles and responsibilities as a CBE and its different members.
As it is important that everyone gets involved it might be necessary to split up into smaller groups.
Ask the groups to make a list of the tasks that they think they will be responsible as a CBE. Refer to the problem tree and the discussion on the actions which can be taken. Ask the groups to quickly present their lists and complement where necessary.

Brainstorm

During a brainstorm exercise the participants are asked to identify the different stakeholders who are dealing with water management. These should be written down on cards and the facilitator will add the missing ones. When this is completed the facilitator will ask the participants whether they know all the institutions which are listed. If some of the participants are not familiar with some of the institutions the facilitator gives a short introduction on the particular institution.

Group exercise

When all the stakeholders have been identified the participants can be divided in groups and be asked to identify the roles and responsibilities of the different stakeholders (3 groups each group 2 – 3 stakeholders). This can also be done in a plenary session. When the groups have finished the exercise each group will get a chance to present the results.
The facilitator will have to make sure that all roles and responsibilities have been mentioned and that they are understood by all participants.

Concluding remarks

To close the day, relate the roles and responsibilities of the CBE to the programme of the week, and how each of them will be dealt with. It is important that the participants realise during this session that their roles and responsibilities are not limited to the collection of fees, money or tokens. The participants should realise that their role is also to keep the water supply system in a good condition, to keep the surroundings of the water point clean, to avoid abuse and damages of the water point by the users, to carry out small repairs and to contract mechanics for major repairs. Furthermore it could also be stressed that the participants can play an active role in improving the living conditions of the people in the compound, by advising the people on hygiene and sanitation issues.
Hand out the list of their roles and responsibilities and wish the participants a good evening.

Background materials for the facilitators

- **Pricewaterhouse Cooper,** Chapter 7: Legal Framework and Board of Directors/Management, from: *Consultancy to Review the Prospect Approach to Community Management of Water Supply. Second Draft.* CARE Prospect, Lusaka, November 1999.
- **Jan Davis and Gerry Garvey, with Micheal Wood**, Chapter 6: Managing Community Water Supplies, from: *Developing and Managing Community Water Supplies.* Development Guidelines No. 8, OXFAM, Oxford, 1993

Unit 4: Water, sanitation and hygiene

Day 2: Session A and B

Duration: 2 ½ - 3 hours

Objectives of the session

- To raise awareness on the link between water, health, sanitation and environmental protection
- To understand the water cycle
- To understand how groundwater can get contaminated
- To understand how diseases are transmitted between individuals or throughout a household or compound
- To understand the oral – faecal route and barriers
- To understand how water can be contaminated at the tap while collecting, or during transport, storage and consumption
- To discuss which major preventive measures can be taken
- To discuss the role of the CBE in taking such measures

Content	***Method***	***Materials***
Introduction	Lecture	Stationary
Video presentation: Prescription for health, video	Video presentation	Video machine and tape
The prevalence of diseases, risk practices and possible preventive measures and their role in taking such measures	Focussed discussion	Flipchart and picture 1
Transmission of diseases	Interactive lecture	Flipchart and picture 2
Exercise 1: Oral route and barriers	Exercise in groups	Picture set 1
Exercise 2: Risks of water contamination between tap and consumption	Exercise in groups	Picture set 2
The water cycle and how ground water can get polluted and contaminated	Interactive lecture	Flipchart
Concluding remarks	Lecture	Flipchart

Handouts

- Water, sanitation and hygiene
- Picture for the interactive lecture on transmission routes "Causes and transmission routes if environmental-related illnesses"
- Picture for the interactive lecture on ground water pollution: "Interaction of Groundwater Supply and Wastewater Disposal in a City Overlying a Shallow Aquifer"

Notes to the facilitator

Introduction

Most people in the compounds have no awareness on hygiene and do not know that waste and sewerage water will carry diseases. Throughout the compound pit latrines can be found close to shallow wells. Some houses even do not have any pit latrines and use the river or stream as a toilet. The same water is used by other residents to wash themselves and for household use. Also some water taps are located in a dirty environment with sewerage water and solid waste close to the tap. People are not washing their hands after they have been to the toilet and as a result they might contaminate water and food with bacteria. All these practices will put people at risk for water and sanitation related diseases.
Proper handling and hygienic use of water, hygienic maintenance of water points and water sources, protection of the environment, safe sanitation disposal and cleaning of hands all contribute to the improvement of health. This session will therefore focus on the importance of linking water supply, health, sanitation and environmental protection, and help all participants to see the need to pay attention to these issues.

Video presentation

A 23-minutes video film, "Prescription for Health" was produced by the IDRC (International Development Research Centre). The video is suitable for audiences of diverse cultural backgrounds. It was filmed in Bangladesh, Kenya, Philippines, Sri Lanka and Thailand with extensive animation sequences to illustrate clearly the contamination path. The video promotes personal hygiene and community practices linked to water supply and sanitation which can help to break the cycle of infection.[7]

Questions for the focussed discussion after the video presentation

After viewing the video the facilitators can use the questions listed below to probe the discussion and to relate the content of the video to the daily life of the participants. The main ideas and answers can be written on flipcharts.

- Which diseases are prevalent in the compound where you live?
- Which of these diseases are related to water, hygiene and or sanitation?
- What are the practices you have seen in the video, and which of these put you and your family at risk for these diseases?
- How can these practices of pollution be prevented, which preventive measures can be taken?
- What could be your role as a tap attendant or water vendor?

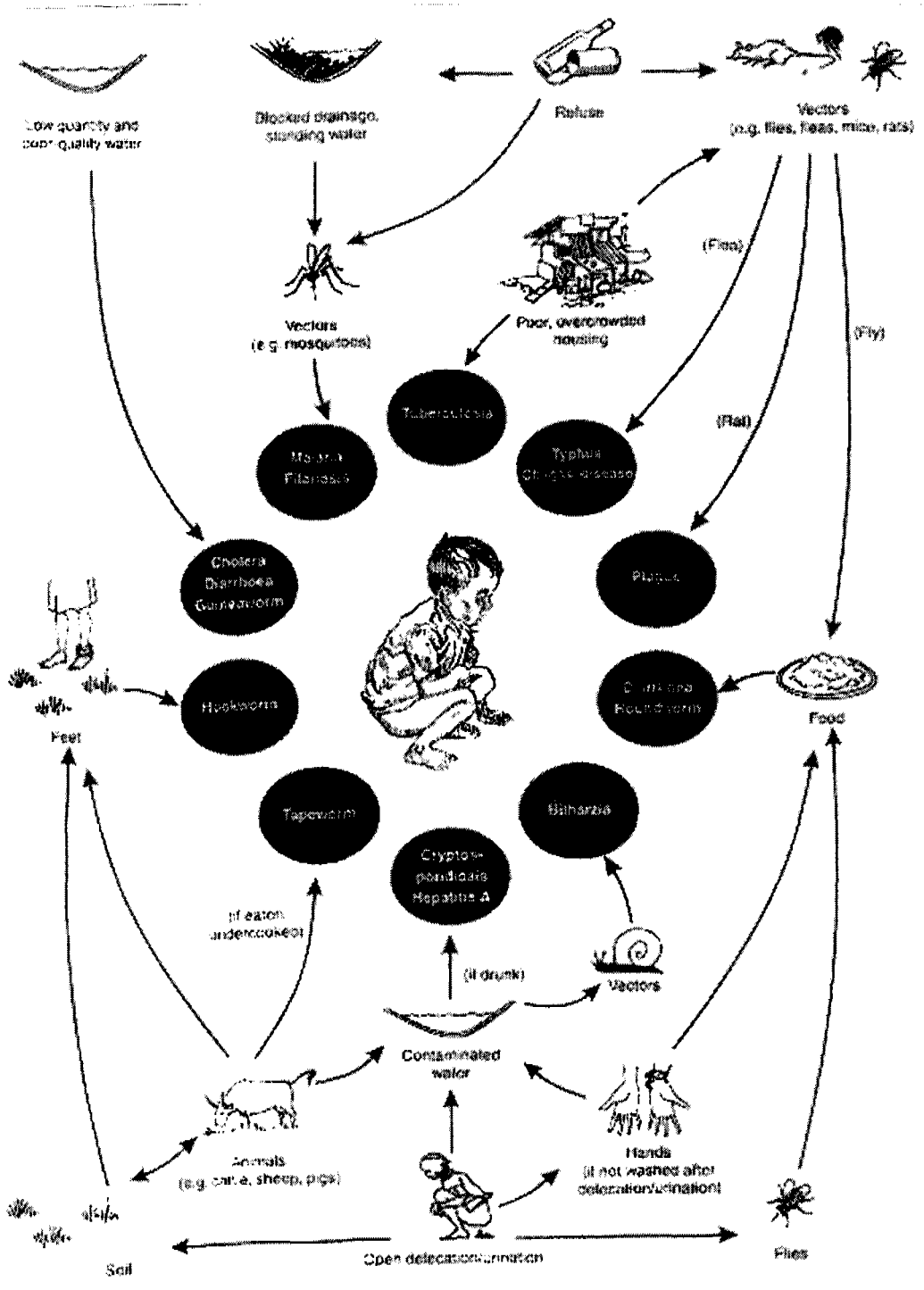
Interactive lecture on the transmission of water-sanitation and hygiene related diseases

- There are many ways in which germs are transmitted from one person, insect or animal to another, these are referred to as transmission routes. The critical challenge is to break the transmission route so that germs are not carried from one person, insect or animal to another. During the discussion the participants will be asked to indicate the various transmission routes they have seen during the video presentation, and others that they are aware of. At the end of the discussion the facilitator will hand out picture 1 "Causes and transmission routes if environmental-related illnesses". Using this picture the

[7] Adapted from: WHO, 2000. Operational and Maintenance of rural water supply and sanitation systems. A training package for managers and planners.

facilitator will summarise the various ways environmental related diseases can be transmitted and indicate how the transmission routes can be broken.

- Picture indicating and the various risks of pollution and contamination of water in the ground "Interaction of Groundwater Supply and Wastewater Disposal in a City Overlying a Shallow Aquifer"



Causes and transmission routes of environmental-related illnesses

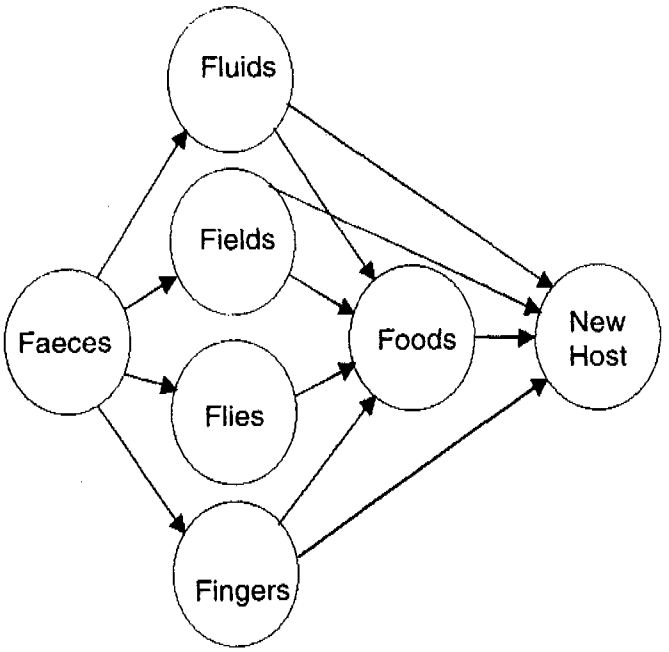
Source: Waterlines

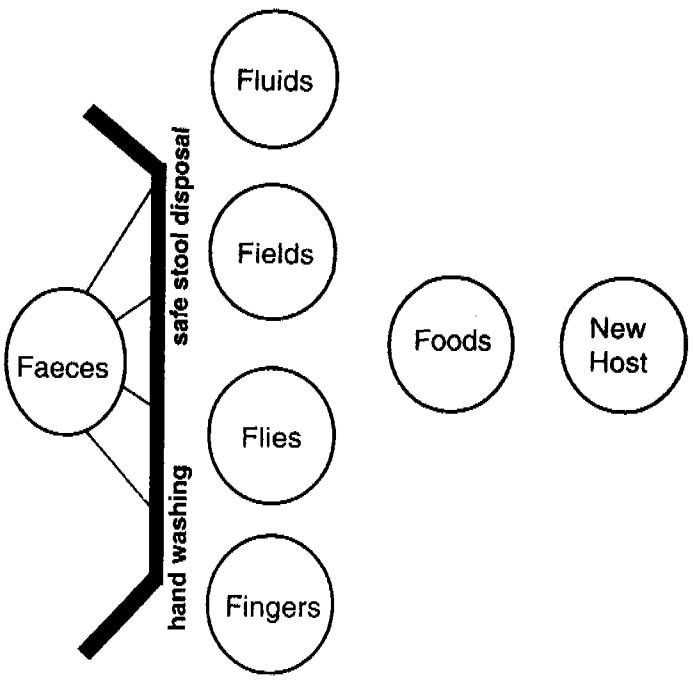
Exercises

To give a chance to the participants to practice their knowledge two exercises are proposed here.

1. Oral – faecal route and barriers

People can receive diarrhoea in maybe ways and from many sources. Diarrhoea is generated by germs which are transmitted from faeces to the mouth. In the following exercise the participants will be asked to identify the different ways how germs can be transmitted from faeces to the mouth. The group will be divided in smaller groups and each group will be given the set of pictures "Oral faecal route and barriers", which together will form the oral faecal route (see picture 2 "Oral Faecal route").
When the groups have identify the oral faecal route they can be asked to identified the various barriers such as the use of a latrine and handwashing (see picture 3 "Oral faecal barriers).



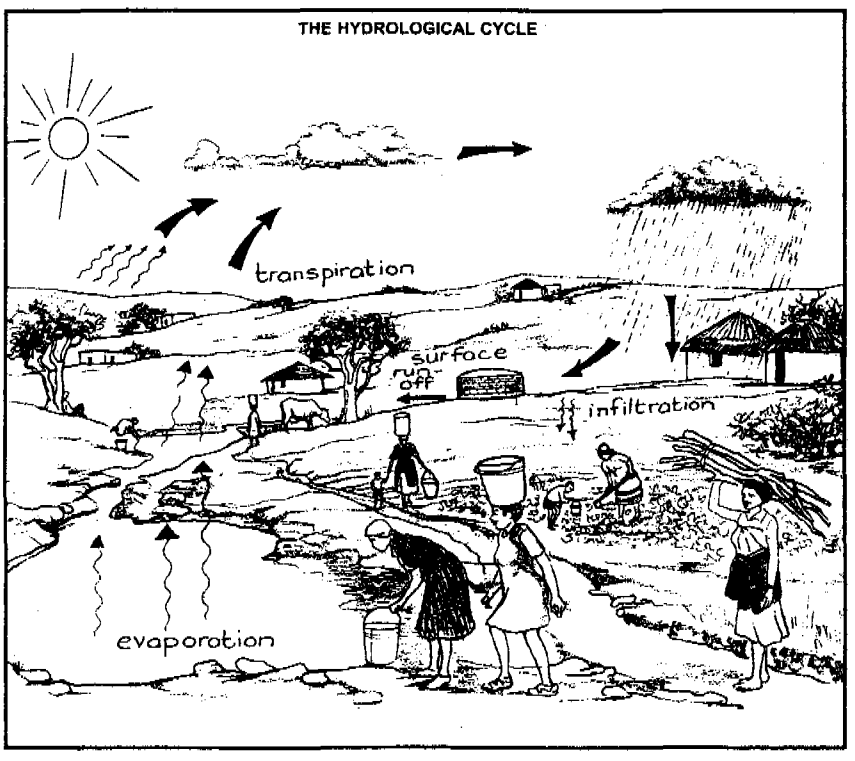


Contamination risks of water between tap and consumption

Each group will be given the set of pictures "Water chain from tap to consumption", which depicts the collection of the water at the tap up to the consumption of the water. The participants will be asked to identify where and how water can be contaminated and which preventive measures can be taken.

Interactive lecture: Hydrological cycle and contamination risks of groundwater

The lecture is dealing with three things. First, the hydrological cycle be made explicit and the different water sources which are available for human consumption will be indicated. Thereafter, the different contamination risks of ground water and preventive measures will be discussed and explained. All will be done in the form of an interactive lecture. At the end of the session the focus will be on the roles and responsibilities of the various stakeholders to take these measures. The facilitator will start of with the explanation of the hydrological cycle by using picture 4 "The hydrological cycle". Hereafter the participants will be asked to indicate what threats to the cycle they are aware of or have seen in the video. After this exercise the trainer will recapture the main threats for water to get contaminated and discuss how this can be prevented. At the end of the session the facilitator will ask the participants to identify who should be responsible to take preventive measures.



Source: Mvula Trust, 1997

Summary

Before the end of the session the facilitator can summarise the major measures which can prevent water and sanitation related diseases at household and compound level:

1. Safe human excreta disposal
2. Personal hygiene, especially handwashing
3. Domestic hygiene
4. Water hygiene
5. Safe wastewater disposal and drainage

Unit 5: Customer relations

Day 2: Session C and part of session D

Duration: 2 to 3 hours

Objectives

- To understand how to relate with the customers and how to deal with difficult customers

Content	*Method*	*Materials*
Introduction	Lecture	Flipchart
Role plays for different scenarios	Role Play	Copies of role plays, buckets, chairs, tables
Customer relations – how to deal with customers	Focussed discussion	Flipchart
Concluding remarks	Lecture	

Handouts

- Managing a water point: Customer relations

Notes to the facilitator

Introduction

As member of the CBE you will be the person who will be in direct contact with the users of the scheme. And you have will have to make sure that the customers do not abuse or damage the tap of the public standpost, that they keep the area around the standpost and the source clean and that they do not abuse the system by making illegal connections. You will have to collect the contributions and control that the customers take the right amount of water. When the water tariff will change, or when the system breaks down, they will come to the public standpost to get an explanation for the changes or the break down. Although they can referred be to institutions such as LWSC or others, you will have to deal first with the possibly angry or unsatisfied customers. Furthermore, as access to water is a human right, and as water might be available for subsidised for some of the customers you will have to make sure that you can be accountable for all your incomes and expenditures. It is therefore very important that you understand; who the users are, what they expect, and how you can deal with difficult customers.

Role plays

Some scenarios which might take place are described below. The group should be divided in three or four groups and each group will be asked to prepare a short role play. The roles are purposely kept open so that each of the group can decide how the different members of the CBE will deal with the situation.

Role play 1:

The pump is broken, and a lot of women and children have come to the public standpost. The women and children start complaining. The tap attendant and some of the other members of the CBE will have to calm them down, and explain the problem and when and how it will be solved. How will you as a CBE deal with the customers and how will you try to solve the problem as soon as possible?

Role play 2:

A lot of customers are not happy with the service the CBE is providing. Representatives of the compound have even officially send their complaints to the RDC. They are complaining that the water supply system is breaking down too often and that the standpost is not open enough hours. As a result your customers are starting to use alternative sources, which means that you loose income. What will you do as a CBE to regain the trust of the customers?

Role play 3:

Several people continuously make made illegal connections, and keep on abusing the system. As a result you are not able to provide the expected service to the paying customers who come to the water points. What will you do as a CBE, how will you handle this situation?

Role play 4:

On a regular base people come to the various water points to collect water but refuse to pay. What will you do as a CBE?

Focussed discussion

After viewing the role plays, the facilitator can use the questions listed below to probe the discussion and to relate to what has been seen during the role plays, and to the daily life of the participants. The main ideas and answers can be written on flipcharts.

Questions which can be used for the discussion:

- Who are your clients, who are the customers?
- Which services do they require/expect?
- When do they come and collect their water?
- How do they transport their water?
- How do they use their water? For what purpose do they use their water?
- Who are difficult customers?
- How can you deal with these difficult customers?
- How can you deal with customers that make illegal connections or abuse the public standpost?
- How can you accommodate the needs of the different customers?
- How can you keep your customers satisfied and keep them as a paying client?
- What other services can you deliver to the customers? For example information about changes in the tariff, or rules and regulations on the use of the water, or information about hygiene and sanitation.

Concluding remarks

The facilitator can give a summery of what has been discussed and some basic ideas how you can deal with customers.
In order to have good relations with the customers it is important to put a transparent financial management in place, to understand your customer in order to be able to deal with his or her needs and to be transparent on the management of the scheme. Furthermore you could involve the customers in the management of the system and so create a sense of ownership of the system. All these measures will increase the willingness of the customers to pay for the services you and their motivation in assisting you with the operation and maintenance of the system.

Unit 6: Preparation of the field trip

Day 2: Session D

Duration: 1 hour

Objectives of the session

- To give a brief description of the water scheme that will be visited
- To explain the purpose of the visit
- To introduce the programme of the visit
- To give a brief introduction on the basic principles how to prepare a presentation and how to present
- To prepare the visit

Content	*Method*	*Materials*
Introduction of the field visit	Lecture	Flipchart with programme
How to prepare and give a presentation	Lecture	Flipchart
Division of the group in three smaller groups	Plenary	
Preparation for the field visit	In smaller groups	

Handouts

- Information about the scheme which will be visited, the plan and a short description

Notes for the facilitator

Preparations

The purpose of the field visit is to give the participants the opportunity to look at all the components of a small-scale piped water supply system and the operation and maintenance requirements of the system. The idea of the visit is to follow the water from the tap to the source. During this walk the tap attendant and the operator of the system can explain the different components of the system and the problems which can occur with these components. At the end of the visit the group will split in three groups and each group will observe or investigate one particular issue.

The small-scale piped water supply system as well as the organisation of the operation and maintenance of the system that will be visited during the field visit should be similar to the systems that will be managed by the Community Based enterprises that will be trained during the course. In the case of Linda and N'gombe this means that the schemes should be managed as a business and that the scheme should have preferably an electric pump, several stand posts and a water reservoir.

The (water) committee responsible for the management of the scheme should be contacted in advance to fix the date and timing of the visit to ensure that the tap attendant and the operator will be ready to receive the participants and are aware of the inputs which are expected of them. Preferably the facilitator meets the (water) committee before the field visit in order to explain the purpose of the visit and to finalise the programme of the visit.

The visit should preferably be made in the morning because most of the activities related to water take place early morning or late afternoon.

Introduction of the field visit

Explain that tomorrow the participants will see a water scheme in operation. The water scheme will not be entirely as it will be in their compound, but it will give a fair idea of what they can expect to be constructed or similar to what has already been constructed. During the field visit the idea is to follow the water from the tap back to the source.

The visit will start at the tap/public stand post and trace the water back to the source. This is intended to give the trainees a good feeling of what is needed to get the water from the ground to the tap. Also, it is intended that they will understand that there is a cost attached to this and that there is a need for management of the system, to take care of its maintenance and operation.

The trip will give the participants a good insight into what a water system looks like, what is needed, and what kind of problems can be expected in maintenance and operation of the system. It is important that the trainees have such an insight, as they will depend on the operation and maintenance of the system for a regular supply of clean drinking water, and thus their livelihoods.

During the field visit the participants should be accompanied by a tap attendant and a system operator or manager from the scheme they are visiting. These people can give explanation and information while they go.

After the participants have walked from a public stand post to the source, the group will split in three smaller groups. Each group will look at a different aspect which is related to the

operation and maintenance of a tap stand. One group will make observations on the existing hygiene and sanitation practices in the community, around the tap as well as in the households. Another group will discuss with the (water) committee what problems they face when operating and maintaining the tap and discuss briefly how records from the water consumption and the fees collected of the various users are kept as well as discuss the cost involved in the operation and maintenance of the scheme. The last group will discuss with the users what problems they have with the water supply and what they think of the operation and maintenance of the tap as well as the management of the scheme.

Proposed programme for the visit

1. Travel to the site
2. Discussion for ½ hour with tap attendant at his/her tap stand
3. Follow the water from the tap to the borehole together with the tap attendant and the operator (1 hour)
4. Visit the pumping installation and the water tanks and discuss with the operator (1/2 hour)
5. Division in three groups
6. Each group goes for a walk in the community, making observations and asking questions to the users (1 hour), of which:
    - One group will make observations on the existing hygiene and sanitation practices in the community, around the tap as well as in the households.
    - Another group will discuss with representatives of the water committee what problems they face when operating and maintaining a small-scale piped water supply system and discuss briefly how records of the water consumption and the fees collected from various users are kept, as well what cost are involved for the operation and maintenance of the system.
    - The last group will discuss with the users what problems they have with the water supply and what they think of the operation and maintenance of the tap as well as the management of the scheme.one group will concentrate on asking the users what they think of their water supply.

Presentation on presentations

After the field visit the participants will asked to present their findings. Before the participants start preparing the field visit the facilitator gives a brief session on how the participants can prepare their presentation. Also the way of presenting can be discussed.
A short introduction will be given about the importance of a good presentation. Then an outline for a presentation will be developed. Attention will be given to the importance of a clear objective, the knowledge of your audience, the time of the day and the length of concentration, the preparation of the materials, the structure of the talk (with the emphasis on not telling too much in a short time) and the presentation it self. Some suggestions on giving feed back will be shared.

Preparations by the participants

After the introduction the participants will be asked to prepare themselves for the field visit. The participants should sit together in their small groups and discuss which issues they want to discuss or observe during the field visit. They should prepare a checklist of items related to the issue they have to investigate. The list does not have to be in detail but can serve as a guide. The facilitator can use the list that is included in the handout, to help the groups that need help. Furthermore the participants should be aware that they have to present their findings in the afternoon to the rest of the group. Each group will have to prepare a presentation in order to report back to the others of the group on what they have observed.

Unit 7: Field visit

Day 3: Session A and B

Duration: Whole morning

Objectives

- To get acquainted with all the components that form together a small-scale piped water supply system
- To get familiar with the maintenance requirements of a a small-scale piped water supply system
- To assess the problems which the operator and the tap attendant face with the operation and maintenance of a small-scale piped water supply system
- To exchange and share ideas and experiences related to the operation and maintenance of a small-scale piped water supply system
- To assess the hygiene and sanitation conditions in the compound

Content	*Method*	*Materials*
Field visit		Transport and lunches

Handouts

- If possible a map of the small-scale piped water supply system which is visited

Notes for the facilitator

Proposed programme for the visit

1. Travel to the site
2. Discussion for ½ hour with tap attendant at his/her tap stand
3. Follow the water from the tap to the borehole together with the tap attendant and the operator (1 hour)
4. Visit the pumping installation and the water tanks and discussion with the operator (1/2 hour)
5. Division in three groups
6. Each group goes for a walk in the community, making observations and asking questions to the users (1 hour), of which:
   - One group will make observations on the existing hygiene and sanitation practices in the community, around the tap as well as in the households.
   - Another group will discuss with representatives of the water committee what problems they face when operating and maintaining a small-scale piped water supply system and discuss briefly how records of the water consumption and the fees collected of the various users are kept, as well what cost are involved for the operation and maintenance of the system.
   - The last group will discuss with the users what problems they have with the water supply and what they think of the operation and maintenance of the tap as well as the management of the scheme.one group will concentrate on asking the users what they think of their water supply.

Unit 8: Review of the field visit

Day 3: Session C and part of session D

Duration: 1 ½ - 2 hours

Objectives

- To reflect on the findings of the field visit in such a way that participants see the link between the field visit and the course topics;
- To give a chance to the participants to share the observations they made during the field visit.

Content	*Method*	*Materials*
Preparation of the presentations in small groups	In small groups	Flipchart
Presentation from each group	Plenary	Flipchart
Group discussion	Plenary	Flipchart

Handouts

- None

Notes to the facilitator

Contents

After the field visit the participants are asked to report on their findings. There is likely to be a good link between the findings of the field visit and the sessions of the course. The participants will get half an hour to prepare their presentations. At the end of the day the three groups present their findings which is followed by a discussion. The presentation of each group will last not longer than 20 minutes.

Unit 9: Components of the water supply system

Day 3: Session D

Duration: ½ - 1 hour

Objectives of the session

- To explain the different scheme components of a small-scale piped water supply system

Content	*Method*	*Materials*
The components and the role of the various components of a small-scale piped water supply system	Interactive discussion	Flipchart Schematic drawing of a WSS Pictures of the components

Handouts

- The components of a water supply system
- Lay out of the scheme for which the CBE will be working

Notes to the facilitator

Interactive discussion

The facilitator asks the participants to think of the field visit and asks them to indicate the components a small-scaled piped water supply system usually comprise. These are listed on a flipchart and compared with the schematic drawing of the water supply system visited during the field visit. During the discussion the facilitator will make the relation between the components on the drawing and those seen in the to the field.

This is followed by a short discussion on the role of each component.

Unit 10: Operation and maintenance of a small-scale piped water supply system

Day 4: Session A and B

Duration: 2 – 3 hours

Objectives of the session

- To be able to operate a small-scale piped water supply
- To be able to identify irregularities in the system such as break downs, or illegal connections and to able to correct these
- To be able to carry out the basic maintenance on the public standpost
- To be able to read a water meter and to calculate the amount of liters which have been metered
- To be able to repair a leaking tap and to be able to use an old tire tube instead of a washer
- To know where washers can be bought and how much they will cost
- To know whom to contract for the breakdowns such as leaking pipes, cracks in the apron and other major break downs that need to be repaired

Content	*Method*	*Materials*
Introduction in the importance of Operation and maintenance	Lecture	Flipchart
Roles and responsibilities for the O&M	Lecture	-
Operation and maintenance requirements of a public standpost	Interactive lecture	Flipchart
Operation and maintenance requirements of a an elevated steel reservoir	Interactive lecture	Flipchart
Clorination in piped water supply	Interactive lecture	Flipchart
Development of an operation and maintenance plan	Group exercise	Example of O&M plan
Exercise: replacement of a washer and water meter reading	Pair exercise	5 taps, 5 roles of tape, 5 set of tools, 5 washers

Handout

- Hand out on Operation and maintenance
- Fact sheet on Public standpost
- Fact sheet on Chlorination in piped water supply
- Fact sheet on Elevated steel reservoir
- Fact sheet on Small flow water meter
- Fact sheet on Water meter
- Tools needed to replace a washer
- Set of washers

Notes for the facilitators

Introduction

During the introduction the facilitator should emphasize the importance of proper operation and maintenance. Proper operation and maintenance of the various components of the system will increase the life span.

Roles and responsibilities for the operation and maintenance

Recently NWASCO has provided licences to companies to supply the water to the residents. In Lusaka, LWSC has been licensed to supply drinking water to all residents. No other company or organisation can provide drinking water in Lusaka unless subcontracted by LWSC. Therefore all water infrastructure will in the longer term be formally owned by LWSC. In both N'gombe and Linda the CBE will manage the water supply of one borehole and therefore will have responsibility for the borehole, the pump, the water reservoir and the taps. In N'gombe the recently constructed borehole (with SLP support) only serves 10 taps while in Linda the borehole serves 28 taps (14 water points).

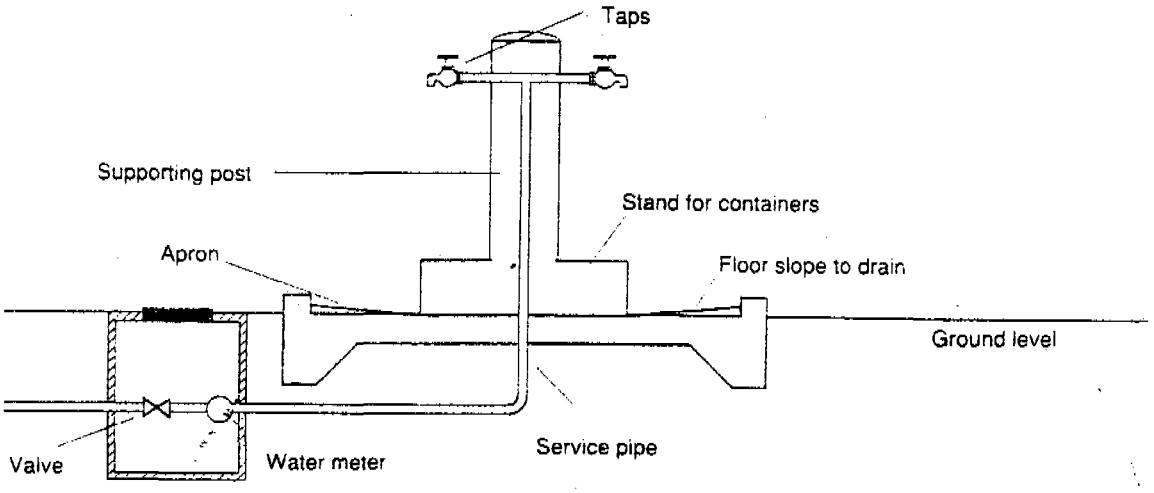
Based on the business plan which the CBE will have to prepare the CBE will enter into a contract with the LWSC that entitles the CBE to manage the water supply related to that borehole and to sell the water. The business plan will indicate the costing of routine maintenance and operation costs. Part of the funds (as calculated in the business plan) will be deposited into a maintenance bank account on which both the CBE and LWSC are signatories.

LWSC will be technically responsible for major maintenance repairs and will cost share in the cost of major repairs in the first years when the maintenance bank account does not have sufficient funds (this arrangement must be further discussed and agreed with LWSC). The CBE will be responsible for day-to-day operation and minor (routine) maintenance.[8]
This means that the various members of the CBE will be responsible for the operation of the electric pump, the reservoir and the public standpost as well as for the chlorination of the water. In the following handout each of the tasks for which the CBE will responsible is shortly described. Because the responsibilities of the CBE for the electric pump is limited to the operation, which means the switching on and off of the pump on set times, this activity hasnot been described in detail. At the end of the handout more detailed information can be found in the attached Factsheets on a drilled well, chlorination, elevated steel reservoir, public stand post and a water meter.

Interactive discussion on the O&M requirements of a public standpost

The facilitators ask the participants what components a public standpost usually comprise of. These are listed on a flipchart and compared with a schematic picture of a standpost with all the components. A public standpost comprises of connection to the service pipe, a suitably supported post, a tap, an apron, a drain and a soak away pit, a valve and a water meter. See for detailed information the picture on which the various components of a standpost are indicated.

[8] Adapted from a mission report to Lusaka, Zambia from Wilma van Esch, ILO.



After this short recap the aim of the discussion is to assess the basic operation and maintenance requirements of each of the components, including the frequency of maintenance or replacement, the skills needed, and the required materials, spareparts and tools. This can be written on a flipchart per component. The table and the fact sheet on Public standpost that can be found in the handouts for the participants can be used as reference for this exercise.

Interactive discussion on the O&M requirements of a steel reservoir

The facilitators ask the participants what components steel reservoir usually comprise of. These are listed on a flipchart. The facilitator discusses the basic operation and maintenance requirements of a steel reservoir. This consists of the opening and closing of valves and managing the chlorination and will be the responsibility of the scheme operator.
An overview of the operation and maintenance requirements and the frequency when these activities will have to be carried out, as well as the required tools and equipment can be found in the table in the handouts for the participants.

Interactive discussion on chlorination

The facilitator discusses with the participants the reason why water is chlorinated and how chlorination works. Chlorination is a chemical method of disinfecting water that kills nearly all pathogens and provides a barrier against reinfection. It can be applied as the last stage in a drinking water treatment process or as the only measure when water quality is already reasonably good. The most used low technology methods are batch chlorination and flow chlorination. For both methods the operation and maintenance are relatively easily learned and can be carried out by the scheme operator.

Then the facilitator explains both methods in more detail (information on both methods can be found in the Factsheet on Chlorination in piped water supply systems, in the handouts of the participants). To finalise the facilitator gives and overview of the operation and maintenance requirements and the frequency when these activities will have to be carried out, as well as the required tools and equipment.

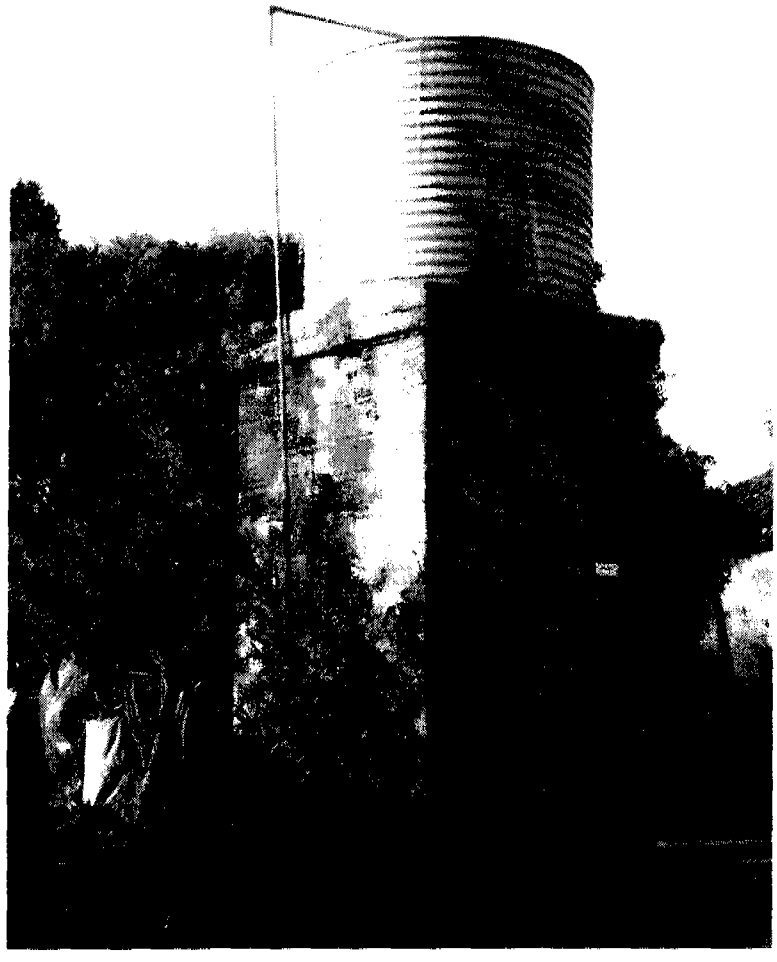


Photo: Arjen During, 2001

Development of an operation and maintenance plan

Operation and maintenance requires planning for a long term arrangement. The participants will have to systematically answer questions such as:

- What needs to be done?
- Which repairs will need to be subcontracted and which ones will we be able to carry out ourselves?
- What are the tools and finances required for those repairs we can carry out ourselves?
- What are the cost involved for those activities that we will need to subcontract?
- When does the work need to be done?
- What kind of support do we need and who will be able to give us this support?

Discuss with the group what operation, revision, cleaning or repair each of the elements requires, including the replacement of certain parts. List all of these operation and maintenance activities. A checklist can be found in the handouts for the participants.
For each of the activities discuss how often it needs to be carried out. Also discuss and list how much time the tap attendant needs for each of the activities and when s/he needs assistance.

List the tools needed and estimate the required spare parts and other materials. The tools may include a broom, spanners, a screw driver or hammer.

Exercises

Water meter reading:

Hands on exercise on reading of the water meters: how do you read, how do you record this, if it is in cubic meters how can you translate this to liters? Give the participants various opening and closing readings (3 for example) and ask them each to calculate the amount of liters which have been used, the amount of buckets that have been collected and the amount of water spilled. Ask volunteers to share their results and show how they have done the calculations. Explain that less buckets might have been collected if more water was spilled and they are able to check this with the amount of fees which have been collected during the day. When the participants have completed their exercises change the examples and ask the participants to calculate from the records how many liters they have sold and compare how many liters have been metered and find out the wastage.

Replacement of washers

Hands on exercise on the replacement of a washer from a leaking tap: How can a washer be replaced? Which tools are needed to replace a washer? What are the cost? Where can washers be bought?

Give every 2 participants 1 tap, a washer, some tape and a set of tools required to replace the washer. Demonstrate the replacement and then ask the participants to do it themselves. Each person should do it! And the facilitator must make sure that everyone is able to do it.

Unit 11: Monit oring

Day 4: Session B and part of C

Duration: 1 – 1 ½ hours

Objectives of the session

- To introduce the concept of monitoring
- To review what issues will need to be monitored
- To introduce sheets and checklist which can be used to collect the data
- To discuss what action can be taken if action is needed

Content	*Method*	*Materials*
Introduction	Lecture	Flipchart
What can be monitored and how	Focussed discussion	Examples[9]
The use of monitoring sheets	Demonstration	Flipchart with examples
Use of monitoring sheets (exercise)	Individual exercise	Picture of standpost and copies sheets
Concluding remarks	Lecture	

Handouts

- Copies of the "Monitoring checklist"
- Copies of the "Fault reporting form"
- Copies for the participants of a picture with different faults
- Copy of the results group exercise: Matrix for setting up a Monitoring System
- Handout Monitoring

[9] Materials that need to be prepared are: Flipchart with empty Matrix for setting up a Monitoring System, Flipchart with "Monitoring checklist", 2 Flipcharts with an empty "Fault reporting form" and Big picture of a water point (standpost) with faults

Notes for the facilitators

Introduction

Monitoring is the process whereby information about the water supply service is collected, checked and analysed in order to improve the situation in case the situation is not as good as expected. As a facilitator you can explain that in fact we monitor all the time, although we may not be aware of it. For example: farmers keep an eye on their field and undertake action if too much weed starts to grow, parents watch their children and visit a doctor if it has diarrhoea all the time. If farmers or parents do not act upon the signals they get things will go wrong dramatically. The crop may yield too little, the child may even die. This illustrates the need to know what to look at, and to know what action to take.
A reporting system (which might also be called a referral system) is basically a tool for transmitting and ensuring speedy repairs of leaks and break down in water facilities. Monitoring helps to ensure that the reporting systems are fast, accurate and result in speedy repairs. Several members of the CBE will be in a position to assess every day whether anything goes wrong. If they know what action can be taken to remedy the situation they can undertake the action themselves or report it directly to those who are responsible to take or organise action. The CBE will also be in an excellent position to see whether the repairs are made within the required time and supervise the quality of the work of the contractor.

Focussed discussion

In the introduction the importance and need for monitoring has been explained.
The aim of this focussed discussion is to make the participants understand what their role can be in the monitoring of the performance, condition and the operation and maintenance of the system. For the identification of what should be monitored and which indicators should be used the facilitator can refer back to the previous session on Operation and Maintenance. How to collect the information can be done in a brainstorm exercise referring to monitoring as an activity we carry out daily. For the questions on what action has to be taken and who should take the action reference should be made to the session on roles and responsibilities of all stakeholders. It is important that the information will be transferred to those who are in the position to take a direct action so that the problem can be solved as soon as possible.

Questions which can be used to guide the discussion:

- What are the things that we as a CBE can monitor?
- Which indicators can we use to monitor? What is the ideal situation, (this can be used as indicator)?
- How can we collect the information? Which sources of information can be used?
- How often should we collect the information?
- And if we see something which is wrong, what action can we take? Repair ourselves? Report? To whom?
- If no action is taken: to whom else should we refer the issue?

To conclude the session the facilitator can fill together with the participants the Matrix for setting up a monitoring system. If feasible the result of the exercise should be typed and given as a handout to the participants the next day.

Demonstration

The CBE should be trained on how to use the "checklist of issues to monitor" and how they should complete a fault reporting form. Before giving them an exercise which they can do themselves the facilitator can demonstrate the use of the list and explain how the form can be completed.

During this demonstration it is important to stress that not all the members of the CBE will be able to notice all the problems while they are working. So the members of the CBE will have to divide the tasks between them in order to make sure that all aspects get sufficient attention. For example the tap attendant – or those who are responsible for the operation of the public standposts should be able to check all the aspects around the public standpost and report problems to the one(s) who will be responsible to organise a mechanic in order to carry out the repairs. The tap attendants can then check all the issues which are mentioned in the "Monitoring checklist" once a week, and report if there is any problem with one of them. Hand out the checklist. Most of the issues should be familiar to the participants, as these have been discussed during the session on Operation and Maintenance and during the previous session. Check whether they understand the list and ask them to study the list carefully for a few minutes.

After the participants have studied the checklist show them a picture of a public standpost where different faults can be noticed. Go through the issues mentioned on the list and check whether a problem can be noticed or not. If a problem can be noticed write this down on a flipchart. When all issues have been checked, discuss with the participants which of the problems they are able to solve themselves and which they will need to report. This can be followed by an explanation on how the "Fault reporting form" can be used. At the end of the demonstration discuss with the participants how to have the form carried quickly and to whom.

Individual exercise

Give each of the participants a picture of a standpost with different faults. Explain that it is the end of the week, and that it is time for their weekly check. Ask them while using the "Monitoring checklist" to write down all the problems which they notice on the picture and to identify what action they will take. They will have to decide which issues they handle or deal with themselves, and to whom they should report the other issues. They also have to decide that if no action is taken, when and to whom else they would refer the problem to. To complete the exercise they will have to fill in the "Fault reporting form".
The facilitator can round of this session by going through the right answers which should be written on a flipchart, so that that all the participants have a chance to correct their reports where necessary.

Matrix for setting up a monitoring system

Issues to be monitored	*Indicators*	*Collection of data*			*Use of data*	
What should be monitored?	**What is the ideal situation?**	**Source of information: how can we collect the information?**	**Who collects the information?**	**How often should the information be collected?**	**Who will take the action?**	**To whom should the information be referred to when no action takes place?**

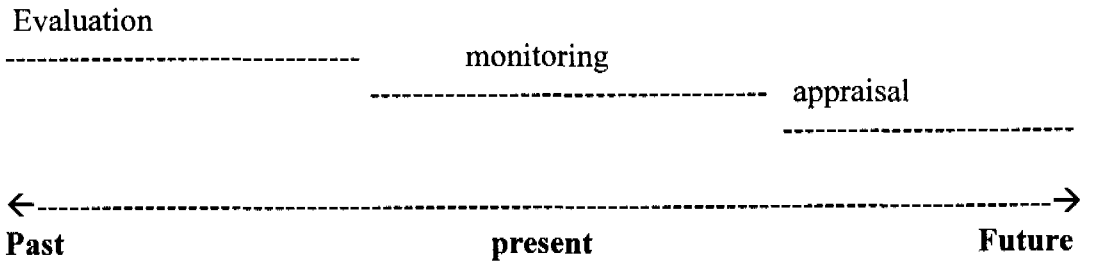
Background for the facilitator

Monitoring and evaluation

Definitions of Evaluation, Monitoring and Appraisal

- **Evaluation** is the checking, collection and analysis of information about past project development for purposes of making decisions about continuation of the project and/or to improve the performance of similar projects and the sector as a whole.
- **Monitoring** is the checking, collection and analysis of information about current project development to improve implementation, performance and results. In essence it means comparing the actual situation with the expected (planned) situation – and then taking action to bring reality and expectation together.
- **Appraisal** assesses the present situation to plan future directions and outcomes[10].

Evaluation, monitoring and appraisal over time



Without monitoring the system will fall apart: the importance of keeping track

What is the issue?

Monitoring is the process whereby information about the water supply service is collected, checked and analysed in order to improve the situation in case the situation is not as good as expected. In fact we monitor all the time, although we may not be aware of it. Farmers keep an eye on their field and undertake action if too much weed starts to grow, parents watch their children and visit a doctor if it has diarrhoea all the time. If farmers or parents do not act upon the signals they get things will go wrong dramatically. The crop may yield too little, the child may even die. This illustrates the need to know what to look at, and to know what action to take[11].

---

10 Source: Shordt (2000), Action Monitoring for effectiveness. Improving water, hygiene & environmental sanitation programmes. Part 1.

11 The text of this section is an adapted version from a text of: Bolt E. and Fonseca C., *Keep it Working: a field manual to support community management of rural water supply*. IRC, 2001.

In theory, Monitoring and Evaluation is only unnecessary when all the following conditions exist:

- a project or scheme is operated perfectly without any interruptions;
- there are never any problems with its operation and maintenance;
- the community is 100 per cent satisfied with the scheme and have no need for improvements;
- the scheme offers the community an excellent and affordable service.

As this situation never exists in any water supply or sanitation scheme, it can be appreciated that there will always be a need for M&E programmes and the information they produce.

Source: Mvula Trust: guidelines to community managed water and sanitation services (module 14: Monitoring and Evaluation)

Why talk about monitoring?

Management and performance of the water supply system also needs to be monitored. The scheme management and the tap attendant need to find out when and where it goes wrong and they need to know what action to undertake to remedy the situation. If this is not done, the service level will go down as a result of breakdown, people will no longer be prepared to pay and the system will ultimately fall apart. People may not always know where to go with information about the system or who is responsible to undertake action. Once system monitoring is put in place we often tend to collect too much information, without really using it to solve problems. This is a waste of time of the information collector and of the information provider. We therefore need to take a close look at what we really need to look at and how we can make monitoring meaningful.

About monitoring

Monitoring is usually done at various levels. The government will monitor how many communities have well-functioning water supply systems. The office which has assisted with the implementation of the scheme will monitor how many households or compounds are served in the district or project area. However, monitoring of management and functioning of an individual water supply system is best done by the community or the users themselves, in particular by a group which includes members of the management body. They have a vested interest in the functioning of the system and this helps ensure that action is taken if monitoring information shows the need for it. If you want to assist people to set up an effective monitoring system there are a few steps you need to know about.

First of all community members need to raise (potential) problems with the water supply system and any concerns they have with relation to its management. This could for example be that the pressure in the tap is irregular or that they feel that rich people benefit more from the system than poor people. It is obvious that various groups within a community need to be asked to formulate their problems and concern. When asking a rich man and a poor woman you will get very different lists.

Secondly people should determine what for them is the optimal situation. With regards to the water pressure for example, the problem could be that throughout the day there is too little pressure in the tap. People may indicate that water pressure is no longer a problem if at least three hours a day the pressure is high enough to fill a bucket within 1.5 minutes. With regards to the division of benefits, people may feel that the problem no longer exists if the water to the branch lines going to the various neighbourhoods is divided proportionally. It will be clear to you that such so-called *indicators* may vary per community, even though these communities identify similar problems. It is important that there is clarity and consensus about the indicators and that everyone collecting the information is aware of this.

When discussing who should collect the information the main question to answer is: who has most interest in accurate and honest information? Those having such an interest may also best analyse the information. However, this should be done in combination with those who can mobilise the right people or resources to solve problems. How information is collected depends on the indicator. It can be done by asking people, or by observing their behaviour or environmental changes. Information gatherers should always ask themselves whether the method they choose and the people they ask will provide reliable information. In the case of irregular pressure for example, two users per tap could be asked regularly to measure pressure using a bucket and a watch to find out in how many minutes the bucket is filled. They should then inform the caretaker or tap attendant about the outcome, for example that it fills too slowly.

Measuring the yield of a tap can be done the same way as measuring yield of a spring. In the case of finding out whether water remains to be equally divided, a sample of rich and poor users could be asked at regular intervals about the service they receive. Information, for example about changes in water flow to the various parts of the community, can be brought to the water committee for analysis and to determine remedial action.

> In Barrel Chiquito (Guatemala) every six months the committee would visit the houses of the beneficiaries to monitor the use of the water and latrines. Dona Teodora recounts these visits: "When people found out that the committee was going to come they would get worried and clean all around their cisterns so as not to leave signs of water being spilled about. But we knew from what the neighbours told us that the water was spilled. They also swept the latrine so that it was clean when we made the visit."

Community members also need to know what to do if nothing happens to solve the problem or to improve the situation. If the water committee does not take action, the problem remains and the situation will probably deteriorate. Community members need to be well aware of possible avenues for support, for example from a government agency at district level.

In Guatemala, the Ministry of Health and Social Assistance is legally responsible for the construction and control of water supply systems. The government runs five programmes, three of which fund projects. An Institute for Water Resources was created in 1992. More than 200 NGOs also construct water systems. Every institute has its own norms, including whether or not water and/or maintenance is to be paid for. However, the National Plan stresses participation in construction, charges communities for operation and maintenance work, and entitles them to set their own tariffs. Although all the agencies stress the importance of participation, few give the communities a say in decision making. Training for management focuses on operation and book-keeping, and is given to men, whereas women receive hygiene education. The systems are managed by committees, which are elected by men. After construction, the systems are monitored and maintained by the agencies. There are water shortages, due to environmental, technical and managerial problems and the inefficient use of water. Committees and operators are not trained to deal with these issues. Water quality is affected by inadequate source protection and the lack of sanitary systems. Capacities must be developed for managing water resources and supplies.

Planning for Action Monitoring for effectiveness: the steps to be take

- Identify what has to be monitored, what are the key issues, problems, concerns or demands which will become the focus of monitoring. This should be done together with the stakeholders.
- Define indicators and criteria, determine together with the stakeholders what is the ideal situation is.
- Decide who collects or checks? Are extra checks needed? By whom? The information collection should be done by the people who have interest in the issues. Often the people who complain about an issue or a problem are the best one to monitor, as they are the ones which have a vested interest in the mater. It must be attractive for people to monitor a certain issue. The person collecting the information or reporting must see benefits in doing it accurately.
- Collection and analysis; issues which should be dealt with are how is the information collected, which source of information is used, when is it collected, and are extra checks needed.
- Who acts? What action will be take? Referrals needed and to whom? To make monitoring an useful activity it is very important to plan for the use of monitoring data and organise the flow of information.

Evaluation is learning: no solution is for ever

What is the issue?

A community or a water committee has objectives, although they may not always be made very explicit or written down. When a water committee decides to implement a certain tariff system, their objective will be to improve the recovery of costs for operation and maintenance. At times it is useful to sit back and assess whether the objective was reached and, if not, the reasons why. [12]

[12] The text of this section is an adapted version from a text of: Bolt E. and Fonseca C., *Keep it Working: a field manual to support community management of rural water supply*. IRC, 2001

Why talk about evaluation?

Whereas monitoring is meant to keep track of developments to allow for immediate remedial action, evaluation focuses on the impact of activities. Evaluation helps to determine whether problem solving activities proved useful. Much can be learned from looking back at how things were organised and what they brought about. You could stimulate community members at pre-determined times to take a systematic look at what they did, at the intended and the actual outcomes, and at whether the outcomes were as useful as expected. Lessons learned will help direct future activities.

About evaluation

Evaluation basically means that you look back and compare what was intended with what was achieved. There are several ways you can help communities look back at the implementation of the solutions they put in place to solve pressing problems. For example, a 'recovery workshop' brings together field staff and community members to jointly assess whether objectives were achieved, the lessons learned and any positive or negative side-effects. Issues you can raise during such a workshop include:

- How was action plan implemented (who, what, when, outcome, problems encountered)?
- What were the expected and unexpected results?
- How do community members feel about outcomes? What are their conclusions?
- What are the next steps? Should alternative solutions be tested?

Another way to evaluate is through structured interviews with key-people, including users of the water service. This can be combined with information collection through observation. It is important to make people realise that an evaluation is not meant to put them down, should nothing positive have happened, but to enable them to learn from the experience. If people feel threatened, they are likely to present the situation as better than is actually the case. You should therefore take enough time to explain the purpose of evaluation.

Last, but not least: evaluation is only meaningful if the outcome is used to learn how to improve the situation. Information should not be kept in your office, but be shared with community members for reflection and to determine future action.

Unit 12: Con tracts and legal issues

Day 4: Part of session C and session D

Duration: ½ - 1 hour

Objectives

- To understand all the clauses in the contract which the CBE will have to sign
- To understand all legal issues which they need to know in order to be able to operate and maintain a small-scale piped water supply system as a business

Content	*Method*	*Materials*
Introduction	Lecture	Flipchart
Step by step explanation of the contract	Interactive lecture	Flipchart and example of a contract
All other legal issues	Lecture by guests	Lecture

Handouts

- A copy of an example of the contract which the CBE have to sign
- Some materials which are prepared by NWASCO and LWSC in which the legal issues that are relevant for the CBE are explained

Notes to the facilitator

Introduction

When a person signs a contract, it is important to understand what this will mean for him or her. It is important to have a good understanding of what is expected from the employee, which rights he or she has, and what his/her roles and responsibilities are, and how someone will get evaluated. During this session the facilitator will go step by step trough an example of the contract which the Community Based Enterprise will be asked to sign, and will make sure that all the participants understand all the clauses which are included in the contract.

Step by step explanation of the contract

The facilitator will hand out a contract to each participant. The same text has been prepared on flipchart or overhead sheet. The participants will first read themselves a clause, then the clause will be read by the facilitator. After this the participants are asked to explain the clause, if they have misunderstood or are not able to fully explain the clause, the facilitator will complete the explanation.
The facilitator should make sure everyone understands the full contract before the end of the session.

Guest lecture of representatives of LWSC and SLP

During the lecture the facilitator will hand over to the representatives of the LWSC and SLP in order to give a chance to explain all the legal issues the CBE will have to deal with, such as tariff setting, the shared responsibilities of the maintenance of the system, the cost which will need to be covered by the CBE and the cost of which will be covered by LWSC, the procedure of coming to an agreement between LWSC and the CBE etc. These are issues which have been agreed upon between SLP and LWSC before the training course can take place.

Unit 13: E valuation and closure of the course

Day 4: Session D

Duration: ½ - 1 hour

Objectives of the session

- To evaluate the different aspects of the course

Content	*Method*	*Materials*
Evaluation	Form which can be filled in anonymously	Copies of the form

Handouts

- Evaluation form
- Certificates