

ACTION MONITORING FOR EFFECTIVENESS

aMe

Improving water, hygiene and environmental sanitation
programmes

Part II

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Abstract:

The theory of monitoring has developed faster than practice. Therefore, action Monitoring for effectiveness (**aMe**) focuses on application—on practical methods to improve project/programmes in the short-term. It emphasizes use of monitoring information at the lowest level possible, with referral to other levels as needed. Using monitoring information is crucial. Within communities and at intermediate (district, county) levels, **aMe** helps people analyze, check and improve the situation around them. For leaders in water and sanitation programmes, this book describes how they can organize and facilitate monitoring activities that are built into on-going programmes.

The book is divided into two parts. Part I describes the approach, emphasizing participation by those people who have a vested interest in ‘getting it right’ and solving problems. Part I also describes data collection methods, simple sampling and analysis. Part II contains 32 Fact Sheets, each of which provides practical examples of indicators, methods and tools for monitoring a specific topic. These topics range from concrete issues such as monitoring to ensure construction quality or reduce costs to monitoring more abstract issues such as community participation, management and distribution of benefits.

This book is based on 10 years of experience at community, district and national levels first in Asia and then in Africa and Latin America. It has been written especially for senior and supervisory staff involved in water and environmental sanitation programmes, although the methods are relevant to other development sectors.

Keywords: monitoring, water, environmental sanitation, participatory evaluation, hygiene, community-based programmes, institutional development, management

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Preface

This book deals with monitoring for effectiveness – practical approaches to developing monitoring activities that are used to improve the results of programmes in the water, hygiene and environmental sanitation sector. It has been developed with the support of Danish International Development Assistance (Danida) within the Royal Danish Ministry of Foreign Affairs. The manual focuses on application and practice drawn from experience from programmes around the world, including Danish-supported projects in Bangladesh, Ghana, India, Uganda, among many others.

Special thanks and deep appreciation are in order to colleagues, the women and men in these programmes who work and develop monitoring activities with imagination and energy, to improve access to services and the continuing use of these services. Their dedication and candour, their willingness to experiment have been instrumental in the development of this book.

Many individuals have provided key inputs within IRC. David Saunders initiated not only this book, but also was instrumental in developing the overall conceptualization. Maria-Lúcia Borba has reviewed the text with imagination and has provided valuable suggestions. Sascha de Graaf and Loekie Broersma have managed the production. Important materials and insights have been provided by Christine van Wijk, François Brikké, Eveline Bolt and Marc Vézina. Special thanks are in order to Jan Teun Visscher for his patience and observations, while Lauren Houttuin has, with great patience, done the desktop publishing and Nicolette Wildeboer has, with a keen eye to detail, edited the text.

The consistent support of Jan-Møller Hansen of Danida in enabling the publication of the book is very much appreciated.

This text has been reviewed and commented on with insight by Lyra Srinivasan, Frits Wils and Patrick Nginya.

It is hoped that the efforts of these many colleagues will come to fruition in the use and pleasure which you — the reader — derive from these materials. Any errors in the text are, of course, the sole responsibility of the author.

Kathleen Shordt
February 2000.

Chapter 1 *About the Fact Sheets*

The purpose of monitoring for effectiveness is to help improve project and programme results and attain the immediate objectives over the short-term. For this, the amount or quantity of monitoring is less important than the quality of the monitoring activities. Thus, action Monitoring for Effectiveness (which is abbreviated as **aMe** in this book) emphasizes concrete and sustainable approaches at community, district/sub-district and national levels. Its aims are:

- USE** Monitoring information should be used to solve a problem, improve a situation as soon as possible. At its simplest this means: **Find a problem and fix it. Find a strength and build on it.** This helps programmes adapt and change.

- EMPOWERMENT** People should monitor who have real interest and specific expectations about an issue or problem. It is important to involve those people who can use the information, beginning with the local or lowest level, to improve a situation. This tends to shift control to user and community groups. Thus, monitoring must not merely use people as free labour or merely extract information, which is sometimes not even acted on by the project or programme.

- SUSTAINABILITY** Monitoring activities should become in-built so that they are part of the on-going programme, planned and carried out by (dedicated) staff, community members and other partners. Thus monitoring sometimes disappears as a separate activity.

This monitoring approach has been developed for water, environmental sanitation and hygiene programmes. However, the strategies and principles can be useful for other sectors as well, such as integrated programming, education, health, early childhood development, water resources management.

Each Fact Sheet deals with one issue, providing information and examples about how that issue could be monitored. The examples are indicative. They are not like road maps that are followed exactly. Rather, they give material that can be adapted or transformed to suit specific circumstances.

It has not been possible within the space of this book to deal in depth with all topics and monitoring issues. Issues have been selected for which there is monitoring experience and which frequently arise as problems in many programmes and projects. In addition, for some issues such as finance about which books have been written, it is not possible, within the confines of a few pages to deal with the information in depth. Nonetheless, it is hoped that these Fact Sheets, including much collective experience, will be of practical use to you, the reader. There is a Fact Sheet for each of the issues in the following table:

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The Fact Sheet for each issue is organized following these headings:

① Problem issue ② Indicator: examples ③ Who collects or checks? ④ Monitoring plan ⑤ Action based on monitoring information ⑥ Training or orientation needed Remarks Recommended literature Examples

These same items (① to ⑥) appear in Part I of this book, chapter 3, as steps for planning monitoring activities. The following box summarizes the working principles of the aMe approach for each step. Where relevant, the Fact Sheets have been prepared to apply these principles.

Overview from Chapter 3 of Part I

Steps and principles in the aMe approach:

Preparation: Know the programme well. Advocate for monitoring.

Step 1: Identify key issues, problems and concerns

Consult representatives of the various stakeholders, including the users.
Begin with a few issues, then gradually expand monitoring activities.

Step 2: Define indicators and criteria

Check for validity, usefulness, reliability and ease/expense.
Use indirect indicators as needed.

Step 3: Who collects or checks? Are extra checks needed? By whom?

People should monitor who have a real interest in reporting accurately and consult with representatives of key stakeholders, including the consumers.
Ensure extra checks (triangulate) for validity, reliability.

Step 4: Collecting, analyzing data, reporting

Use valid, reliable and cheap methods for collection and analysis.
Use a range of methods.
Analyze data according to specific groups such as men/women, rich/poor.

Step 5: Who acts? What action?

Plan for the use of monitoring information from the beginning. Monitoring information should be:

- used by an individual or group to solve a problem and improve project performance
- acted on at the lowest level possible
- referred to other levels, as needed, to someone who will act

Monitoring should become in-built.

Step 6: Provide training or orientation

Provide training or orientation to groups involved.

Try out the monitoring activities on a small scale first.

In practice, the order of the steps can change and some may be carried out at the same time. Some steps might be omitted, for example, if the issues and indicators were identified earlier in the life of the programme. However these six steps provide a way to organize monitoring. For further information about these headings, see Chapter 3 of Part I.

Chapter 2 Community and its Institutions: Introduction

This section provides examples of monitoring five issues related to communities and their institutions:

- ◆ **Informed community**
- ◆ **Community participation**
- ◆ **Forming committees**
- ◆ **Committees function**
- ◆ **Selecting poor households**

The community

Community is one of the most misused words in development programmes. A community is composed of groups of people who have similar but also different interests, similar and different needs. They may cooperate in some endeavours but compete in others. The local government and villages leaders sometimes do — but other times do not — know enough or have sufficient motivation to represent the other groups in their community. Therefore projects will often experience difficulties if they work only with the local government and leaders.

This section is based on the belief that all relevant groups, or recognized representatives of each, must be involved. This means that the opinions and knowledge of each group should be taken into account. They should have a role in making decisions which will affect them. This is usually called having a ‘voice and choice’ — for the rich and poor, for men, women and children, and for each language or ethnic group.

The different groups in a community should be involved in checking or monitoring the issues which affect them, that is, the issues which they want to ‘get right’. In addition, monitoring should help projects and programmes ensure that none of the relevant groups is overlooked or omitted from key decisions and activities.

A note on provision in urban areas ¹

This book focuses largely on rural settings and small towns. Thus, the Fact Sheets in this section are not specifically relevant to the urban situation. Therefore this note has been added with a view to examining some key indicators.

Most policies and programmes for water and sanitation have failed to serve the basic needs of the poor in urban areas of the developing world. By 2020 AD, over 50% of the population in developing countries will live in urban centres. Many cities have experienced rapid increase in poor populations

¹ adapted from M. Kariuki (1999)

living in informal or unplanned settlements, many of which are illegal. National policies discourage or prohibit provision of water and sanitation infrastructure in illegal settlements. Provision of services is also hindered by difficult terrain and poor cost recovery.

Thus urban water distribution has gradually been taken up by the private sector (small scale providers, NGOs, CBOs) that now account for 20% to 70% of the water retailed in cities. Urban residents purchase water from a range of services such as kiosks, tankers, house connections from privately managed sources. Without land tenure, the poor often pay ten or more times what the middle and upper classes pay for water. A large number of people still use unsafe sources.

For sanitation, the majority rely on on-site latrine technologies (communal defecation sites, pit latrines and septic tanks). Most of these options are inadequate. Wastewater and solid waste disposal is, likewise, either lacking or inadequate to serve most of the urban poor.

Solutions now being sought include private sector participation, public-private partnerships to extend services, reducing costs to the poor through competition and improving efficiency. Thus planning tends to focus on stimulating the private sector and changing government policies.

The special issue of indicators relevant to urban areas

Urban services for the poor must, in most countries, be changed radically. Therefore, these indicators are written in the form of objectives and focus on future possibilities:

Policy

- ◆ Government policy and regulations support the provision of water and environmental sanitation services to the urban poor by other service providers (small-scale providers, NGOs, CBOs, etc.).
- ◆ The government no longer prohibits service delivery within informal settlements.

Coverage & access

- ◆ Utility contracts (for management or concessions) provide for 100% coverage of all consumers.
- ◆ Most households have access to a safe water supply less than 40 metres from their dwelling and environmental sanitation facilities within 5 metres.
- ◆ Water use among the urban poor increases to 20 to 30 litres per capita per day and the cost is reduced to less than 10% of household income.

① Problem issue

Important information about water and sanitation programmes should flow to all target households. If men and women are aware of the programme and its rules, they are more likely to participate and to benefit.

② Indicators: examples

These two indicators focus on the beginning stages when a programme or project is initiated in a community.

- At least one man and woman in a household know about the project, and can accurately state one or more rules for entry. (At a later stage the indicator could be changed to include, for example, being able to state guidelines about use of water.)
- The initial information and mobilization activities have been carried out in each neighbourhood according to agreed plans.

③ Who collects or checks?

This depends on the local context. For example, members of community-based organizations, water and sanitation committees, staff members of non-governmental organizations or field workers might do the checking.

Extra checking is needed. This should be done by someone who is not involved in the information and mobilization activities. In other words, when people monitor their own work, they may want to state that the community is well-informed. Extra checks might be done by programme staff.

④ Monitoring plan

At least one man and woman in a household are informed

Transect walks and spot checks can be made by supervisors, by field workers, by members of non-governmental or community-based organizations. They plan a path to walk through a village or community, visiting households. The households can be selected by counting roughly every 10th or 20th house or by visiting less accessible or poorer neighbourhoods. A man or woman in the household is asked about the programme, for example:

- ◆ Have you heard of this programme?
- ◆ What have you heard about it?

- ◆ How does this programme work? Are there any special things that people are asked to do?
- ◆ Have you seen or attended any activities of the programme? Which? Where?
- ◆ Do you have any suggestions or questions about the programme?

It may be helpful to ask men and women separately if the men tend to answer for the women.

Planned information/mobilization activities have been carried out

The written and the verbal reports of the implementing group, the field workers and committees can be used. To do this, it is only necessary to check off the activities in the work plan which have been completed. To cross check this, during the visits to households, men and women can be asked to mention some meeting they attended or activity they have seen.

⑤ Action based on monitoring information

At least one man and one woman in a household is informed

If the monitoring reveals that many households are uninformed or misinformed about the programme, then immediate action should be taken by the field workers, local animators or committee members to improve the level of accurate knowledge.

Planned information/mobilization activities have been carried out

The programme should not be allowed to continue in a community until the mobilization activities are carried out.

⑥ Training or orientation needed

Orientation is needed about how to undertake a transect walk and carry out home visits. Those involved should practice explaining the purpose of the visit to householders.

Remarks

The transect walk can also serve other purposes at the same time as the monitoring. For example, it could be used to identify areas in particular need. It could also serve to help with motivation and mobilization.

1 Problem issue²

Community participation can have many meanings. Lyra Srinivasan identified four levels of community participation or involvement:

Cheap labour	- People work in digging, transport and so on, to lower the costs to the project. The work is assigned by the project or programme.
Cost sharing	- People pay contributions to show 'demand' and as payment for O&M. The O&M payments are believed to indicate local commitment/ownership.
Management	- Local management capacity is built through committees and local government. These management responsibilities may include managing finance and making payments, community mobilization and committee organization, organizing repairs, replacements etc. Management tasks are largely assigned.
Decision making	- Decision making is by men and women in the community as well as local leaders on all of the above plus decision making about type of technology, costs and payment, service levels, design and site selection, training and education inputs.

Many programmes focus on the first two of these (cheap labour, cost sharing) and assign management responsibilities for O&M after construction. However participation in decision making is believed to stimulate stronger ownership and sustainability - and it can result in decisions that are more relevant locally. Therefore this example focuses on monitoring informed and effective decision making.

2 Indicators: examples

Agency & sector strategies	- Programmes have a range of technology, management and financing options which can be adjusted to fit local circumstances so that users can make informed decisions.
Field staff: knowledge & way of working	- Field staff can explain the policies and strategies for people's decision making and participation. Staff can provide accurate information about costs, cost estimates on repairs and replacements, benefits and problems of different technology, management and financing options.
In community	- Men/women, rich/poor, all ethnic groups are informed and make decisions about: the costs and benefits of various technologies and their maintenance; site selection and coverage; management options; amounts and timing of payment.

² adapted from L. Srinivasan (1990)

③ Who collects or checks?

In a programme, those people should be identified who are interested in monitoring of informed decision making. This may be users, supervisory staff, local government, NGO staff. Users should have some way of referring complaints and questions to higher levels if needed. Extra checks are useful to ensure that the alternatives are real – not 'pseudo-choice'.

④ Monitoring plan

Agency & sector strategies

Interview the leaders and read the written strategy.

Field staff: knowledge & way of working

In meetings with field workers, knowledge and skills can be monitored and, at the same time, improved. Monitoring activities could include:

Method 1: Discussion & questioning

For O&M, ask questions such as:

- ◆ What are the various technical options? What are advantages and disadvantages of different technologies and levels of service (shallow wells, deep wells, roof catchments...)?
- ◆ What are the expected O&M costs for each of the technologies over time?
- ◆ Who is responsible for replacements? Can they be obtained?

With respect to management, ask questions such as:

- ◆ What are the management options? (committee, user groups, private sector, contracts) What are the costs involved? Is training available and provided?
- ◆ How do you find out what options women prefer? What do you do if men and women prefer different water technologies?

Method 2: Role playing & demonstration

Staff can demonstrate (and then discuss) how to introduce different options to community groups.

*In community***Method 1: Spot checks**

Supervisors can ask community members, particularly women, during community visits: What is this programme about? Was your opinion asked about the locations, technologies, tariffs, who works on what? Do you agree with the decisions taken or have any other ideas?

Method 2: Participatory assessment

This assessment could be particularly useful to start in the first communities or neighbourhoods in which a project has worked. The results of the assessment can then be used to improve work in subsequent communities. See the directions for the assessment below³.

λ Example: Participatory assessment

In this example (Dayal et al., 1998), the monitoring focuses on who had the information needed for decision making and who actually decided.

- Step 1: **Select communities, facilities or neighbourhoods that represent different areas, soil or water conditions, ethnic groups in the programme. Set dates and seek participation of men/women, rich/poor, different ethnic groups.**
- Step 2: **Programme staff and those doing this activity agree on the issues and different options for 'who has the information' and 'who decides'.**
- Step 3: **Pocket voting. Carry out the activity in communities. Discuss the results with those who participated and with field staff/programme leaders. Based on this, decide if and what action should be taken.**

³ The following section is from R. Dayal et al. (1998)

Purpose: To assess decision making and choices and to encourage the community to understand their own processes of decision making and participation.

Time: 1½ - 2 hours.

Participants: Voting done in two or three focus groups: men/women, richer/poorer, different ethnic groups.

Materials needed: About six large cards showing different people such as an agency worker, a local official or leader, a richer man, rich and poor men together, richer woman, richer/poorer women together.

Smaller cards showing key decision points within the project. For example: selection of village or neighbourhood, technology choice, site selection, decision on who will construct, decision on how much to pay for construction (and use of) facility. The number of cards will depend on the local situation.

Pocket chart, envelopes, voting slips for each participant, paper to record results.

How to conduct the exercise:

1. Show large cards and explain that each represents a person or group who had information about a subject or influenced how decisions are made.
2. Show smaller cards and ask participants to suggest what each represents. Make sure the cards are clearly understood. Give each participant a set of voting slips.
3. Two rounds of voting. Ask *who, in reality, knew about the idea? Who had the information about it?* Tally the answers. Then ask, for the second round of voting: *Who, in reality, made the decision on the subject?* There may be more than one answer.

As an alternative, the cards can be placed in groups and the participants can discuss as a group who was informed and who was responsible.

Note that in some settings it may be possible to conduct this activity as a focus group discussion, rather than through voting.

The results could be entered into a scoring chart such as those shown below:

Degree of informed decision making by M/W, R/P for M/W, R/P

1. Subject area of information 	Project initiation	Choice of technology & service level(s)	Location of facilities	Choice of local management organization	Type of financing and size of charges
Question 1: Person(s) who had information 	Score	Score	Score	Score	Score
outside agency worker/team					
local male leader(s)					
local female leaders(s)					

male group or assembly, rich					
male group or assembly, rich & poor					
female group or assembly, rich					
female group/assembly rich & poor					

A second chart, just like the one above is needed for Question 2: Person(s) who took decision.

Probing and discussion is needed to find out if information was understood and if more than one group was involved in taking the decisions. The different groups involved in this activity (rich/poor, men/women) may answer the questions differently. It can be useful to compare the answers of the different groups as well as to identify to what extent those who should be involved in decision making were, in reality, involved. The analysis for each community occurs during the discussions as the activities are carried out.

5 Action based on monitoring information

Most deficiencies will require changes in programme/project strategies and retraining of staff. Monitoring may also identify strong points and successful experiences to be built upon and disseminated.

6 Training or orientation needed

Training and practice is needed to facilitate the participatory assessment. Orientation and some practice is needed for the semi-structured interviews.

Recommended literature

Dayal, R., Wijk, C. van and Mukherjee N. (1998). *Participation, gender and demand responsiveness: making the links with impact and sustainability of water supply and sanitation investments*. New Delhi, India, UNDP-World Bank Water and Sanitation Program.

① Problem issue

There are many water, sanitation and management committees in communities around the world. Committees that are representative and active will strengthen the local programme. If the committees are 'owned' by a few people interested in keeping the benefits of the programme for themselves, the project is endangered from the beginning. An important issue is: What guidelines are useful in forming water, sanitation and management committees?

The following example is adapted from experience in Bangladesh, Ghana, India, Tanzania and Uganda. There are, of course, many local variations depending on the situation.

② Indicators: examples

Formation of committee follows agreed rules

For example:

- Committee contains five to seven people.
- More than 1/2 of members are women.
- All active local groups are represented in the committee.
- There is clear representation of poor and marginal groups.
- Members agree to guidelines about how their committee will operate (for example: all decisions must be made unanimously; and all groups in the community should benefit, specifically the poor).
- There are clear and agreed rules about how and when a committee will be disbanded (for example: a committee will be disbanded if it does not meet for four months or does not repair a water point within two weeks...).
- Members express an interest in the issues on which a committee might work.
- It is not necessary that all members be literate.
- Leader of local government or chief is not the convenor of the committee. (This gives the committee more independence.)

③ Who collects or checks?

The field workers and/or community leaders are often interested in checking. Extra checks usually are needed. This could be done by the supervisor of the field worker, NGO staff or district community development officer.

④ Monitoring plan

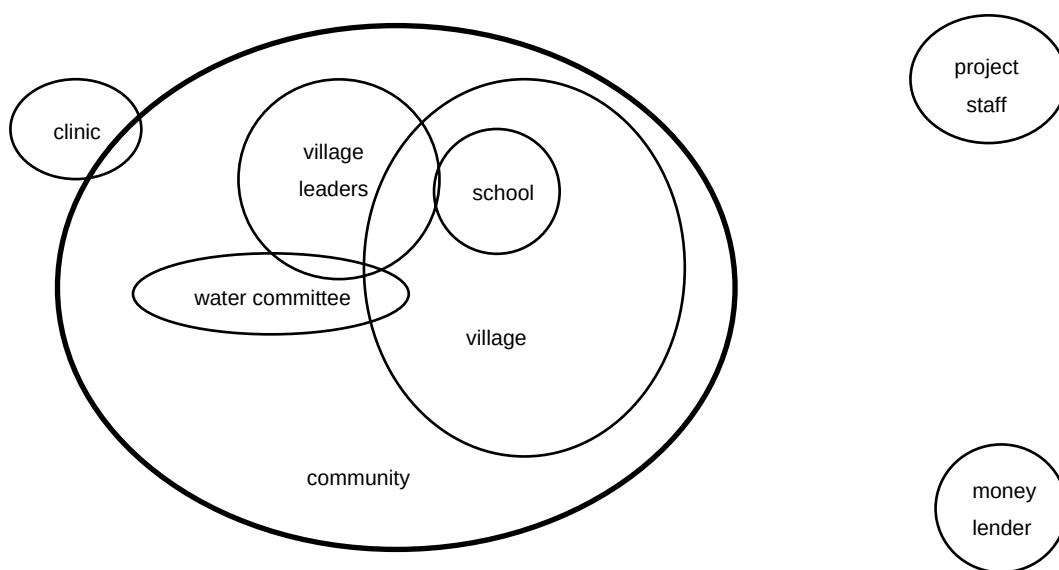
To monitor at the time the committee is being formed or soon afterwards, the field worker or NGO staff can interview or have group discussions to:

1. Ask several men (together) and several women (together) from average and poorer households questions such as:
 - ◆ Is there a committee? What does the committee do? Who runs it? Is any office holder a woman?
 - ◆ What are the different languages, clubs, institutions in the community? Who represents each group on the committee? Who represents the poorer families?
2. Ask the members of the committee similar questions.

The supervisor or district personnel can check by asking field workers about the background of committee members, how the committee was formed, what explanation was given to the community before the members were selected.

Another way of checking is to ask a group of men and a group of women to draw a circle (Venn) diagram showing the groups in the area and their relation to each other. In this diagram, check where the committee is placed. Venn diagrams use circles to represent people, groups and institutions. People arrange these to show the degree of real overlap. Variations include drawing lines of different thickness to show the strength of the relationship, or representing strength by distance from the centre. In general, participatory diagramming can be used to generate joint experience. Participants using their collective knowledge and experience can also make pie diagrams and bar charts. These can help those who monitor and participate examine their institutions and the perceived effect of service providers (Boot et al., 1994).

Example of a Venn diagram



5 Action based on monitoring information

Examples of actions in response to monitoring information include:

- ◆ Qualitative monitoring: A project learned that many of the management committees were not operating. They asked: *How are committees really being formed? How could this be improved?* Staff examined a few successful and unsuccessful committees very closely. They talked with the field workers, users, local leaders, committee members. They sat in on meetings and observed how the committees operated. They concluded that open elections were not the best way to compose committees in the project area.
- ◆ Because the water system was not being repaired promptly, the local government in one town in Uganda decided to disband its own committees and to re-form them.
- ◆ In one project in India it was decided not to create formal committees where communities are badly divided or experience other problems. The project worked with existing informal groups in such communities.

Programmes should organize ways for field workers to discuss problems they encounter in helping to set up committees. Organizations and individuals active in the communities should also have the opportunity to comment on the selection of members.

6 Training or orientation needed

The staff who help form committees should know how this will be monitored beforehand. They usually have good suggestions about how to set up and monitor committees.

Remarks

Committees can, of course, be set up in different ways, for example, through election by all adults in the neighbourhood, through consulting all the active local groups or through consulting the formal and informal leaders. If elections are held, it is crucial to prepare community thinking and to describe the work of the committee carefully before the election. Just asking the community to elect 'honest and respected' people during one afternoon meeting does not usually result in the best selection, although unfortunately many projects still do this.

1 Problem issue

Different types of committees are activated in water and sanitation programmes. Some have many responsibilities; others have only a few. How well all these committees function is a major concern in many countries.

2 Indicators: examples

Example 1: Water and Sanitation Committee (adapted from project in East Asia)

Representative	- All major groups in the community are represented by someone on the committee. - Users do not complain about the committee.
Works together	- Decisions are made unanimously by all committee members.
Implements	- Decisions are carried out. - Funds are not released for each phase of the local programme until the committee has carried out the agreed steps in an implementation plan.
Finance	- Committee finance is clear and transparent as shown by: - users can state roughly how much money is in the committee's bank account - all money received and paid out is accounted for in the books following agreed rules - there are receipts for all financial transactions.
Gender	- At least half the committee members are women who are actively involved in key decisions about technology selection, means and amount of cost recovery, timing of payments.

Example 2: Water Committee (adapted from project in West Africa)

Formation	- There are clear and known guidelines for selecting members, reappointing members and disbanding committees.
Capacity	- Committee members are trained before construction. - Committees have sufficient knowledge and skills to operate as shown by members who: (a) can describe accurately how to get spares and carry out repairs, (b) can explain rules of bookkeeping and accounting for money received and expended, (c) can describe accurately how tariffs are set.
Recognized	- Committees are registered and recognized by the government.
Finance	- The committee pays for water. - Users state that all financial decisions are agreed by all members. - Users state that water tariff was set by committee in consultation with users.
Gender	- 1 in 2 committee members is a woman.
O&M	- All non-functioning water points are brought into service in less than two weeks.

③ Who collects or checks?

Field workers and local government are usually involved in monitoring the functioning of committees. Sometimes they are not sufficiently interested to monitor or to take action when there are problems. Therefore, extra checks are useful.

Extra checks

The users have a strong interest in the functioning of committees. To involve them in monitoring, they need to be oriented about where and how to refer complaints. This is an important extra check in monitoring. They could refer complaints to local government or district administrators, to the project fieldwork supervisor or project office, to an NGO group that has special responsibility for the functioning of committees.

Fieldwork supervisors can also make spot checks of committees, for example, one in five committees. Bookkeepers and local auditors can make spot checks of committee finance.

④ Monitoring plan

Method 1

1. Field workers are trained and use a checklist to review the functioning of committees.
2. Field supervisors use the same checklist for spot checks of committees.
3. Surprise audits are organized of local government and committees, for example, one in ten committees is checked each year. Sometimes just the knowledge that a surprise audit can occur will help committees be more careful with their finances.

λ Example

A water association member in Uganda suggested a four-step financial check of water committees and local finance:

Step 1: Check the books and receipts held by the treasurer.

Step 2: Check the amount in the account book against the amount deposited in the bank.

Step 3: Check the amount collected at the water point(s) as reported by the caretaker(s) for the day before.

Step 4: If the water point is metered, the amount of money collected can be compared with the amount of water used that day as shown on the meter.

Method 2

A public complaints system: Users are informed by programme agency as to where and to whom they can submit complaints. Users decide how to transmit the report in the most efficient way taking into account local conditions (for example, through a bus driver, by telephone, by postcard). Users are also told where they can send a second complaint if there is no reaction to the first one. The agency must set up procedures about who handles these complaints and how. It is usually best for those handling complaints to visit the site of the complaint, not just to discuss it in an office.

Method 3

Projects can undertake a qualitative study. Qualitative monitoring can uncover the reasons behind the quantitative data – why something is happening. Qualitative methods are ways of finding out what people do, know, think and experience by using one of four collection methods: open-ended interviews, observation, documents, participatory techniques. Here is an example:

λ Example

The project knew from quantitative data that many of the local management committees were not operating. Questions asked were: *Why are they failing? What should the project do to improve the situation?*

The staff examined in detail a few successful and unsuccessful committees. They asked users and committee members how the committee had been formed. They talked with the field workers, users, local leaders, committee members about how the committee worked. They sat in on meetings and observed how the committees operated. They examined financial documents, bills, receipts and reports of past meetings.

⑤ Action based on monitoring information

The committees and local government should know who acts and what action can be expected if there are problems with the functioning of a committee. The actions could include: providing more training, closer supervision by field workers, local government and project disband the committee, user group appoints new committee members, committee members who took money are taken to court.

⑥ Training or orientation needed

Careful training or orientation is essential for local government and committee members. Discussions are needed with user groups about their rights and how to complain. This can be carried out when committees are formed or during other orientation such as for O&M and/or hygiene.

Remarks

In general, committees will not continue to function intensively over many years. It may be useful to develop indicators which reflect the minimum level of functioning required to maintain the basic water and sanitation services.

① Problem issue

Many programmes, even those which are demand-based, have a poverty focus. However, often there are complaints that more powerful households appropriate for themselves the benefits that are intended for the poor.

This example is about monitoring the selection of poor households which may be involved in special programmes or may receive extra subsidies.

② Indicators: examples

A clear definition of poor or below poverty-line households is needed. This can be defined through focus group discussions with community members or by consulting with field workers and water/sanitation committee members in communities. The definitions will vary somewhat reflecting local conditions. Below is an example of a locally relevant indicator.

All households selected for a subsidy must fit within the following criteria:

from a project in Bangladesh:

- family lives in one-room dwelling.

from a project in Sri Lanka (M. Boot, 1993):

- household where cooking fire is on the ground level.

from a project in India (B.K. Kurup et al., 1996):

- households have thatched roofs or no modern conveniences such as tape player, television, refrigerator
- households own less than 1/2-hectare of land
- households report an income below the official poverty line
- men and women in households must express an interest in entering the programme and willingness to pay the first instalment for a latrine
- households do not receive remittances from relatives working in another country
- priority is given to female-headed households, households with no able-bodied men and households that have a handicapped member
- householders must express interest and willingness to pay/provide labour/materials.

③ Who collects or checks?

The collection of information and selection of households can be done by community members, including water/sanitation committees and community-based organizations.

Cross checking is crucial in selecting households for a subsidized programme. This can be done by a combination of project field workers, local government, community members.

4 Monitoring plan

A local group is composed of committee members and respected informal leaders who are familiar with the area. They agree to the indicator and criteria and have an opportunity to adjust the criteria if there are special local circumstances. They visit houses to identify those below the poverty line and also to inform the households about the programme. They must agree unanimously on the households selected.

It is very important to cross check the selection process and to deal with complaints. The extra, independent checking helps the committees to remain objective and also protects them from political pressure. The extra checks could include:

- ◆ One in five households selected are visited by the field worker.
- ◆ The names and addresses of all beneficiary households are posted for one month in **public places** (the local government office, health clinic and schools) so that anyone in the community can complain. This is an effective way of monitoring. It improves transparency and the image of the programme.
- ◆ Every complaint must be followed up by the field worker and, when needed, by senior project staff. In each case the household against which there is a complaint must be visited to double check that the criteria are fulfilled. The number of complaints usually decreases rapidly when communities see that the programme is trying to be honest.

5 Action based on monitoring information

Households can be added or removed from the list, but only with the approval of all groups (the committee that does the selection, the field worker, staff member, local government).

The local government or management committees should pass a resolution approving the final list of households.

If agreement on the list of poor households cannot be reached within the community, then the project cannot continue in that community. Work continues when all parties finally agree. However, experience shows that it is seldom necessary to stop programmes.

Because the criteria are generally agreed, and visits are made to the households if there is a difference of opinion, and names are publicly posted, it is possible to avoid even strong political pressure.

⑥ Training or orientation needed

Orientation is needed for local government personnel, water and sanitation committees. The group doing the selection needs on-the-job training from the field worker. It is sometimes helpful for them to visit nearby communities to see how this process has been successfully implemented. The field workers must be carefully briefed.

Remarks

For decisions about who should benefit or receive resources, it is very useful to have the community at large participate in the monitoring. This provides a good example of community participation in selection of beneficiaries and in monitoring. The names of all prospective beneficiaries are posted so that anyone can complain.

Recommended literature

Kurup, B.K. et al., (1996). *The community-managed sanitation programme in Kerala: learning from experience*. (Project and programme papers; no. 4E). Delft, The Netherlands, IRC International Water and Sanitation Centre.

Chapter 3 Agency, District, NGO Levels: Introduction

Among the many issues that can be selected, this section provides four examples of monitoring:

- ◆ **Programme management**
- ◆ **Policies on equity, gender, demand**
- ◆ **Agency staff and supervision**
- ◆ **Staff contacts with community**

① Problem issue⁴

Four aspects of management are examined here: efficiency, facilitating management style, autonomy and flexibility. Other Fact Sheets which are relevant for monitoring institutional and programme management include: policy support, agency staff and finance.

② Indicators: examples

Examples of various indicators that may be helpful in monitoring agency management are:

Efficiency	- The time for implementation (tendering, construction...) does not exceed planned time by more than 10%. - Less than X administrative steps or approvals are needed for release of funds, where the number ('X') is agreed to and known by senior staff. - Ratio of water sold per staff member: More than 80 thousand cubic metres of water are sold per year for each staff member. - Staff costs are not more than X% (for example, 50%) of the operating costs (excluding depreciation and debt payments). - Water loss (not billed, not paid): Unaccounted-for-water is less than 20% of (net) water delivered to distribution system.
Facilitating style	- Management staff have a schedule which they follow for field visits and spot checking in communities (for example, a travel schedule for at least two days a month). - Management staff listen to and use information from the field as shown by regularity of field visits, comments made on staff reports, regularity of staff meetings, ability to admit and discuss mistakes/problems as well as strengths. - Management helps solve problems as shown by examples of bottlenecks which have been cleared and existence of plans or strategies to solve long-standing problems. - Women and poor people take on new roles in decision making and management. - Strategies aim at balanced division of work, contributions and benefits between men/women, rich/poor.
Autonomy	- National staff can make and alter work plans and budget line items at least once a year following agreed procedures. - Discretionary funds are available rapidly so that needed repairs are not delayed by lack of funds. - For projects, the total fees for expatriate staff/expatriate consultants are less than X% (for example, 5%) of the annual project expenditure. - Political interference: The programme has rules for selecting the areas for new schemes, site selection of water points, determining water rights and tariffs for different categories of users. These rules and procedures include consultation with different ethnic groups, rich/poor, men/women. The programme follows its own rules and procedures.
Flexibility	- Management is flexible, responding to new challenges and opportunities by altering planning or way of operating. - Technology choice: A range of technical options are available and are selected by communities/users with full knowledge of the O&M costs and requirements. - Socio-economic and technical teams prepare a joint programme and have integrated procedures and a joint manual.

⁴ adapted from D. Narayan (1993) and G. Yepes (1994)

③ Who collects or checks?

It is very helpful if senior staff, politicians, donors approve and encourage the monitoring of agency management. Information collection can be done by a range of groups such as community leaders, agency staff themselves, outside groups such as NGOs or consultants. Collection might best be done by a combination of these. It is, of course, essential that the people who organize the monitoring are dedicated to having effective management. Furthermore, it should not only be the managers who are involved in monitoring their own work. Put another way, if the agency is not very effective or has major problems, it may not be able to monitor its own efficiency, management style and flexibility.

④ Monitoring plan

Different ways of monitoring the indicators can be considered such as:

- ◆ **Periodic reports with key performance indicators:** Indicators are agreed upon and dealt with clearly in each periodic report showing, for example, field visits, changes recommended in work plans and budgets, time to make major repairs, bottlenecks or problems that have arisen.
- ◆ **Special workshops** can be organized to monitor key indicators. An example is shown below.
- ◆ **Special studies** may be undertaken, for example to investigate quantifiable issues such as the number of administrative steps and approvals needed for release of funds.

λ Example 1: Participatory assessment of institutional factors at the district level

Participants: All available staff (technical and social, male and female) who are involved in selected communities, plus male and female villager e.g. members of the water and sanitation committees or village development committees.

Methods which could be used:

- ◆ Sorting cards with different statements
- ◆ Pocket voting
- ◆ Ranking on paper
- ◆ Diagramming

Plan: Prepare a set of three to six statements about an issue, showing different aspects or levels of compliance. Here is an example. Some blank cards should be available for people who wish to write their own statements.

0	No interdisciplinary team approach was used
---	---

1	Social and technical specialists worked in parallel
---	---

2	Social and technical teams coordinated their activities and plans
---	---

3	Social and technical teams prepared and implemented one programme and had an integrated procedure or manual
---	---

- adapted from R. Dayal et al. (1998)

In this example, a score is given to each card. While not necessary for local monitoring purposes, such scores are useful for comparing situations, for participatory evaluations.

One set of cards is distributed to each participant or to each homogeneous group of participants. Ask them to read through each card and select (or sort or rank) the one that fits the programme best. Ask:

- *With which statement do you most agree?*
- *Which statement best describes the policy services in the project under study?*
- *Write on the card if you are a member of the socio-economic staff, technical staff, community member, member of an NGO, etc. Do not write your name.*

- adapted from R. Dayal et al. (1998)

λ Example 2: Diagramming

Participatory diagramming can be used to generate joint experience. Participants using their collective knowledge and experience can make systematic drawings such as pie diagrams, bar charts. Venn diagrams use circles to represent people, groups and institutions. People arrange these to show the degree of real overlap. Variations include drawing lines of different thicknesses to show the strength of the relationship or influence. These drawings can help people examine their institutions and the perceived effect of service providers (M. Boot, 1993).

5 Action based on monitoring information

Agency management usually has to balance many different interests, both within and outside the agency. This can make it difficult to take action on certain issues. For example, it can be very difficult to eliminate political pressure in area and site selection. Acting on management issues is especially difficult in systems subject to corruption or based on personal patronage.

Recommended literature

- Narayan, D. (1993) *Participatory evaluation: tools for managing change in water and sanitation*. (Technical paper 207). Washington, DC, USA, World Bank.
- Yepes, G and Dianderas, A. (1994) *Performance indicators: water and sanitation utilities. Set 2: financial indicators and overview of service rates*. Washington DC, USA, World Bank.
- Dayal, R., Wijk, C. van, and Mukherjee, N. (1998) *Participation, gender and demand responsiveness: making the links with impact and sustainability of water supply and sanitation investments*. New Delhi, India, UNDP-World Bank Water and Sanitation Program.

1 Problem issue

To be effective, programmes require a supportive policy environment. Key questions about sector and agency policies include: *Do appropriate policies exist? Are they implemented?*

Among the many possible policies, five issues are shown here: sustainability, equity, gender, demand-responsiveness, community management.

This Fact Sheet is adapted from the paper by R. Dayal et al. (1998).

2 Indicators: examples

Policies and strategies for...

Sustainability	- Policies aim at services that continue to function adequately and are used by more than 90% of the population, including the poor.
Demand-responsive services	- Policies provide users and communities with a range of technologies and financing options. Policies are flexible allowing local adjustments; and users are informed so that they can make realistic choices.
Equity	- Policies set targets for (a) sufficient amounts of safe water used by all people for hygiene and domestic uses and (b) universal use of safe sanitation facilities. - Financing strategies are organized so that the poor pay less than the non-poor. - The population benefiting from the water and sanitation services is identified and known.
Gender-sensitivity	- Policy and strategies aim at a balanced division of costs and benefits between women and men, both rich and poor, in project implementation, O&M, management, use.
Cost-sharing and management	- Communities and users are expected to: - manage contributions before and during construction - own and manage facilities after construction, carrying out/paying for all repairs.

3 Who collects or checks?

Policy and its implementation is best monitored by various partners working together, such as NGOs, semi-governmental agencies, universities, government.

4 Monitoring plan

To check the existence of policy, one has only to ask. To monitor the implementation of policy, information can be collected directly by visiting many locations to check how policy is implemented. Another, usually less costly and more participatory approach, is to ask those who are involved in the programme at different levels how **they see** the implementation of key policies. An example of a participatory workshop to assess policy implementation is shown at the end of this Fact Sheet.

5 Action based on monitoring information

The results of such a participatory exercise can be reported to the national level as part of the process of policy formulation or reformulation.

6 Training or orientation needed

A skilled facilitator is required for the workshop.

λ Example

The following is an example (R. Dayal et al., 1998) of a plan for participatory monitoring of policy that has been applied at district and regional levels.

PARTICIPATORY LEARNING ASSESSMENT ON INSTITUTIONAL POLICY

Outline for one-day meeting

Participants: Staff (technical and social, male and female) involved in the selected **communities at the time of planning and installing the service**, plus male and female villagers/neighbourhood leaders who were involved in the service establishment, such as members of the then water and sanitation committees or village development committees.

Materials: Cards are made in advance showing different policy and strategy options for each topic. On the next page are examples showing four different cards for each policy issue.

Method:

- a. Give the cards as shown in the tables on the next page. Do not provide other details, except the information noted with the cards above (Add some empty cards in case someone wants to give a different answer).
- b. Each person is asked to sort her/his cards on a particular policy such as sustained services from the lowest to the highest order. Each person is to mark the card with the project approach their agency used at the time of establishing the services in the selected

communities. Ask where they would put this programme with respect to its sector policy, and where they would put the programme with regard to its targets on coverage and use.

- c. Ask them also to mark if they are technical, social or village and male/female. Repeat for each indicator.
- d. Sort each pile on degree of consensus and agree with the participants on the overall scores in scoring tables. In this way the participants are involved in the process of analysis.

It is helpful for the facilitator to be alert to capture any special features of the group dynamics between the different categories of participants. There are several possible alternatives to sorting cards, such as using rating scales or asking participants to prepare their own cards. It may be helpful to check the validity of the responses to this activity by discussing the issues with a few participants on an individual basis.

Sustainability	Equity
Policies focus on construction targets	The policies set targets of % population covered.
Policies aim at services that function adequately**.	The policies set targets for safe water for drinking and use of safe sanitation facilities by each household.
Policies aim at services that are maintained and function adequately** and are used by a specified % of the population	The policies set targets for sufficient amounts of safe water used by all people for hygiene and domestic uses and universal use of safe sanitation facilities. Poor do not pay more than non-poor for water.
Policies aim at services that continue to be maintained, function adequately** and are used by more than 90% of the population, including the poor	As above plus ... Financing strategies are organized so that the poor pay less than non-poor. Achievement of targets is monitored and programmes were adjusted if required.

Gender-sensitive and gender-balanced	Demand-responsive services
Women, gender and access for the poor were not mentioned in policy, objectives and strategies	Agency determines technology, service level and project communities.
Policy and strategy documents put women and the poor as passive beneficiaries or target groups for separate health education programmes	Communities and users decide to join standard programme with standard contributions, or to not join.
Special activities/programmes encourage women and poor in new roles in decision making, management, and ensure access to service	Communities and users could choose between several technology and service options without special provisions for affordability to poor.

Policy, strategies and performance aim at a balanced division of burdens and benefits between women and men, both rich and poor, in project implementation, O&M, management, use	Policy and strategy provides a range of technologies. Management and financing options are flexible, open to local adjustments and inform users so that they can make realistic choices.
--	--

**** For water services: in terms of water quantity, quality, regularity and predictability and meeting local basic water needs for domestic use as minimum requirements.**

For sanitation services: all men, women and children in all households can access and use improved sanitation in a hygienic manner.



1 Problem issue

Typical problems and concerns related to staff within agencies, district and other intermediate levels of government include:

- ◆ Sufficient staff with appropriate qualifications or experience are not in place.
- ◆ Too many personnel divide work in some functions, resulting in long lines of communication and inefficiency.
- ◆ Staff are not able or will not carry out their jobs as intended, are unaware of policy or are unable to implement policy with flexibility, ensuring relevance to local situations.
- ◆ An inadequate supervisory structure means that field activities cannot be supervised or followed up.

2 Indicators: examples

There are many possible indicators to choose from depending on the situation. Examples are:

Basic conditions	- In place: Staff is in place according to agreed plans. - Project activity sequence: activities are carried out following an agreed sequence. Operators and community staff carry out work according to their agreed work plans. - Training: Staff is appropriately trained (see Fact Sheet on training). - Payment: Staff is paid on time and sufficiently for the job compared to other similar jobs in the same region.
Contacts with consumers and communities	- Number and timing of contacts with communities are sufficient: - for field staff to carry out intended tasks; - for supervisory staff to monitor and revisit a community, if needed, for follow-up action. - Knowledge: Staff know policy and strategies with respect to finance, cost recovery, poverty/equity, gender, participation, demand. They can explain specific strategies used to implement these policies and to carry these strategies out. - Communication: Field staff communicates with communities as intended using methods and channels that provide information to rich/poor, men/women, all ethnic groups. They involve these groups, or representatives selected by these groups, in decision making.
Supervision, facilitation	- Facilitation: Supervisors facilitate the staff as shown by helping to solve problems, clearing bottlenecks and stimulating relevant learning and capacity building (training, exchange visits, etc.). - There are agreed plans for supervision and field visits that involve two-way communication with field staff and with community members (rich and poor, men and women). - Supervisors coordinate with other groups such as district authorities, local government, relevant NGOs.
Other	- Gender: More than X% (for example, 1 in 5) of the management positions are held by women. - Gender, Equity: All staff (including technical and field teams) can describe or show gender and poverty-sensitive approaches (things which they do) in their work. - Efficiency: The number of reports required by higher levels is judged as not too many by the staff. - Transport: Vehicle operation is controlled and reporting is acted on.

③ Who collects or checks?

It will vary depending on the situation; for example, supervisory staff, representatives of staff unions, representatives of communities. It is very important that the people collecting the information have an interest in improving the situation and in reporting accurately.

④ Monitoring plan

Much of the information can be found by asking staff and reviewing records. Qualitative issues and sensitive issues can perhaps be measured more validly through participatory means such as sorting exercises. These might include issues about quality of communication, payment on time, number of reports required, and quality of staff contacts with communities.

To assess the knowledge of field staff, it may be useful to ask a group (for example, during a staff meeting) to list or write the hygiene behaviours that they emphasize. For each of these, the field staff should be able to give a simple and clear explanation of the behaviour and why each is important for health.

⑤ Action based on monitoring information

Monitoring is easier than the action. For example, it may be easily observed that the supervisory structure is not adequate. However, it may be difficult to change the supervisory structure.

Because this information is often not acted on, it may be useful to build in some referrals. Thus, staff, community members or leaders should have some place to refer problems and issues.

λ Example 1

The following performance indicators and examples are derived from G. Yepes (1993). Focusing more on efficiency and cost control, this example provides a different approach to indicators than the Fact Sheet on Agency Policy.

These indicators might be useful for assessing staff productivity in piped water schemes.

Staff costs are less than X per cent (for example 50%) of the total operating costs (excluding depreciation and debt payments).

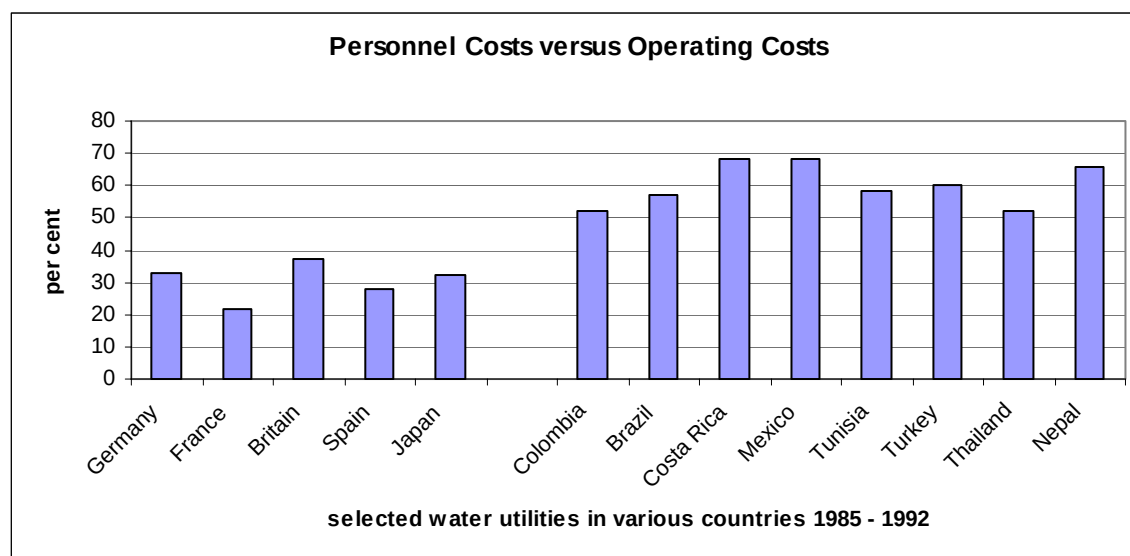
Different ways of describing staff productivity are:

- Personnel costs per cubic metre sold or thousands of cubic metres of water sold per staff member.
- Number of staff per 100 kilometers of pipeline.
- Number of households per worker.
- Number of household connections per O&M staff member.

Example for thousands of cubic metres of water sold per year per staff member

(Data taken from various years, 1987 through 1992)

Up to 80,000 cubic metres sold per year per staff member	Togo; Bursa, Turkey; Monterrey, Mexico; Brazil (average)
80 to 150,000 cubic metres sold per year per staff member	Bogota, Colombia; Brussels, Belgium; Macao
More than 150 cubic metres sold per year per staff member	Santiago, Chile; USA average; Canada average; Paris, suburb



- G. Yepes (1994), p. 2 and 10

λ Example 2

Prepared for NGOs working in Ethiopia, this is a participatory assessment where a representative team first agrees on the issues/indicators to be checked and then hold interviews and meetings with respondents who have received copies of the evaluation form in advance. During and after these meetings, recommendations are formulated. This excerpt gives an example of how human resources were assessed in one NGO.

Rating Scale	
Needs urgent attention and improvement	ζ
Needs attention	ζ ζ
Needs improvement on fairly wide scale, but not major or urgent	ζ ζ ζ
Needs improvement in limited aspects, but not major or urgent	ζ ζ ζ ζ
Room for some improvement	ζ ζ ζ ζ ζ
No need for immediate improvement	ζ ζ ζ ζ ζ ζ

HUMAN RESOURCES: example of completed assessment	
1. Human resources development planning	ζ
- Human resources development planning takes place.	ζ ζ
- Opportunities exist for men and women (equally) to apply new skills in the work environment.	ζ ζ ζ
- Evaluations and promotions are based on performance and are equitable.	ζ ζ ζ ζ
2. Staff roles	ζ ζ ζ ζ ζ

- Job descriptions are well-defined, are respected, are updated and reflect the actual situation. - Capacity of staff and the mission of the NGO match each other.	ζ ζ ζ ζ ζ ζ
3. Work organization - Staff meetings are regularly scheduled. - Staff participates in management decisions. - Teamwork is encouraged. - Information is shared easily among all staff members. - Staff members are encouraged to take initiatives and to be self-motivated.	ζ ζ ζ ζ ζ ζ ζ ζ ζ ζ ζ ζ ζ ζ ζ ζ
4. Diversity issues - The diversity of constituents is reflected in the composition of the board and the composition of the staff.	ζ ζ ζ
5. Supervisory practices - Supervision occurs on a regular basis and includes field visits. - Grievance and conflict resolution procedures are in place and practiced.	ζ ζ ζ ζ ζ ζ ζ
6. Salaries and benefits - Salaries and benefits are clearly structured and are competitive.	ζ ζ ζ ζ

- adapted from W. Booth et al. (1996)

① Problem issue

Effective programme communication with communities is crucial. Various groups can be involved such as government agencies, NGOs, public health institutions, private sector consultants and contractors. The field staff sometimes live in the communities; other staff live outside but make periodic visits. During these visits they might deal with mobilization, construction, O&M. The following are some issues that could be monitored.

- ◆ Are visits made as scheduled?
- ◆ Do staff perform very quick 'hit-and-run' visits, rather than spending sufficient time in each community, to see some facilities, households and talk with men and women?
- ◆ Do staff only inspect the on-going construction or make speeches? Do they listen, ask and observe?
- ◆ Do staff pay sufficient attention to 'software' issues such as community mobilization, finance, hygiene behaviours and committee functioning?

② Indicators: examples

Staff: basic level	- Staff visit communities according to an agreed schedule. - During visits, staff focus on agreed set of issues/indicators which include both technical and non-technical aspects (community organization, hygiene, finance, etc). - During each community visit, staff examine one facility and talk with users if they are available. - All staff always try to carry out promises or commitments which they have made to community people. - The number and timing of contacts with communities are planned and are sufficient for field staff and supervisory staff to carry out agreed work. It is possible to revisit a community, if needed, for follow-up action.
Staff: qualitative indicators	- Staff know policy and strategies with respect to finance, cost recovery, poverty/equity, gender, participation, demand. They can explain specific strategies used to implement these policies and carry these strategies out. - Field staff communicate with communities as intended using methods and channels that provide information to and elicit information from rich/poor, men/women, all ethnic groups. They involve these groups, or representatives selected by these groups, in decision making.
Agency policy and plans	- Agency has strategy which is monitored for (a) number, frequency, purpose/plan of staff contacts with communities and (b) qualitative aspects shown above.

③ Who collects or checks?

The standard approach is that field workers complete notes or forms about the community visits which are used to varying extents by their supervisors. See examples at the end of this Fact Sheet.

Extra checks are needed about the way programme staff work in communities, usually through supervisory visits or through spot checks by senior staff. In addition, special studies can be useful with representatives of field staff, agencies, donors, and professional NGOs.

④ Monitoring plan

Method 1

1. Forms are often used to collect information about the activities or the stage of development of the programme in a community. These may include information about the timing, issues agreed upon and commitments made, costs, or follow-up needed. Planning is needed to ensure not only that the forms are used, but that they are followed up subsequently. The information from these forms (if used) is usually combined with information about the physical progress of activities in each community.
2. Staff meetings are useful. Field staff can be asked to follow up on particular issues (use of latrines, how tariffs are being set, and so on), and can be asked to report back for each community during the staff meetings. This helps ensure that visits are made and helps the staff focus on special topics that might otherwise have been overlooked. Staff meetings can also serve as opportunities where field workers can raise problems or pose questions about their work in the communities. Often the field workers need help and their jobs are difficult! Care must be taken, however, that the meetings are conducted in an atmosphere of candid and non-threatening sharing.
3. Supervisors and senior staff should visit at least some communities under each field work team or construction team. During these spot checks, it might be useful to bring the forms that have been completed by the field workers for comparison. Questions such as the following can be posed: *"When did someone from the project staff last visit? Who visited and for how long? What did they do or say?"*
4. It can also be useful for the supervisor to ask a field worker to demonstrate their work, or to demonstrate a participatory activity in a community. Things to observe include the way field workers communicate (two-way, good listening, talking with women as well as men) and the way they explain issues (simple, complete and organized explanations). Special questions can explore the skills and understanding of community members or committees, for example, *"How did you decide on the level of tariffs? How do you keep accounts?"* Women can be asked what they know about the programme and did they have a voice in deciding issues such as the choice of technology, tariffs, and opening times of the water point, and so on.

Method 2

It can be extremely useful to involve teams of representatives (including field staff) from agencies, local government and professional NGOs in participatory monitoring activities of selected communities. Staff contacts and agency linkages are among the important issues that can be

investigated in such activities, which may take the form of studies or participatory evaluations. These activities provide a large amount of valid qualitative data that can be fed into policy formulation.

⑤ Action based on monitoring information

Since effective contacts with the community are crucial, it is important to follow up quickly with the necessary action. Such actions might include:

- ◆ reorganizing the basic programme implementation and training procedures
- ◆ providing training for field workers
- ◆ reorganizing travel schedules so that there is more time available for work in each community or more than one community can be visited in each trip
- ◆ improving transport and mobility of field workers
- ◆ reorganizing schedules and work of supervisors so that they can provide better supervision

λ Example

One Danida-supported project found through its monitoring that the contacts with communities were not regular and tended to focus on only construction aspects. Thus, it was decided to reorganize the supervisor's work, giving each supervisor responsibility for all aspects of programme development in two to four districts to enable closer follow-up and return visits

(K. Shordt, personal communication).

⑥ Training or orientation needed

Project staff need practice in how to fill out the forms, and how to supervise and monitor in a way that is positive and effective from the field workers' point of view.

λ Examples of Reporting Forms for Field Visits

Reporting Sheet for Community Visits by Field Workers

Name of area & village:

Date:

Purpose of meeting (include number attending meeting):

OR

Purpose of visit:

Did the community, promoters or committees take any action since your last visit?

Did the committee carry out its own earlier decisions?

Decisions taken and actions planned by group:

Follow-up action promised or required by you or by project:

Your name:

Water programme monitoring sheet:

Sub-Country:

Village:

Type of water source:

Identification number:

Stage	Date started	Date completed	Comments, problems, follow-up needed
Stage 2			
Stage 3			
Stage 4			

Chapter 4 Community and Agency: Introduction

This section focuses on the monitoring of selected issues which are equally relevant to communities, agencies, programmes and projects. There is a Fact Sheet about each of the following:

- ◆ **Training**
- ◆ **Gender**
- ◆ **Finance**
 - Estimating costs of water
 - Water tariffs
 - Billing, collection and cost recovery
 - Transparency, honesty and efficiency in finance

① Problem issue

Training is usually monitored for the number of people attending and completing various courses, sometimes through written assessments by participants at the end of the course or workshop. This tends to overlook effectiveness: **Is the training used?** It also overlooks short events that may be called **orientations**, that are important in programme management.

② Indicators: examples

General indicator

Training (and orientation) will have the following characteristics:

- **Timely with high coverage:** provided to all individuals (men and women, new or transferred staff) at the right time to support programme activities.
- **Relevant and useful:** Training has relevant content that is subsequently utilized.
- With **participatory methodologies** that allow for group work, practicing new skills and/or development of concrete products during the training events.
- **Modified and improved** in response to monitoring information.
- **Used:** Both men and women can demonstrate skills and indicate where/when these skills are practiced in each of these: meetings, maintenance/repairs, budgets and accounting, improved hygiene, use of facilities, monitoring and reporting functionality.

Two specific examples of indicators and criteria are shown below.

Specific example: Water and sanitation committees will be trained as follows:

Timely & high coverage	- All committees are trained within six months before construction.
Turnover	- At least one-half of the trained committee members stay in place for two years.
Relevance & use	- Committee members, both women and men, can describe important aspects of training (as defined by project staff) and demonstrate sufficient knowledge and skills by: (a) describing accurately how to get spares and repairs done, b) explaining rules of bookkeeping and showing accounts/bank statements, (c) describing how tariffs are set. - Committee members, both men and women, can show how at least two of these learnings were used in their communities.
Methodology	- Training of water/sanitation committees includes practice in: - Working together as a group - Joint preparation of a work plan.
Improved	- Trainers can give an example of how the training programme was improved in response to the experience (or formal monitoring) within the programme.

Specific example: Agency operation and maintenance staff

Timely & high coverage	- All O&M staff are in place and trained within two months of commissioning of water schemes.
Turnover	- All new staff are trained within three months of taking over a new job.
Relevance	- Training follows agreed procedures and job descriptions as set down in O&M manual or job descriptions for the water scheme.
Use	- O&M operators can describe important aspects of training (as defined by project staff) and can demonstrate correct maintenance of equipment or procedures for repairs.
Methodology	- Training includes actual practice, for example, in: maintenance, making a repair, and financial procedures.
Improved	- Trainers can give an example of how the training programme was improved in response to the experience (or formal monitoring) within the programme.

③ Who collects or checks?

It is important to find people who are interested in monitoring and improving training. The trainees themselves can assess the contents and methodology at the end of the training programme. The trainers likewise must be extremely interested in and actively engaged in monitoring. To do this, they need to be able to travel and visit some of the past trainees. Staff involved in community organization may be useful in monitoring the results of training of community members and of staff active in the community. Fieldwork supervisors may be interested in monitoring the results of field worker training.

④ Monitoring plan

Timely & high coverage	- Compare estimates of numbers to be trained with work plan and reports. Tool: review records. - In communities, social maps can be used to identify who has been trained.
Turnover	- Check the records of transfers or ask field supervisors and staff.
Relevance and use	- Trainers or field supervisors ask (group discussions) those who received training/orientation the following questions: - What was the training about? What new things did you learn? Check answers against the expected answers and course contents. - How did you use the training? Can you give specific examples? Can you show something that changed as a result of the training? - Can you demonstrate a skill you have acquired that relates to

Continued

	physical work such as construction, bookkeeping, repairs, maintenance around standpost?
	- Ask the managers of the staff who were trained if they can identify any specific results from the training. - Follow-up study, one to two years after training provides clear information about the usefulness of the training. This is most relevant for assessing the use and outcomes of longer-term training events or several linked short-term trainings (training-supervision-refresher training).
Methodology	- Supervisors of trainers (or of personnel being trained) can: - Review the plan of the training courses/workshops - Ask trainees what they did, made or prepared during the training.
Improved	- Senior managers can ask trainers for examples of how the training was changed or improved over time and why.

⑤ Action based on monitoring information

Action should improve the training — modifying its timing, identification of trainees, curriculum, content, methods, and so on. Sometimes, even when it is known that the training/orientation should be improved, little action is taken. However if senior managers show interest in the results of monitoring, the quality of training is likely to improve.

Small qualitative studies of training and orientation activities can be undertaken by independent groups to help improve training. Such studies can also point out management obstacles that make improvement difficult. For example, one study showed that the quality of the trainers (and how they are hired and identified) needed to be changed.

Feedback from training assessments might show that the job-related training cannot be more effective because of the nature of the work or jobs. For example, in one African country, more than 23 tasks are assigned (top-down) to voluntary village water committees. It is unlikely that most committees are able to (or are willing to) complete these assigned tasks in their entirety. Therefore the impact of the training is limited by the nature of the work that has been assigned. In such cases the logical action would be to simplify the job tasks and make the total package more flexible.

⑥ Training or orientation needed

The training of trainers is important and should include practice in monitoring.

Note

If the expectations of training are too high or unrealistic, monitoring will always show shortfalls. There is some literature and research from other sectors dealing with the problem of measuring short-

term training, but which does not seem conclusive. Accordingly, expectations from isolated training events, lasting a few weeks at most, should not be too ambitious.

λ **Example of scoring sheet for training assessment in a community**

Topics in which training received → ----- Person(s) who practice training ↓	Organize and conduct meetings and assemblies	Understand and manage operation, maintenance and repair	Make and/or understand budgets, accounts and accountability	Understand and practice improved hygiene	Monitor & control effective functioning and use
No training practiced	0	0	0	0	0
Men can demonstrate skills ¹ and indicate where/when practiced	1	1	1	2	1
Women can demonstrate skills ¹ and indicate where/when practiced	1	2	1	1	1

1 Indicative skills for each subject area would be defined for each situation

- R. Dayal et al. (1998)

① Problem issue

Gender relates to roles and responsibilities of men and women. It relates to the different work they have, their different needs, their different access to resources and the different areas in which they can make decisions and exercise control over resources and benefits. A very important component of gender is that it also recognises that not all men or all women are the same. A gender approach pays attention to status (rich and poor men, rich and poor women) and to culture (different language and ethnic groups). Projects should address the demands of these various groups, recognising their different needs and possibilities. Gender issues are not fixed. Just as societies change, gender issues can change over time.

The gender-based approach is distinct in that it focuses on women and men, rather than considering women in isolation

Institute of Development Studies, University of Sussex

Programmes ... should guard against directing messages only to women or placing the burden of improved sanitation primarily upon women

Sanitation promotion pages, Working Group on Promotion of Sanitation,
Water Supply and Sanitation Collaborative Council, 1997

Programmes that pay no attention to gender will suffer from unexpected problems – or fail to be sustained. Here are some examples showing how projects in different settings have dealt with gender issues:

The issue	The action
New hygiene practices	So that new hygiene practices can be tried out and sustained within the household, the hygiene promotion is targeted to men and fathers, as well as women and mothers.
Water points: site selection, design, operating hours.	The users of water points, who are often the poorer women, make the final decisions about location, design and operating hours for water service.
Participation of women in meetings	Projects work so that women are informed and so that women (rich and poor, all ethnic groups) can raise issues and take part in decision making.
Water rights	Some farmers divert drinking water for irrigation of their lands. To avoid or resolve this problem, water rights for irrigation and domestic use are agreed by the whole community (men and women, rich and poor). There is a working system to refer and act on complaints.
Project staff	In many projects the female field workers are more effective at involving community women. Thus, both male and female staff visit each community. There also are male and female supervisors.

For operation and maintenance of water sources, men are usually the ones who receive training and paid jobs. However, available information tends to indicate that women handpump mechanics perform technically as well or better and the costs of maintenance to the agency lower when equal opportunity is given to them (C. van Wijk, 1997).

② Indicators: examples

Policy	- The programme has a specific gender policy which aims at equitable participation, decision making , access to resources, control of services and benefits.
Project level	- Programme work plans contain strategies and activities to inform men and women, rich and poor. These strategies and activities are carried out. Staff capacity - Concrete gender strategies are known and carried out, for example, how to involve men and women, rich and poor in decision making, site selection and so on. - Male and female field workers have similar training and opportunities to visit communities.
Community level	Informed decision making - Men and women, rich and poor, are informed and participate in decisions made about technology, about payment schedules and tariff levels, about who receives training and paid jobs. - Women state that they have had a major voice in decisions about the location (where technically feasible) and opening times of water points. - Meetings are held at locations and times which are convenient for both men and women, rich and poor. Training of community members - Men and women (rich and poor) both have a voice in deciding who receives training at all levels. - Men and women receive training on hygiene and on O&M. Community management - Women select their own representatives on management committees. At least X% (for example, 50%) of the committee members are women. Women in the community have regular contacts with the female committee members. Women in the committees hold decision-making positions. - Both men and women (rich and poor) have similar access to paid jobs and similar responsibilities for unpaid project work. Impact - For women (rich and poor), the benefits in terms of time savings, economics and health resulting from the new sanitation and water facilities are greater than costs and increased burdens.

3 Who collects or checks?

It is important to identify those who are interested in monitoring and will report accurately. Depending on the situation, these may include NGOs, fieldwork supervisors, female field workers and community women, poor consumers and so on. It is often extremely valuable to identify men who have an interest in monitoring gender issues. It is also helpful to organize extra checks, that is, more than one person or groups checking an issue. Too often there is no action or even a point of referral for legitimate complaints from poor consumers and poor women. The monitoring must include careful and realistic plans to ensure that complaints can be referred to those who know how and want to take action to resolve a concern or problem. The women and poor consumers should take part in the planning and orientation about who can be contacted if there are problems, when and how.

4 Monitoring plan

See other Fact Sheets that describe monitoring for policy, participation, committee functioning.

Monitoring institutional arrangements for gender at agency level:

- ◆ Project co-ordinator or supervisors can check if the agency has a gender policy or if gender considerations are included in policy document.
- ◆ Extra checks are needed to ensure that institutional arrangements to operationalize gender considerations are included in the policy documents, proposals and work plans.
- ◆ Extra checks are needed to ensure that agencies adopt a gender sensitive strategy, specifically:
 - **Rules:** there are rules to implement gender balance (in terms of female and male staff)
 - **Recruitment:** ensuring that recruitment of staff takes gender sensitisation into consideration
 - **Referees:** there are referees to ensure this is being considered and rewards to those who are using a gender approach (the three R's strategy!).
- ◆ Extra checks are also needed to ensure that the strategies are feasible and are carried out.
- ◆ Extra checks needed to ensure that gender training or workshops are offered to staff.

Monitoring gender and poverty sensitive management at district level

Methods: A workshop participatory discussion could be used with sorting cards containing different statements, pocket voting, ranking on paper or diagramming

Participants: All available staff (technical and social, male and female) who are involved in selected communities, plus male and female villager such as members of the water and sanitation committees or village development committees.

Plan: Prepare a set of three to eight statements about an issue, showing different aspects or levels of compliance. Some blank cards should be available for people who wish to write their own

statements. Ask participants to identify which cards are true for the project. Let participants discuss the results thoroughly (and possibly change their voting).

λ **Examples of cards for 'sorting' exercise about management of a programme or project**
(numbers show scoring and do not go on the cards given to participants)

Topic: Management	
The management was not conscious of gender and poverty issues or considered them not their task. Score: 0	Management saw new roles for women as a means to increase the effectiveness of projects/programmes. The need for user choice was recognized. However, this was not really carried out for women and poor people. Score: 3
The management defined roles of women as passive beneficiaries or only as a target group for health education. Score: 2	There were plans/strategies which were carried out to inform and involve women and poor people. Score: 4
Participation of poorer people and women was to provide free labour for meals, digging and/or paying money. Score: 1	Women and poor users were involved in decision making about issues such as costs, technology, site selection, who receives subsidies, training or paid jobs. Score: 6
	Gender as a concept was defined correctly in project documents and the management can explain how a gender and poverty approach was practiced. It can mention some of the results for the project/programme and for the people. Score: 4

-adapted from R. Dayal et al. (1998)

Monitoring staff capacity:

- ◆ Supervisors can check in staff meetings if the field workers report on how they involve women in site selection, technology choice and so on. Do the field workers provide concrete examples related to this?
- ◆ Supervisors can observe field workers and ask them to demonstrate how they integrate both men and women in discussions during their work in a community
- ◆ Village women can be asked what they know about the programme, from whom and how they have been involved

Participation of women and the poor in meetings:

Practical things to check in monitoring the participation of women and the poor in meetings⁵ could include:

⁵ adapted from M. Boesveld (1994), p. 50

- ◆ Are meetings organized at places and times suitable for women and the poor?
- ◆ Are women and men, poor and rich, informed about the meetings through channels that reach each of them?
- ◆ Are women and the poor encouraged to attend meetings?
- ◆ Is seating arranged so that men and women, rich and poor, feel comfortable and can hear?

- ◆ Is the vernacular of men and women, rich and poor, used or is there translation?
- ◆ Are women assisted to speak out, for example, by giving breaks for internal discussion or asking women to choose spokeswomen?
- ◆ If needed, are separate meetings held with women or door-to-door contacts or informal sessions?

5 Action based on monitoring information

There are many possible responses to monitoring information such as:

- ◆ Training (or re-training) of field staff and committee members
- ◆ Change or refine strategies for activities such as technology choice, tariff setting, site selection so that both men and women, rich and poor can have voice and choice
- ◆ Initiate health and hygiene education activities focussed on men also
- ◆ Establishing institutional arrangements for recruitment of staff taking gender into consideration
- ◆ Withholding grant, loan instalments and approval of work plans until there is compliance.

6 Training or orientation needed

In-depth training and sensitive follow-up in the field are needed to assist staff to develop commitment to new attitudes and practical strategies. Supervisors need orientation for monitoring and how to respond if the monitoring exposes problems. Community leaders need special sensitisation for a gender and poverty sensitive approach.

λ Example of discussion topic for staff training⁶

In many projects women receive one-day training to do voluntary jobs and to clean around water points, to monitor water regularity, monitor latrines and to do other maintenance.

- **What does this mean in situations where women already work long hours in agriculture and in the household? What types of women can do this work? What types of women will do this work? Do women have a voice when deciding who will share in the training and do the work?**
- **Do or would men do this or similar work in their community? Also without compensation?**
- **Who gets higher level training and positions in the communities? Does the training or position bring particularly benefits?**
- **How would you briefly summarise this situation? Do you have any suggestions?**

⁶ adapted from information provided by Christine van Wijk

Remarks

Many times staff are gender conscious but lacks the skills to implement a gender approach. Training on gender concept, strategies and tools has become an important instrument to help staff introduce gender considerations in daily work.

Recommended literature

Wijk, C. van (1997) *Gender in water resources management, water supply and sanitation: roles and realities revisited*. (Technical paper series; no. 33). Delft, The Netherlands, IRC International Water and Sanitation Centre.

Boesveld, M. (ed.) (1994) *Working with women and men on water and sanitation: an African field guide*. (Occasional paper series; no. 25). Delft, The Netherlands, IRC International Water and Sanitation Centre.

Finance: Introduction

This section provides examples of monitoring four issues which are important for financial sustainability:

- ◆ **Estimating costs and budgeting**
- ◆ **Water tariffs**
- ◆ **Billing, collection and cost recovery**
- ◆ **Transparency, honesty and efficiency in finance**

Background

In many countries the responsibility for operating and maintaining water supply schemes is being transferred from the national or regional level to the district, town, community or user level. Thus the management of finance is shared by a larger set of individuals and institutions. Monitoring the financial aspects can help these groups to ensure the effectiveness and sustainability of their services.

Financial policies in water and sanitation programmes are not always realistic. Monitoring can also be used to check the feasibility and implementation of policies, answering questions such as: Are the policies realistic? Is enough known about actual costs for communities to implement financial policies?

Community finance before construction

During the mobilization period before construction, there are several financial issues which could be monitored. These include checking:

- ◆ Are clear policies and rules agreed with community on payments, cost recovery, and subsidies?
- ◆ Are the initial payments and financial transactions completed as agreed? This often includes payments by users or community groups.
- ◆ Are financial management procedures set up and followed? Is there transparent and efficient finance? This is crucial to establish trust initially and ensure sustainability in the long term.

Issue	Examples of indicators
Clear policies known	- Clear policies and rules agreed with community on payments, cost recovery, subsidies shown by: - Community members know the costs. Community is aware of capital and O&M costs of technologies. - Staff can describe the costs.
Contributions paid	- Proportion (for example, 80%) of those who applied to enter the programme will complete the entry requirements (usually payments). - Proportion of users paying is more than 90%. - User and community payments are fully accounted.
Efficient and transparent financial transactions	- Local government, NGOs, private sector (masons, suppliers, storekeepers, families...) follow rules for purchase, finance, and transport. - User and community payments are fully accounted.
Lowest cost for good quality	- Itemized costs of water and sanitation are known and calculated accurately, reflecting market value. - The quality of materials is checked and meets specifications.

① Problem issue

Costs need to be estimated and communities need to be informed about them in order to be fully aware of the implications of selecting a particular technology. There are usually no difficulties in estimating investment/construction costs. However, the case is different for operation, maintenance and replacement of equipment. If these costs are not known to committees and to users, then setting tariffs becomes 'guesswork'. There are many cases where the tariffs are too little to cover O&M and replacements. Then the sustainability of the system is threatened. There are also many cases where tariffs are too high, creating substantial profits for local committees but limiting the amount of safe water for poor households. In this case, bad cost estimates and high charges to users can defeat the purpose of the water system to improve the health and well-being of people.

② Indicators: examples

Making the estimates	Those who set local tariffs, such as water committees or management groups, can explain clearly how average monthly costs are calculated.
Agency capacity	Field workers and their supervisors can explain simply and clearly to local committees and users how to estimate average monthly costs.

③ Who collects or checks?

Those who monitor should have an interest in the issue and should be able to make estimates themselves. These might include field workers, their supervisors, NGO staff working with communities.

④ Monitoring plan

Example of monitoring how cost estimates are made:

- ◆ Depending on the local management structure, supervisors ask management groups, associations or water committee members (including the women members) to explain how costs are estimated.
- ◆ Field workers can ask selected users how the tariff was set. Even if the users cannot explain the details, they should voluntarily state that tariffs are based on actual costs.

Example of monitoring agency capacity:

- ◆ At a staff meeting and during field visits, the senior staff can ask field workers to explain how costs were estimated. The explanations should be specific (with numbers and actual costs), simple and understood by community members.

5 Action based on monitoring information

Depending on the monitoring information, actions to be taken might include:

- ◆ Retraining the field staff
- ◆ Organizing and in-depth study in representative communities to learn how to develop more accurate cost estimates
- ◆ Refresher training of the water committees and management groups

Note

In much of Africa the public standpost attendants receive salaries, unlike most Asian countries. In projects within two African countries, it was estimated that the cost of water at public standposts increased by 40% to 50% in order to cover the attendants' pay. Thus, users of public standposts were paying 40% to 50% more per unit of water than wealthier families with household connections. It is strongly suggested that small studies be undertaken in these settings to determine how to reduce or eliminate this extra cost.

6 Training or orientation needed

Training is needed for field workers and their supervisors in making estimates, explaining them and monitoring for this indicator at the community level. The training should include practice and actual examples.

Recommended literature

This Fact Sheet is adapted from two useful publications:

Brikké, F. (1999) *Management of operation and maintenance in rural drinking water supply and sanitation: a training package*. WHO and IRC, The Netherlands.

Davis, J. and Brikké, F. (1995) *Making your water supply work*. (Occasional Paper series; no. 29). Delft, The Netherlands, IRC International Water and Sanitation Centre.

λ Example 1

Composition of recurrent costs (operations & maintenance) in small piped water schemes	
Works personnel	- Operation, routine preventive maintenance. Routine repairs, construction for minor rehabilitation
Private contractors	- Major repairs, service contracts, tendering costs
Management personnel	- Supervision, financial management (billing, payments, accounting), administration, monitoring, trainers, technical assistance
Materials	- Tools, spare parts, equipment, stationery
Consumables	- Chemicals, electricity, petrol
Environmental costs	- Water source protection, water testing, waste water treatment
Other	- Communication costs (telephones, etc), transport - Unaccounted-for-water and vandalism become costs to the community if not prevented.
Optional	- Future investment costs for replacements, extensions and major rehabilitation

- adapted from F. Brikké (1999)

λ Example 2

Composition of costs estimated by committee for a public standpost on a piped system	
a.	Salary of attendant per month
b.	Amount of money paid to local government or water provider for amount of water used each month. It is necessary to estimate this. The amount of water being used each month could be calculated in this way: (estimated # of households fetching water) x (estimated # of people per household) x (estimated # of litres per person per day) x (30 days a month) = # of litres per month Example: 40 households x 5 people per household x 20 lpcd x 30 days a month = 120,000 litres = 120 cubic metres
c.	Estimated cost of disposables such as grease, cement, notebooks per year. Divide by 12 to get monthly average estimate
d.	Tools and equipment such as small repair kit for attendant. Divide by 12 to get monthly average estimate
e.	An amount to be set aside, as indicated by water agency, as provision for replacement of pipes, specials Add items (a) through (e) to find the estimated monthly expenses

- adapted from K. Shordt et al. (1997)

λ Example 3: Estimation of recurrent costs for a deep well with piston handpump

This case, derived from experience in South America, relates to a well about 25 metre in depth which serves a rural community. There is a water committee to manage the service with a treasurer and a caretaker. For major repairs a mechanic is hired. The recurrent costs relate to maintenance and management. Maintenance includes purchase of tools (bucket, spanners, wrench, etc.), materials (grease, paint, gravel, cement), and payment for a mechanic to perform major repairs. In addition, once a year a private contractor undertakes the major inspection and annual maintenance. The management is done by a caretaker who is paid and a treasurer. The treasurer receives a commission for doing the billing, collection, accounting, payments. He/she updates the books once a week.

Recurrent costs for a deep well with handpump

Type of cost	Value (\$)
Maintenance	
Tools	200
Materials	100
Spare parts	150
Mechanic (major repairs)	150
Private contractor (annual maintenance)	300
Total maintenance	900
Management	
Wage caretaker	200
Commission treasurer	100
Stationery	50
Unforeseen expenses	50
Total management	400
Total recurrent cost for the year	1300

- adapted from materials provided by Johnny Rojas, CINARA, 1999

A note on cost analysis

Cost estimation is one aspect of the larger topic of cost analysis. It is not possible to discuss this subject in detail within the confines of a few pages. However, because cost analysis is frequently mentioned within the context of monitoring and assessment, it may be useful to the reader to review some of the basic definitions. There are many methods of cost analysis. Most of these, however, require specialist services to develop.

Brief description of cost analysis methods

Cost recording: registration, preferably grouping the costs in distinct categories, is the simplest way of approaching cost analysis.

Cost comparisons: comparing the costs, for example, of facilities, life span of materials, construction, different project alternatives. This is a fairly easy method which is used often.

Cost-benefit analysis is expressed as a ratio of cost in money versus the outcomes in terms of benefits, quantified in monetary terms. This can be difficult to calculate, especially when trying to quantify benefits such as health improvements.

Cost-effectiveness analysis is expressed as the ratio of the costs (quantified) versus the effects (not necessarily quantified in monetary terms). The definition of effectiveness and effects can be difficult and is often subjective.

Cost-utility analysis is the ratio of the quantified costs compared to outcomes (not necessarily in monetary terms), while the outcomes are ranked. This is similar to the *perceived cost-benefit analysis* (ratio) where groups of users, often divided into men and women, rich/poor, different ethnic groups, identify the level of benefits and costs for themselves from a system or project. From their own perspective, they answer the question: *Are the benefits greater than the costs?*

Least cost analysis uses estimation methods to measure the costs of alternatives or different possible outcomes. Least cost analysis can require complicated calculations.

Marginal cost analysis deals with the cost of additional outputs or inputs in a project or programme. *Marginal* means in addition to what is already done. A typical question is: *Will the additional inputs result in sufficient additional outputs?*

Sensitivity analysis deals with estimating the expected outcome of the project according to different scenarios.

- adapted from materials provided by François Brikké, IRC, 1998

Cost analysis within communities can be simplified to recording costs, comparing them and trying to control costs. Examples are provided in the Fact Sheet on latrines: cost control.

Recording expenditures and income by categories is helpful for checking cost estimates. It also provides greater financial transparency – something which is often a problem in water programmes. The following page shows an example of a recording form for a small, community-based water scheme or for one water point. Next to that is an example of a budgeting format.

Budgeting

Description	Amount	Description	Amount
Incomes Charges flat rate charges additional consumption connection charges interest from savings penalties paid reconnection charges Other contributions central government municipality donors NGOs other institutions TOTAL INCOME		Expenditures Maintenance & repair chemicals electricity petrol spare parts tools/small disposables major repairs annual maintenance contact Personnel salaries social security holidays training transport Other rent furniture stationery office equipment capital investment fund interest loan repayment insurance TOTAL EXPENDITURES	

DIARY						
Date	Description of expenditure or income				Amount	
	Materials, electricity, repairs, spares	Payments to water company	Salaries and other expenses	Income	Income	Expenditures

- adapted from materials provided by Johnny Rojas, CINARA, 1999

1 Problem issue

Tariffs are the types and levels of charges to the consumers. Some governments and agencies set standard rates or ranges (lowest and highest amounts that can be charged). In other cases, community government or committees set tariffs for a scheme or for users of one water point.

Tariff levels should provide enough money to meet operation and maintenance costs. Often other costs are included such as replacement, expansion costs or debts from earlier loans. Beyond this, extra charges are sometimes added. Prices can be set, for example, to provide taxes for local authorities, cover costs of other services such as sanitation, generate profit and income, subsidize poor users, protect the environment. Tariff rates should encourage efficient use of water resources. At the same time, the rate structure must also make sufficient quantities of water available to poor people, an objective that may be achieved through cross subsidies from the payments of other categories of consumers. Setting tariffs to accomplish these objectives can be difficult. Programmes have a very important role to play in helping communities to set an appropriate rate that covers costs but does not stop poor families from using enough safe water for personal and household purposes.

Sometimes the rates charged are only based on what the committee or local government thinks people will pay. This can lead to unforeseen consequences such as limiting the amount of water used by those in greatest need. Tariffs should be determined on the basis of real costs, not guesswork (See the Fact Sheet on estimating costs.)

There is much variety in how households contribute, for example:

- ◆ flat rates (monthly, at time of harvests, and so on) per household or per person
- ◆ payment by volume: fixed charge by cubic metre, by bucket or jerrican or block tariffs
- ◆ different charges for various consumer groups (rich, poor, industries, public sector)

About water utility rates

Most tariff rates set by water utilities are progressive, that is, the price per cubic metre increases as consumption increases for metered connections. The lowest level of consumption pays the least and this usually benefits families with household connections. Utilities usually charge flat rates (independent of the amount consumed), when the water is not metered. These flat rates can have two undesirable results. If the flat rate is low, it does not promote water conservation. If the rate is higher, it tends to penalize low income groups, resulting in poor people using less water. The poorest people in towns and cities often buy water from vendors who have themselves purchased water. The poorest tend to pay more when they buy 'resold' water.

Many water utilities have a range of water tariffs for different user groups (residential, commercial, public, etc.). This can present some problems. For example, high commercial rates can drive industries to develop their own water (and sewerage) systems. If the tariff system is too complicated, there will be fraud and cheating. For example, in one large African city, 12% of the charges are not paid, because of collusion with politicians.

2 Indicators: examples

Tariffs	- Tariff rates achieve the objectives set by the programme such as (a) meets O&M costs, (b) encourages efficient use of water, (c) makes sufficient (at least 20 lpcd) water available to lower income groups.
Agency capacity	- Field workers and those who work with communities can explain clearly how to decide on the rates of tariffs and the advantages/disadvantages of each method. - Staff/committee members know how to do “calculations” for setting price of one container (bucket or jerrican) so poor consumers can purchase at least one container per person per day and so that O&M costs can be covered.

3 Who collects or checks?

This indicator should be monitored by those who have an interest in reporting accurately. This might include, for example, staff of local NGOs, field workers, supervisors of field workers, representatives of low income neighbourhoods, finance officers of utilities, auditors and bookkeepers.

4 Monitoring plan

Each type of tariff has different disadvantages that could be checked in monitoring:

Type of tariff or payment	Method	Features which can be checked when monitoring the tariff rates
Payment through community funds		
Voluntary fund-raising	Funds are collected when required through meetings, household collections, festivals, and so on	Check if funds are sufficient for O&M
Community income	Payment for water is taken from group income such as cooperative farms, market taxes, state subsidies and so on	
Water tariffs		
Flat charge per person	Households pay a fixed (monthly) fee according to number of people (and cattle) in household	Check if poorer families are paying, if less water is used for economic reasons, and if funds are sufficient for O&M
Flat rate charge per household	Households pay a fixed (monthly) charge	
Flat charge per unit volume	Users pay for the volume, for example per cubic metre or per container	
Agreed user charge	Each user group pays for an agreed quantity of water collected from a water point (e.g., so many buckets each month)	Check who made decision and how Compare payment against a standpost meter reading
Metered charge	Flows to standpost and taps are metered and consumers pay according to the volume used each month	Check if meters are working, presence of illegal connections, if billing is done on time. Check if low income families have meters

Different tariff levels	For example, public standpost users receive free water, household connections pay a charge, commercial users pay a higher charge.	Check, on spot basis, if different categories of users are billed as intended or are cheating. Check if high volume users are being driven away, thereby reducing income.
Water selling	Water is sold by paid operators or vendors or user groups such as women's associations.	Spot check prices charged. Check if poorer families are collecting less water for economic reasons.

- F. Brikké (1999) and G. Yepes (1994)

λ Examples

To check if poorer families are collecting less water for economic reasons

In a project for community management of water supplies, it was seen during home visits that poorer families seemed to be using about half a container (10 litres) of water per capita per day while richer families used one container per capita (20 litres). The reason given was the high cost of water per container. Since good hygiene requires more than 10 lpcd, the price per bucket became an important discussion point with committees. Some research was undertaken to help set tariffs that allow good access but also provide enough money for repairs.

Where tariffs are set locally

To monitor the capacity of agency staff, senior managers can ask field workers and supervisors to explain and demonstrate how tariffs are set by local committees or management groups. Field workers should be able to explain clearly, using realistic numbers. An outside agency such as an NGO or research unit can cross-check through qualitative studies of selected local user groups and committees.

⑤ Action based on monitoring information

Since tariff setting is both a difficult and sensitive subject, action is usually required by senior management. These actions might include setting new policies, retraining or reorganizing staff.

λ Example

Information in one project showed great variation in the amounts charged and the amounts collected for water among different communities. The programme staff undertook some quick qualitative studies using a semi-structured questionnaire and doing a bookkeeping check of

three areas where cost recovery was good and two areas where cost recovery was poor. On the basis of this, they developed and tried out a new strategy to support fair and efficient cost recovery.

⑥ Training or orientation needed

Careful training is needed for those who help local committees set tariffs. Those monitoring need to have the same skills and information.

λ **Example: Cross subsidies**

The following examples come from the training programme for community development assistants in the Morogoro/Shinyanga Rural Water and Sanitation Programmes, Tanzania. They describe how to set rates for large, medium and small users of small water supply systems.

Classifying people into different rate categories can be done as follows:

- ◆ A list is made of all user households
- ◆ Each household is classified according to large, medium or small water use
- ◆ The committee decides that the larger users will pay a double charge, and the small users half a charge
- ◆ The number of large users is multiplied by 2 (or 1.5). The number of medium users by 1. The number of small users pay half the charge (0.5). These are added to get the total number of rates
- ◆ The total amount budgeted for the water supply for the year is then divided by the total number of rates
- ◆ The resulting figure is the single rate to be paid by each household per year. Large users will pay double (or 1.5). Small users will pay half this amount

λ **Example**

In a village with 526 user households, 39 were classified as large users. They have cattle or have high income and large houses. Of those remaining, 396 were medium and 86 were small users. Five households were too poor to pay and can use the taps free of charge. The annual O&M budget is 150,000 shillings. How much does each family pay?

Answer:

$$(39 \times 2) + (396 \times 1) + (86 \times \frac{1}{2}) + (5 \times 0) = 517 \text{ water rates}$$

$$150,000/517 = \text{about 300 shillings a year}$$

- ◆ Large users pay 600 shillings
- ◆ Medium users pay 300 shillings
- ◆ Small users pay 150 shillings
- ◆ The five poorest families pay nothing

adapted from IRC (1989)

λ Example: Reducing water tariffs

If the tariffs are set correctly, then as the volume of water sold increases, the profit increases. Sometimes local committees that set tariffs do not understand that reducing the cost of water slightly can, in fact, increase the amount sold and thus the amount earned.

In a project in one African country, local committees set the tariffs at water points. Water is purchased by users for each jerrican taken from the water point. The coins available are 10 cents (in local currency), 25 cents and 50 cents. At one water point, the charge was 35 cents for a jerrican. About 100 jerricans were sold each day giving total sales of about 3500 cents.

Users complained that the price was too high. Poor families stopped using safe water, reverting to the river. After some discussion with households in the areas the committee reduced the price per jerrican to 20 cents. The amount sold increased to about 180 jerricans each day giving total sales of 3600 cents and providing a better service.



Recommended literature

IRC (1989) *Cost-Recovery of Village Water Supplies: a training guide for community development assistants*. Delft, The Netherlands, IRC International Water and Sanitation Centre.

① Problem issue

Cost recovery for water depends on users satisfaction with a service and on setting tariffs which are acceptable to consumers. It also depends on the effectiveness of the billing and collection procedures. Some typical problems with billing and collection include:

Consumers do not pay because of:

- ◆ **Lack of information:** Consumers do not receive bills or are not informed about how to pay.
- ◆ **Long billing periods:** Each bill covers many months of service and is therefore unaffordable.
- ◆ **Difficult payment procedures:** For example, bills must be paid in person and there are long waiting lines or offices are inaccessible, etc.

Consumers pay but there are problems due to:

- ◆ **High cost of collection:** For example, in one scheme the salary of the person collecting from users of public standposts was almost as high as the amount collected.
- ◆ **Wrong tariffs:** The tariffs were miscalculated so that they do not cover operating costs. The tariffs are not affordable for poorer users and therefore only a proportion of the consumers pay.
- ◆ **A high proportion of unbilled water:** Only a small proportion of the water produced is billed because the level of unaccounted-for-water is high or some large institutional consumers do not pay.

② Indicators: examples

For all cases	- At least 80% of the water produced is paid for. - At least 90% of the amount billed is paid. - Lower income groups pay less than upper income groups for the same quantity of water. - Collected revenue is greater than the operating expenditure.
For water utilities	- Working ratio = operating costs/operating revenues < 1. - Water billed/water produced > 90%. - Billing is efficient: - Billing period does not go further than two months - Written bills are simple enough for users to explain - Users can pay bills in less than one hour (including travel time). - Householders who have not paid in more than four months are disconnected and not more than 5% of the households are disconnected.
For small providers and small systems	- Cost of collecting payments from users (of public water points) is less than 15% of the amount collected. - Collection of payments takes into account the times when people are able to pay. Sufficient payment period is provided for lump sum payments.

- F. Brikké (1999) and G. Yepes (1994)

③ Who collects or checks?

Data is best collected by those with knowledge of accounting (and things which can go wrong) together with people who have a real interest in improved cost recovery and increasing the efficiency of the scheme or agency. Monitoring should include frequent feedback of limited but important data to those in a position to act on the information.

④ Monitoring plan

To determine if further investigation is needed in a metered water system, a very simple and fast check is to compare the total revenue with the amount of water produced.

Bookkeeping and simple audit checks can provide much of the needed information. It is useful for small groups such as waterpoint committees to have surprise bookkeeping checks, including comparing the receipts, account book entries, bank balances and quantity of water used (if it is metered).

A study carried out to track the billing and payment system can also provide useful information. In the study, the number of steps, forms, people involved and time needed to bill the consumers are studied. A check can also be made of the time and ease with which consumers can pay.

Where tariffs are set locally...

To monitor the capacity of agency staff, senior managers can ask field workers and water committee members to explain and demonstrate how billing and collection are done. They should be able to explain clearly and show the formats for billing and collection, as well as accounting forms and bank books, if relevant.

⑤ Action based on monitoring information

There are many possible actions such as:

- ◆ Revising and simplifying the billing system
- ◆ Advocating for a policy of sanctions against those who do not pay
- ◆ Simplifying or changing the tariff rates

Far more difficult but effective can be improving the level of service so that people will want to pay or reducing the water lost in the system (leaks, illegal connections and so on) so that the proportion of water billed increases. Such comprehensive reactions to cost recovery problems require strong support from the leaders of agencies and programmes.

λ Example

The leaders of a large water agency in Asia have approached the electricity authority with a proposal to combine billing. The idea is that consumers would receive one bill showing both the electricity and water charges. There are two reasons given for this. First, the same staff member can read both the electricity meters and the water meters, thus saving on the collection costs. Secondly, the penalty for non-payment would be disconnecting the electricity. This is easier and perhaps more ethical than disconnecting water.

Remarks

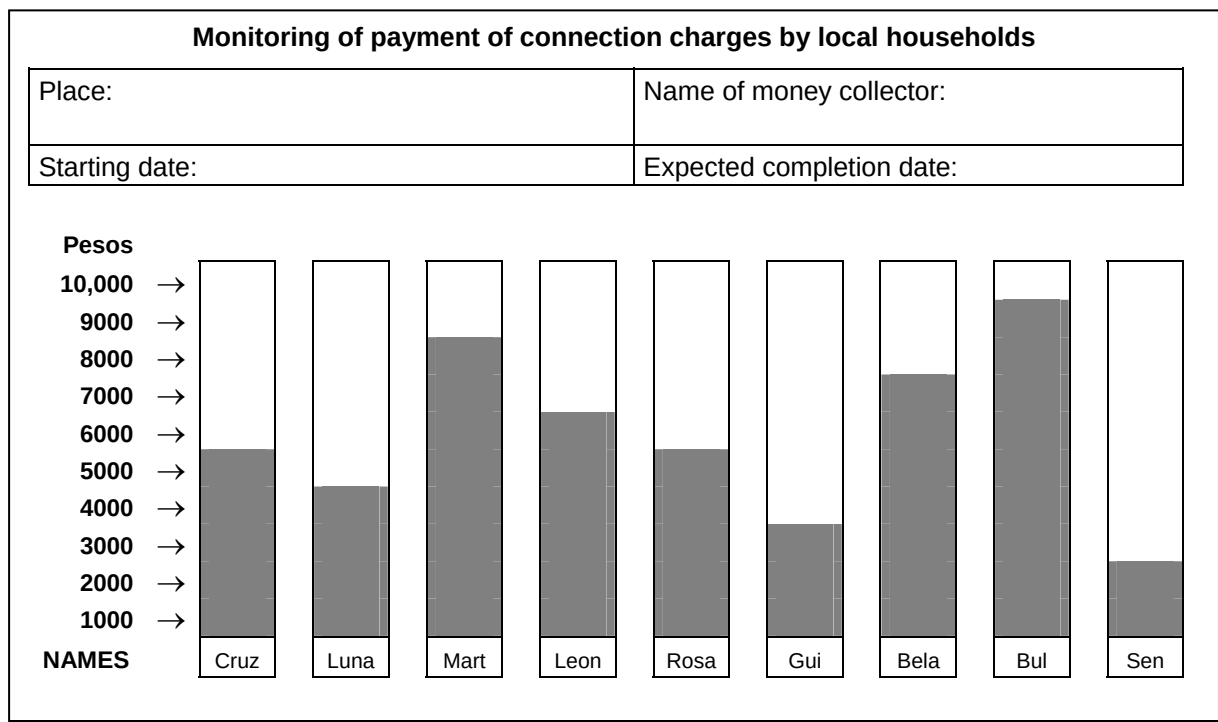
- ◆ Collecting payments, in itself, has costs. There are some cases where the cost of collecting, usually through paid intermediaries, is more than the payment itself or passes unacceptable expenses along to the poorest consumers. In these cases, it may be preferable to identify other tariff structures or means of payment. In larger water utilities, poor management and inappropriate staffing arrangements increase the cost of billing and collection.
- ◆ Sometimes funds build up in accounts, particularly in the first years after construction when few repairs are needed. It is useful to have a known and agreed policy to handle these possible surpluses, such as:
 - stopping collecting after a certain amount of unused profit has been built up
 - using the surplus to extend the water system
 - cross subsidize poorer households or cross subsidizing other programmes such as sanitation
 - reducing charges.

λ Example

When surplus funds build up without control, the system is subject to abuse. For example in one country in Latin America, the water management committees became money lenders, lending out the surplus funds from the water schemes at high interest. In another country in Africa, considerable bitterness was created in some schemes because the price of water remained high for poor families while at the same time the funds were increasing rapidly in the water account. The water committees gradually came to be seen as the profit-making 'owners' of the water schemes.

λ **Example: Monitoring of payment of connection charges by local households**

This is a record of payments that could be completed by a person with limited literacy and numerical skills. Because the payments are visualized in a graph, there is immediate access to information regarding the people and amount paid. The graph also demonstrates that women and men who have limited formal education can easily serve as treasurers of committees, if the programme helps them with simple forms.



GTZ (1989, no. 4E)



λ **Example: Water service bill**

This is an example of a water service bill which includes space for a subsidy for some categories of consumers and indicates payment dates clearly.

WATER SERVICE BILL					
User name: _____			Address _____		
Type of user: _____			Date: _____		
User code: _____			Meter number: _____		
Water Consumption (cubic meter)					
Actual	Previous	Average	Month 1	Month 2	Month 3
Prices and tariffs					
Fixed charge		Basic consumption		Additional	
Charges for water consumption			Other payments		
Fixed charge (1)			Connection (7)		
Basic consumption (2)			Meter purchase (8)		
Extra consumption (3)			Penalties (9)		
Total (4=1+2+3)			Reconnection (10)		
Subsidy (5)			Interest (11)		
			Other (12)		
Net payment (6=4-5)			Total other payments (13=7+8+9+10+11+12)		
TOTAL BILL TO BE PAID (14=6+13)					
Pay before this date and pay less					
There is an extra charge for bill paid after this date					

provided by Johnny Rojas, CINARA, 1999

① Problem issue

Finance should be handled efficiently, honestly and transparently. Transparency means that financial information and rules are known by all those involved. Honesty requires that the rules be followed. Those who purchase and sell materials and services should follow the rules. Those who pay should know what happens to their money. Efficiency requires that payments, purchases, accounting are done quickly and on time. This is crucial to establish trust and credibility.

② Indicators: examples

Efficient	Training is provided to support agencies, water department, management and water committees in finance and bookkeeping. Payments - Staff are paid agreed amounts on the agreed day. - Suppliers and contractors are paid within seven days (or X days) of approval of payment. - Invoices are issued and paid on time. Costs - Lowest unit cost is paid for good quality materials and workmanship. - Unit costs for water and sanitation facilities for different locations are known to project. - If rate schedules are used by the agency, these are updated and comparable to the current market values.
Honest	- All people involved (water agency, contractors, suppliers, local government, committees, storekeepers and families) follow rules for billing and receipts, payments, managing bank accounts, audit, tender and stores. - Receipts and invoices are handled in accordance with the rules (for example, receipts are numbered, signed and dated by two people). - Regularly scheduled and surprise audit and bookkeeping checks are undertaken by independent personnel. User and community payments are fully accounted.
Transparent	Financial/accounting procedures are written and known. - More than one committee member can keep accounts. Public information - Financial information is reported simply to the public at regular intervals. For small systems this will include information about the amount in the bank account and reasons for surpluses and deficits. - Users who pay for water at water points can indicate roughly how much money is in the bank account. - Committees can calculate household water tariffs and explain the calculations.

③ Who collects or checks?

Many people have a role in checking financial information. Transparency is open; corruption requires secrecy. Thus monitoring can rely on sharing information among different people and groups, with many extra checks. Five principles for monitoring financial transactions (billing, paying, issuing receipts and vouchers) are:

1. Payments are checked by those who receive them.
2. Those who pay (payments, vouchers, receipts) also check.
3. At least one outside checker is needed. This could be a bookkeeper who undertakes surprise audits. Project staff, regional or district officials can make spot checks.
4. Each of the three people (receivers, givers, checkers) must be able to refer unresolved complaints to another person with the possibility of referral to other levels if there is no action.
5. The office or people who receive complaints must act.

Interestingly, experience in many programmes has shown that women make good and trusted treasurers.

④ Monitoring plan

Example of practices followed by one project in Asia:

Training is provided to NGOs, branch offices and local government for bookkeeping and financial transactions and how to make cost estimates.

Payment

- Every two months on a random basis the staff checks the receipts held by the household and compare these to the receipts held in the local government office.
- One in five committees is checked by staff on a surprise basis: bank balance, account book, match, each family has numbered receipt matching accounts book.
- Mason not allowed to construct unless he has seen, initialled and dated the family receipt showing pre-payment.

Bank account

- During construction period, one NGO staff member and one local government administrator are joint signatories to the bank account.
- Bank account statements are available for all to see.

Periodic surprise **audits** are done at least once in each local government area before construction but after initial payments. If there are any irregularities, the project must be stopped in that area until the problem is resolved. Senior staff must be informed of any problem in writing by the auditors/bookkeepers. Threat of surprise audits helps the local government keep better records.

Tenders given, decided, signed by two to three people. Random senior staff check prices of commodity vendors in local area. Include: visit to whoever paid and ask how much. For construction: ensure specifications are followed. For commodities: check quality compared to contract or agreed quality, check receipts

Stocks and inventory are checked against register for some commodities. The checker signs and dates the register.

Other examples

- ◆ Procedure for checking money collection at kiosk:
The amount of water used as shown by the water meter is divided by the average number of litres in a standard container. This is multiplied by charge per container to give an estimate of the total amount of money which should have been collected at that water point. This calculation is compared to the amount of money actually reported and deposited by the caretaker.
- ◆ In a project in Tanzania, a woman water committee member took over the work of the standpost attendant for two days and then compared the amount of money which she collected with the amount of money reported by the attendant.

5 Action based on monitoring information

There are many possible actions, depending on the problems. These may include: retraining, reorganizing the responsibilities of staff, undertaking a qualitative study to identify changes to improve transparency in systems. In the extreme, staff are suspended and local projects halted. Dishonest contractors should be blacklisted. There are cases involving powerful contractors when information has been leaked to media or court. Unfortunately, it can be difficult to change the situation when there is a high degree of corruption in a programme or institution. Donor and lending institutions around the world have at times provided large resources to institutions and agencies which were known to be corrupt. In such cases it is very difficult to organize or expect much from a monitoring system.

6 Training or orientation needed

Training and public information are needed at all levels, ranging from national leaders and politicians who can help eliminate major cases of corruption, to those who need training in financial skills.

Important

When planning a piped water supply system, explain clearly to the community:

- ◆ how the charges are calculated
- ◆ how their money will be spent

Nobody wants to pay if it is not clear how their money is to be used

IRC (1993), p. 43

Chapter 5 Establishment of Water Services: Introduction

This section provides examples of monitoring four issues:

- ◆ **Site selection and access**
- ◆ **Construction quality and timing**
- ◆ **Water quality**
- ◆ **Reliability and functionality**

These four conditions are absolutely necessary for sustainability. Unfortunately, however, many programmes face problems with one or more of them.

1 Problem issue

Site selection means identifying the physical location of public water points. Good site selection is crucial for effective water services. Remember that for a household of five members, to carry 20 litres per person per day from a point 300 metres away means three kilometres of walking per day. If little attention is given to site selection, the water points can become 'owned' by more powerful families who may limit the amount of water available to other households.

Women who usually collect water should have the major voice in deciding on the location of the water point. Women often have special demands, for example, that a water point be located at a place which allows for greater privacy.

The monitoring takes place **at the same time** as the site selection. Monitoring the site selection **after** construction is less effective, because little can be done if the water point is already constructed in the wrong place. Monitoring is done to ensure that the site selection rules are followed and deserving households will benefit. It can also help control political pressure and can help establish trust among the clientele at the beginning of a programme.

2 Indicators: example

It is important that all groups (households, extension workers, local government, engineers and contractors) agree on the site selection indicator.

Walking distance to safe drinking water source should be less than 150 metres for 90% or more of the population in the community proper, with the exact site being identified by women users.

One water point should serve a minimum of 12* to a maximum of 40 households within a walking distance of 200 metres. Other criteria:

- There should be at least three* 'poor' households within 200 metres walking distance from the standpost. The definition of 'poor' should be decided by consulting with people locally. For example, 'poor' households are defined as those of a small land area (10 x 10 m) and with thatched roofs.
- Water points should be located in areas with good drainage, avoiding the sides of roads and pathways that would interfere with water collection. Pipes crossing private land should be minimized.
- The women users, water committees and local government must approve the location in writing. In approving, these groups should also state their willingness to pay for and maintain facilities.

* The numbers are examples only. Each programme will be different.

③ Who collects or checks?

Many groups can be involved in monitoring:

- ◆ surveyor or someone who is trained to draw a map
- ◆ users from nearby houses and a member of a water committee
- ◆ engineer, technician or hydrologist to check hydraulics and availability of water if necessary
- ◆ local government representatives
- ◆ water agency or project management

④ Monitoring plan for piped water supply

- a) Determine the indicator and criteria for site selection by consulting with small samples of people from each group that will be involved.
- b) Train and orient: In each location, the different people involved should know their roles and agree publicly with the site selection indicator and criteria. Households are informed in advance about the time and day that site selection will occur.
- c) Mapping and selecting proposed sites with potential users: Potential users from nearby houses walk along the roads and paths with members of the water committee and a facilitator such as a field worker, draftsman, or someone who draws the map. They make the map together and decide on possible sites. They make sure, together, that the rules of site selection are followed. Women are, in particular, asked to select the preferred sites and sign, showing their agreement to possible site. Land release forms are presented and signed if needed. The people drawing the map ask about location of households that are left out. Mapping can be a highly participatory activity that is used for additional purposes such as community mobilization.
- d) Engineer or hydrologist checks technical hydrogeological feasibility. If the original site selected is not technically feasible then the community is informed and the facilitator or draftsman must go back and redo preceding step.
- e) Copy of approved map (often about 1:5000 scale) is made by draftsman, field workers or community members for use in public meetings.
- f) Public meetings are held. Representatives of local government, water committee, some users and programme staff meet to discuss and approve sites for the water points. They use the maps to verify locations and check to see what households are left out. The local government or the users' group passes a resolution to approve the sites and agrees to their responsibility in making payments.

The tools used in this example are:

- ◆ maps
- ◆ site selection approval forms
- ◆ land release forms
- ◆ local government resolutions

5 Action based on monitoring information

Engineers and/or local government inform contractors to construct at the agreed sites. The contractor must be given copies of the site maps. Users are informed about construction dates and the agreed locations. They check that construction takes place at that site. Supervisors or project managers can make spot visits to check the site selection.

There are several ways to refer complaints. If one party feels something is going wrong with the site selection, they must be able to refer complaints to one or two other sources that will take action. For example:

potential users	→	project management
local government	→	district office

Such referrals are planned in advance and all partners are informed about this.

Contractors who, without apparent reason, build in locations which were not approved are warned and then blacklisted.

6 Training or orientation needed

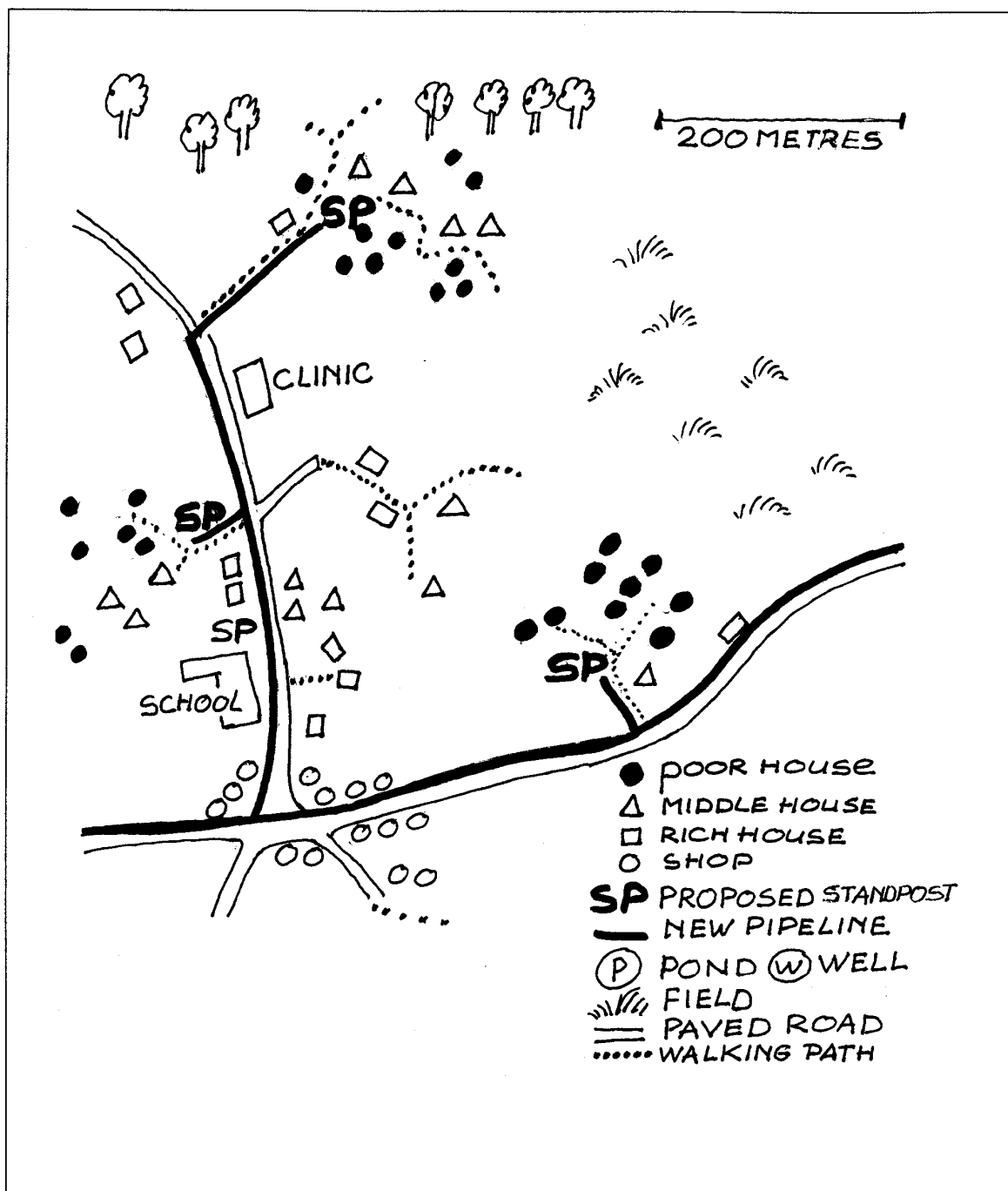
- ◆ Users and water committees need to know the procedures and have the opportunity to express their views on the steps in site selection, indicators and criteria, and the involvement of women.
- ◆ Field workers and draftsmen should be oriented in ways of working with women and the community at large and on how to make maps.
- ◆ Technical people need to be oriented on the technical siting (geohydrology), design of the system, how to explain to community members what they do and their findings.

Remarks

This way of combining site selection activities with monitoring needs careful planning and follow-up from the management, especially at the beginning of the activity.

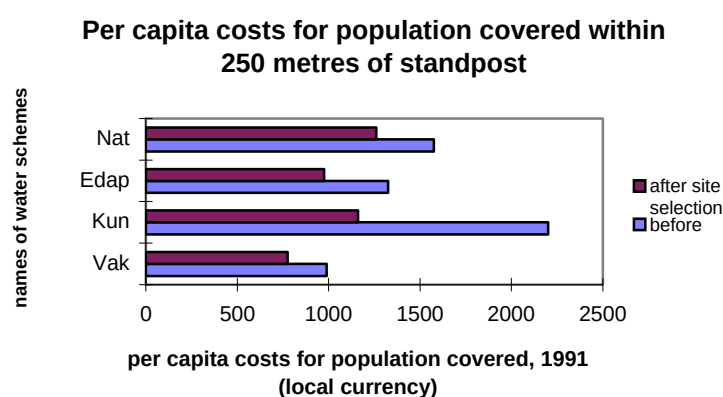
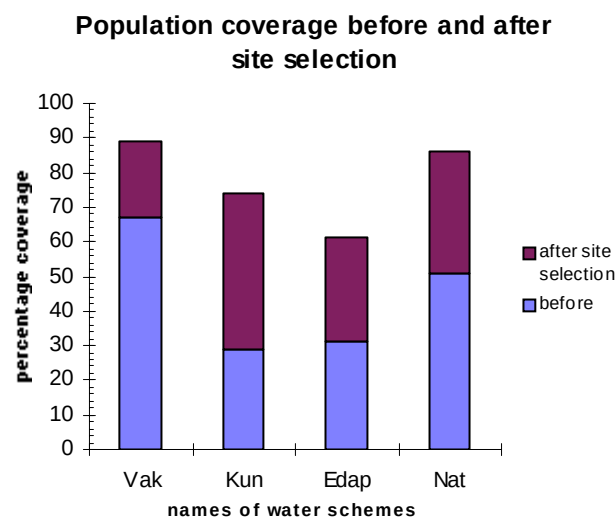
λ Example of a map used for monitoring the locations of public standposts

The SP symbol shows the proposed locations of public standposts



λ Example

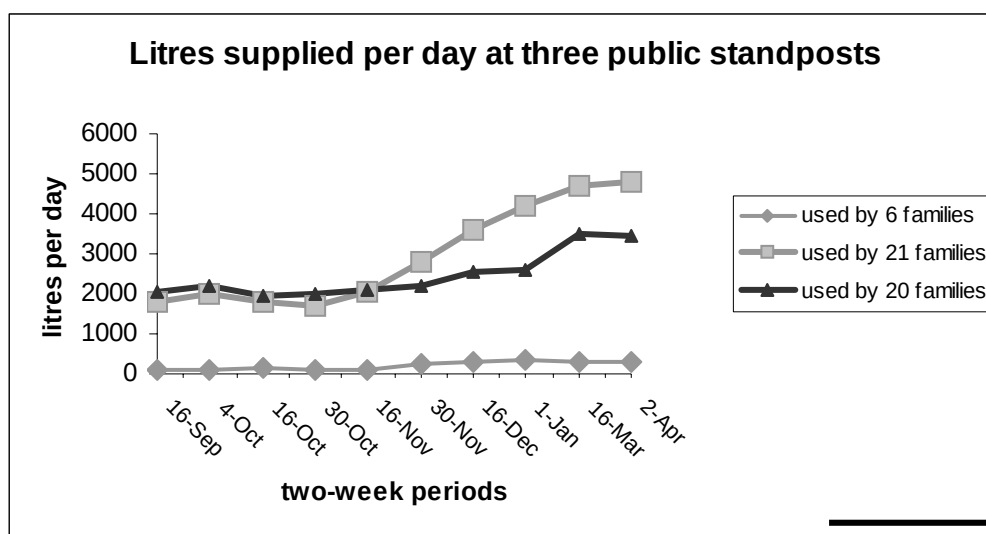
Monitoring of site selection with the community can save money and extend coverage. Here is evidence from the state of Kerala in India. The project for large piped water schemes was implemented by the Kerala Water Authority with the support of the Governments of Denmark and the Netherlands. The piped water schemes shown below served populations of about 90,000 to 250,000 people. The light shaded bars show coverage and per capita costs before monitoring. The dark bars show the changes made in the schemes after monitoring the location of standposts. Real coverage increased by 20% to 45% as shown below. Per capita costs of the schemes were reduced as well because more people were served.



K. Shordt and B.K. Kurup, (1996)

λ Example: Advocating for effective site selection

This is adapted from a very small study: monitoring three water points with water meters at the standposts. The purpose was to provide evidence for policy makers about the need for improved site selection. One standpost was incorrectly located and had only six user families taking small amounts of water in both the rainy and dry seasons. The other standposts were located to provide services to more needy families. This is an example of using a very small sample to provide information for policy formulation.



K. Shordt and B.K. Kurup (1996)

① Problem issue

In many programmes there are complaints about construction such as:

- ◆ Construction is not according to **specifications**. For example: the cement is not cured properly the wells are improperly drilled at too shallow depths
- ◆ **Timeliness**: Construction was completed too long after site selection or too early — before the community was informed and mobilized
- ◆ **High cost**, due to poor planning, inflation and corruption

In monitoring the quality of construction, many stakeholders can be involved, including the future users of the facilities.

② Indicators: examples

Quality of construction: follows an agreed checklist which is approved by the contractor and the implementing organization.

Testing: After construction, drilled wells must be tested for their performance and water quality. Piped systems undergo a complete test from headworks to standposts. Defects must be fixed by the contractor and checked. Only then can the final payment to the contractor be made.

Timing and location of construction:

- Construction will take place not longer than four months (or X months) after site selection and mobilization activities are completed, and after the consumers have made the agreed down payment.
- Construction must be done at the location shown in the site selection form signed by at least five women users and approved by the local authority.

Cost of construction will be minimized by:

- Using locally available materials.
- Reducing non-essential construction design features.
- Controlling financial transactions: payment, billing and bookkeeping procedures to follow agreed rules.

③ Who collects or checks?

Usually technical staff from the project monitor during and immediately after construction.

Extra checks are crucial because construction often can take place in many places concurrently that are difficult for the technical staff to reach. Monitoring of contractors can also be difficult if there is corruption or 'kick backs'.

People who have an interest in ensuring good quality construction should be involved in the cross-checking. This includes: (a) the future users of facilities; (b) water/sanitation committees; (c) government staff of other departments such as district engineers; (d) professionals from independent agencies such as NGOs and private quality control agencies.

4 Monitoring plan

Different monitoring strategies are required at specific points in the construction programme. Three of these are described in the following table.

Quality of construction				
<i>Collection</i>	<i>Who checks?</i>	<i>Cross-check 1</i>	<i>Cross-check 2</i>	<i>Cross-check 3</i>
Who collects? <i>or</i> Who cross-checks?	Contractor	Technical department	Local government such as district engineers, staff of project or NGOs	Water committees, users from community
How do they collect? What tool is used?	Contractors check using specifications shown in contract or checklists	Site visits, construction specifications or checklists	Site visits using written specifications or checklist	During construction, a checklist used by all groups (masons, supervisors, committees, families)

Providing a clear statement of specifications in all contracts is very useful for monitoring. For small constructions, these specifications can be prepared as a checklist to be used by community members. More elaborate checklists/plans are used by technical staff from the project, district personnel, consultants and so on.

Some construction contracts also include warranty periods — a given time period during which the contractor is responsible for making repairs. The warranty requirement increases the cost of the construction but has been developed successfully in some programmes such as the Danida-supported Volta Rural Water and Sanitation Project in Ghana⁷.

Thus, the construction contract could include:

- ◆ The **indicators and specifications** to be monitored by (a) the contractor, (b) the implementing agency and (c) the community. Include also a statement of the action which can be taken if construction is defective
- ◆ A **warranty period** of one year (or X months) written in the construction contract. This requires the contractor to complete all repairs related to quality of construction

⁷ Ghana Water and Sewerage Corporation (1996)

- ◆ A statement which limits the **delays** attributable to the implementing agency such as delay in inspecting final construction or in payment to contractors
- ◆ A condition that a certain percentage of the contractor's payment will be retained by the client pending satisfactory completion of the contract

Users in the community and water committees could use a checklist to monitor several features, such as:

- ◆ The quantity and quality of raw materials: sand, bricks, cement, sand/cement mixes (the number of bags of cement versus the number of loads of coarse aggregate or ballast)
- ◆ The location of construction such as the water point, to ensure that it is the same as the agreed site
- ◆ Depth of trenches for pipes, diameter and types of pipes, information about special fittings to be used
- ◆ Complete specifications for latrines.

⑤ Action based on the monitoring information

Too often problems with construction quality continue because there is no official course of action to stop abuses. Contractors can, of course, be powerful, and can control those who are supposed to supervise them. In addition, programme staff sometimes demand kick-backs. Some agencies are inefficient and make payments very late or have unrealistic rate schedules — so that it is difficult for an honest contractor to operate. To help avoid such problems, fast and consistent action needs to be taken if the monitoring data shows something is wrong.

During and after construction, all complaints by users must be examined in detail. It is essential to do something when the quality of the construction is defective. Possible actions are:

- ◆ Contractor rebuilds or repairs
- ◆ Contractor is blacklisted and cannot work in the programme for a given time period
- ◆ Contractor is fined

⑥ Training or orientation needed

All parties involved in monitoring need orientation about what and how to monitor, and what to do if something seems to be wrong. Construction checklists and drawings used for monitoring can be used in training programmes for construction staff to set standards for construction work.

Remarks

It is crucial to ensure that the specifications and pricing are realistic. For example, if the agreed schedule of rates is too low, it will not be possible for the contractor to deliver high quality work.

① Problem issue

Water quality must be acceptable to users in terms of taste, colour and smell. It must be safe from chemical and biological impurities that affect health. Common monitoring problems arise from the fact that traditional water quality testing requires skilled personnel with equipment and laboratories. In many cases, these are not available or are too limited to cover the area or cease to operate after the project period. For piped systems, experience has shown that it is not sufficient to have the operators at the treatment plants monitor the water quality. Because they are monitoring their own work, their reporting is not always valid or reliable.

② Indicators: examples

Water used for drinking and cooking should be acceptable to users (no objectionable taste, bright colour or strong smell). It should be safe biologically and chemically, as defined by the water agency (see the information on the following pages about water quality standards).

③ Who collects or checks?

In addition to operators at treatment plants or pumping stations, other groups should be involved such as users and water committee members, caretakers, NGOs and independent water testing organizations.

④ Monitoring plan

Effective water quality monitoring can combine (a) user complaints, (b) traditional testing and (c) sanitation surveys. By using more than one method, information can be cross-checked to ensure accuracy.

Approaches to monitoring water quality

Issue	Who can collect or check?	Method
acceptable taste, colour and smell	Users, caretakers, water committees	Community refers complaints to those who will act
	Field staff, NGOs, community-based organizations such as trained women's club	Sanitation survey performed periodically and at least once in life of project
	Supervisors & senior staff	Spot checks of water points
biological and chemical water quality	a) water department & treatment plant staff b) independent organization	Spot checks: bacterial & chemical testing Spot checks of residual chlorine and testing for turbidity
all issues	Field staff, NGOs, community-based organizations such as trained women's club	Sanitation survey

More information about these methods is described on the next pages.

λ Example

In one project in Asia, the chief engineer was concerned about the accuracy (validity) of water quality testing. Therefore, three reports were collected: (a) community complaints on taste-colour-smell, (b) results of spot water testing done by an independent organization, (c) reports from operators in the water agency. At a general meeting, all three reports on each water scheme were given to the field engineers. It appeared that the department operators reported far fewer problems than the community or independent testing organization. This motivated the engineers to improve the monitoring and treatment done by their own staff in each scheme.

5 Action based on the monitoring information

It is crucial, although sometimes difficult, to deal with water quality issues early in the life of programmes. There are cases where whole projects and the national investment have been wasted because people would not use water which they considered to be of unacceptable quality.

Six courses of action that could be taken to improve water quality are:

1. **Treat water at source or collection point.** This may include establishment of additional systems for removal of iron or fluoride at the water point. Please note, however, that for small systems, strong community organization and education activities are essential to ensure that the treatment equipment continues to operate as intended. There are many failures in the operation of water treatment equipment. When the surface water is highly polluted, the installation of slow sand filters should be considered. This treatment process is relatively simple and low-cost. It does, however, require continuing maintenance discipline. For piped systems, water treatment plants often do not operate as intended. This is a management problem requiring better supply of materials and more

disciplined staff. Unfortunately there is no low-cost way of removing salt from water. Salinity of water is an increasing problem around the world and requires searching for other water sources.

2. **Improve the source.** This includes protecting wells with aprons, parapets and covers. It may also include deepening wells or improving the construction around the source. Ideally, this should be the first option considered before finding alternative sources or construction of entirely new water facilities.
3. **Find alternative sources** such as digging new wells, using rainwater catchment.
4. **Treat the water at home** by filtering or boiling. These should be a last resort, if no other solutions can be found to water quality problems. Boiling requires considerable effort and a source of energy. The materials for filtering are often not maintained sufficiently.
5. **Education and advocacy.** In some cases, the new water system may provide safe and potable water but of a different taste and cooking quality from the traditional, more polluted sources. People reject the new source because it tastes different and makes cooked rice or tea also taste different. In such situations, strong community education and demonstrations are needed to convince households to use the safer water for drinking and cooking.
6. **Reduce the possibilities of contamination.** In piped water systems this may include taking out interconnections with old, pre-existing water systems and making sure that the water pressure does not run so low that impurities enter the pipes. For wells with handpumps, reducing the possibilities of contamination would include ensuring that wells are not located close to where pollutants can seep in.

⑥ Training or orientation needed

Training and orientation are required both for those collecting information and for those who use it. During initial training it should be determined what actions, as well as their extent and cost, could be taken to improve water quality.

Remarks

The following pages provide some basic information about sanitation surveys and water quality.

Water Quality: Background

Water quality monitoring and testing⁸ is undertaken to determine if the quality of the water is within agreed standards. Different techniques are used.

Biological quality of water

The most dangerous biological contamination usually comes from the faeces of warm-blooded animals, particularly human beings. For closed wells with handpumps, it is usually assumed that there is no faecal contamination — if — the wells are in good repair, and are located away from sources of pollution such as latrine pits, animal pens and fields where fertilizers are used. It can be assumed that open wells and untreated surface sources are usually contaminated. The biological quality of water in systems that do not have chemical treatment can be tested by checking for evidence of faecal contamination. Most tests look for evidence of the faecal coliform *escherichia coli* (called E. coli). E. coli is not in itself dangerous, but it is fairly easy to measure and nearly always indicates the presence of faecal contamination from warm-blooded animals.

In practice, it is important to ensure that water samples are tested within a few hours after collection and that the temperature of the samples is carefully controlled (about 44.5° C). When this is not done carefully, the results of testing are not reliable. Trained technicians are usually required for testing the biological quality of water, although there are some kits that can be used by trained community members.

Standards differ. For example, in some programmes, it is stated that there should be no E. Coli in samples from piped water systems and closed wells. In other programmes, levels up to 10 or 20 E. Coli per 100 millilitres of water are allowed. All open wells will probably have faecal contamination but the goal should be to bring the level as low as possible, for example, below 100 E. Coli per 100 ml. of water tested. It is common to find 5000 or more E. coli in ponds and rivers used by people and animals.

In **piped systems** where the water is treated with chlorine, a simpler and more reliable method of monitoring is to check the level of chlorine in the water at different points in the distribution network. The test is based on the principle that chlorine is a disinfectant which disappears relatively quickly. If there is no chlorine or the level is very low, it may be assumed that there may be contamination the water. Testing is not difficult and can be undertaken by trained community members or technicians.

Sanitary inspection is another way of checking the biological quality of water. It is less accurate than water testing but is easier for community members and staff to carry out. Sanitary inspection is a practical method for monitoring and maintaining water points over large geographic areas. To do this, the source, transport and/or storage of safe water are examined using a checklist. The checklist consists of probable causes of contamination, according to the type of source.

⁸ adapted from S. Cairncross and R. Feachem (1983)

Sanitary inspection of water sources: examples of items to check

Type of water system	The following may indicate contamination of water
Piped water	- Interconnections with older water sources or older distribution networks which may not be well maintained - Water pressure sometimes low, distribution net runs dry - Leaks not repaired quickly (for example, within one or two days) - No residual chlorine in the water of the distribution net - Complaints from users about bright colour, strong smell, strong taste
Shallow closed wells	- Well located so fertilizers from nearby fields can seep in - Cracks in parapet or standpost allowing contaminated water to pass into well - Priming pump with contaminated water
Open wells	- Note: Nearly all open wells will have faecal coliforms contamination - Overhanging shrubs and trees which birds and animals can reach - Animals or animal pens nearby so that their excreta/urine could drain into well - No wall, no parapet around well - People reportedly throw things into well or foreign matter is observed in well - Clothes washing water drains into well - Infants are permitted to defecate or urinate near the well

Chemical quality of water

Among the many tests of the chemical quality of water (S. Cairncross and R. Feachem, 1983, pp. 24-27) are those for:

Iron and salt. Salts or iron in groundwater is a significant problem in many countries. They tend to make water undrinkable before reaching seriously harmful concentrations. Examples of suggested highest limits are 0.1 mg per litre for iron and 200 mg per litre for chloride (as CL).

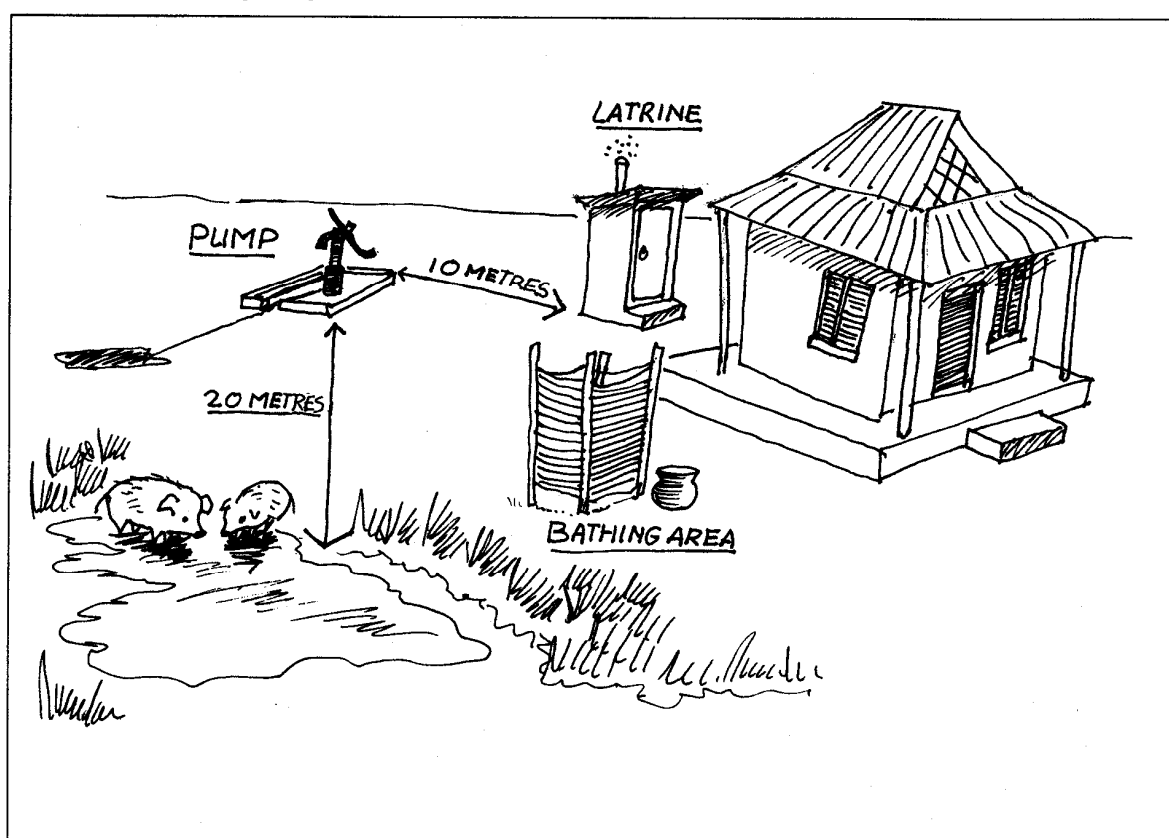
Of course, people themselves naturally monitor the presence of iron and salts when drinking and cooking. Action must be taken to remove iron, or relocate the source when the taste causes people to use less safe water sources. Saline intrusion in coastal areas is an increasing and very difficult problem in many countries. In some cases, however, users reject the water because the taste is different from the 'sweet' taste of the traditional polluted sources. In this event, further education and mobilization is usually needed.

Nitrate concentrations over 45 mg per litre in drinking water are potentially dangerous. These may result from long use of fertilizers, or on-site sanitation system or sewerage discharge, among others. This is one reason for ensuring sufficient distance between the latrine pit and well used for drinking.

Excess **fluoride** can cause discoloration of teeth, pain in joints and skeletal deformity among people who drink the water for many years. The maximum limit is usually considered to be 2 mg per litre of water. In hot climates where people drink more water, the maximum permissible limit is lower, for example, one project uses 1.2 mg.

Arsenic concentrations have increased in many shallow wells in Bangladesh and north-east India, perhaps related to the increasing pumping of water over the years. There are several tests for arsenic currently on the market, some of which can be used by trained community members or field workers as well as by technicians. The maximum permissible limit is around 0.05 mg per litre.

Example: Sanitary inspection checklist



	yes	no
1. Is the latrine less than 10 m from the handpump?	☐	☐
2. Is the handpump on lower ground than the latrine	☐	☐
3. Is there garbage or faecal matter within 10 m of the handpump?	☐	☐
4. Is there faulty drainage or stagnant water around the handpump?	☐	☐
5. Are there cracks in the cement floor around the handpump?	☐	☐
6. Is the handpump loose on the base so that water could leak into the well?	☐	☐
7. Is the pond or cattle shed at least 20 m from the handpump?	☐	☐
8. Is the latrine dirty, with garbage or faecal matter on the floor of the latrine?	☐	☐
9. Other risks (please state) -		

① Problem issue

Reliable services provide water regularly and at the times needed. Complete reliability is an ideal that is seldom achieved. However, the degree of reliability should be acceptable to consumers. If it is not acceptable, then consumers will not pay for services and will seek alternative available sources.

Typical problems of reliability are:

- Source does not function in the dry season when most needed
- Water is not supplied daily or is supplied only for one or two hours per day
- No water at peak hours because reservoirs are too small or caretaker does not open water point
- The motorized pump does not work on weekends as operators are away or there is insufficient petrol/electricity

The following information is adapted from project experience in Tanzania and India.

② Indicator: examples

Reliability

Water from a safe source will be available:

annually: for 12 months a year

monthly: at least Y days a month

daily: at least X hours a day

peak hours: water is available at peak hours which are convenient for women

λ **Example:**

monthly: 25 days a month

daily: at least 6 hours a day

peak hours: operates 6 to 9 AM and 4 to 6 PM

λ **Example:** 30 days a month at least 3 hours per day with predictable hours that are known to the women who fetch water.

Definitions: It is necessary to define the words **available** or **operates** because sometimes the quantity or the pressure of water is so low that there is no useful service although water is still technically available. In other words, a small puddle of water at the bottom of a well, or a continuous but small dribble from the water tap does not mean that water is 'available' to users. Here are three definitions of **available** and **operates** which take into account the fact that people do not always have watches to measure the time it takes to fill a container:

- ◆ A well with a handpump is operating if water flows in less than three strokes
- ◆ Water is available if a standard container (15 litres of water) is filled in less time than it takes to sing a particular well-known local song (about two minutes). This implies that water flow should be at least seven litres a minute
- ◆ For open wells, a well is operating if the bucket, when lowered, cannot touch at or near the bottom of the well.

③ Who collects or checks?

Users or women living near water points check automatically when they collect water. The users, the standpost attendants, water committee members, local government or operators can report problems of unreliable water supply.

To cross-check the reliability of a water scheme, an independent group such as an NGO or special monitoring team should do at least one quick study, also working with the users and standpost attendants.

④ Monitoring plan

Reliability can be monitored through an on-going O&M (operation and maintenance) system. Short, independent studies are also useful in cross-checking the information.

Monitoring reliability through the O&M system

Leaks and breakdowns are reported by community members, operators, linesmen and so on. They should report to the lowest level (such as local area mechanic) that can take action to make repairs or improve the situation. Careful planning is needed about how to report and where to refer complaints if no action is taken at the lowest level.

Community reporting system for O&M		
who checks?	reports to:	tools used to report:
users, water point attendant, water committee members, pump operators	area mechanic or water department	various such as fault reporting forms, telephoning, postcards

Cross-checks (triangulation): Too often the O&M system does not work. Too often action is not taken to improve the reliability of water supply. Every programme should monitor the reliability of the system. The following pages show examples of short field studies to check (a) 12 month water supply, and (b) water availability during the day and at peak hours.

5 Action based on monitoring information

Low reliability will be due to poor maintenance, poor design, poor construction or a combination of these. Some causes are not difficult to remedy. Other causes, such as selection of an inadequate source, can be very difficult to correct.

Examples of who might act and what action can be taken are shown below:

Monitoring for reliability shows this problem...	Who acts to solve this?	What do they do to solve this?	If the problem persists, another referral should be made to...
1. fuel difficult to get	users, water point attendant, water committee members, operators, or local government	1. local purchase must be organized by finding new dealers and/or improving the consumer payments	NGOs or CBOs may be helpful in organizing the community for these actions
2. excess leakage		2. leak detection activities to be carried out	
3. excess waste of water		3. community campaign & monitoring. Possibly shutting down illegal water connections	
4. lack of spares & replacements	users, committee, or local government, water department, managers	4. organize rapid purchase of spares through bulk purchase and/or improved cost recovery	leading civil servant such as governor or collector. If problem still persists, refer to media or donor
5. lack of manpower		5. organize more manpower or reorganize jobs	
6. distribution storage inadequate		6. purchase and construction needed	
7. pumps inadequate		7. repair, rewind or replace pumps	
8. management of O&M inadequate		8. train or replace managers. staff may need training & perhaps need to redesign O&M system	
9. source inadequate	managers of water services	9. stop new connections. improve the source	leading civil servant such as governor or collector. Eventually refer to media or donor
10. storage capacity too low		10. increase capacity	
11. rising main inadequate		11. new mains, distribution	
12. poor construction of components		12. repair or replace components	

⑥ Training or orientation needed

Training is essential for both the O&M reporting systems and for short-term studies. See the Fact Sheets on operation and maintenance. For the studies to cross-check reliability, training and orientation are needed for the women who collect information at the water points, the field workers and the data processors. It may be useful to seek advice from someone who has done this before, to avoid errors.

Remarks

In many cases the monitoring can be used to raise important problems, almost forcing some action. However, monitoring the reliability of water supply should only be undertaken if the situation can be improved.

λ **Example: a short study on annual water availability**

Preparation: **Permission is given from authorities to undertake the study. A plan is made for dissemination and use of the study results. Each water point should have a unique number or address.**

Time period **to collect data: short period of, for example, one or two days.**

Sample: **For piped water, water points are checked at the ends and higher places in the distribution system. For spot sources such as wells with handpumps, the sample size will depend on the hydrogeological conditions in each area. A small sample (5% to 10%) is useful to gather information about trends and changes.**

Who could collect: **Monitoring team, field worker, members of community-based organization or NGO.**

Collection tools: **A simple collection tool and spreadsheet. An example of a form to be completed by the data collector who visits the water points is shown here. A useful alternative is to use focused group discussions.**

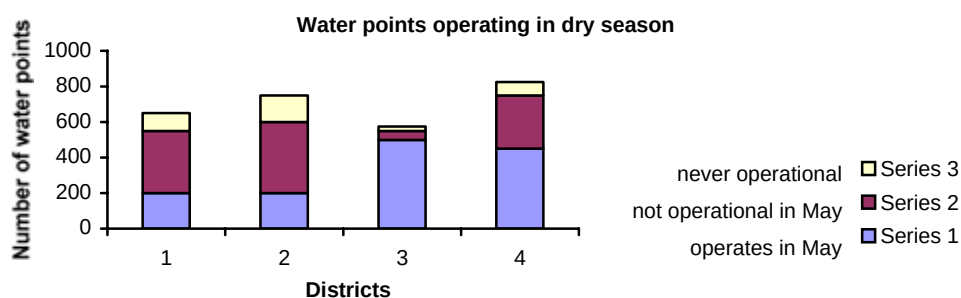
Write Yes or No	Ask users or water point attendant...
	1. Ask: <i>Has this water point stopped working completely or never been operational?</i> (If answer if YES, then stop the questioning)
	2. Check: Is it operating at the time of this visit? Operating means that it takes less than two minutes to fill the container (about 15 litres).
	3. Ask: <i>Could people get water from this water point during the rainy season?</i> Write any problems here
	4. Ask users: <i>Could people fetch water from this point during hottest month of dry season?</i> Write any problems here:.....

Trial: **Try out such a draft questionnaire at a small sample of water points in different areas. Enter the data on the spreadsheet to see if data entry is well-defined and easy. Revise the questionnaire and the spreadsheet.**

Collect: **Do the large-scale collection.**

Data entry: **Enter the data on a simple computerized spreadsheet.**

Analyze: **Look for patterns and problems. Be able to present the important aspects of the data very simply, for example, in graph form. A sample is shown here:**



λ **Example of monitoring plan: Is water available six hours a day? Is water available at peak hours which are convenient for women?**

Preparation: **Plan, at the beginning, how the results of the study will be reported and used by those in charge of O&M and water programmes. Water points should have a unique number or address.**

Define: **Determine the peak hours when most people want to use water points. This may vary for the different geographic areas. Ask project staff, water committee members and some users.**

Time period to collect data: **Two collection periods of one week (or at most two weeks): one in the wet season and one in the dry season. A short time period for collection is better because volunteers are involved in collecting and the accuracy of their reporting decreases rapidly.**

Sample: **For piped water, check the water points at the ends and higher places in the distribution system. For spot sources such as wells with handpumps, the sample size will depend on the**

hydrogeological conditions in each area. A small sample (5% to 10%) is useful to study trends and changes.

Who collects: **Water point attendant or someone living near a water point will complete forms. Their completed forms may be checked and collected by a field worker, NGO or community-based organization.**

Collection tool: **Prepare a short collection form, with a small number of items to be completed each day. Because people do not always have watches, it may be necessary to put very simple questions or pictures on the forms. Find locally-relevant ways to describe the peak hours, for**

Name: _____

Address: _____

Water point number: _____

Draw line to show when standpost is functioning

DAY 1

Write here →

Time

6 8 12 14.5 17 18

before breakfast children go to school mid-day meal children return from school men come home from fields dinner

example: operating before breakfast (6AM)? when children come home from school (14:30 PM)? A sample tool is shown here:

Trial and training: **Try out at a few water points and enter the data on the spreadsheet. Adapt and improve the short questionnaire and the spreadsheet. Identify people who could collect the data and ask them if they would work as researchers. They need to be trained to use the form. Be certain that there is a common understanding of the words ‘water point operates’.**

Collect: **Do the large-scale collection. Enter the data on a simple computerized spreadsheet.**

Analyze: **Look for patterns and problems. Be able to present the important aspects of the data very simply. Feed this information back, as planned, to those responsible for O&M and design of water programmes. This information should also be fed back to the volunteers who collected the information.**

Chapter 6 O&M for Water Facilities: Introduction

This section⁹ provides examples of monitoring the following:

- ◆ **Community O&M reporting systems**
- ◆ **Minor repairs and maintenance**
- ◆ **Major repairs**

Good operation and maintenance (O&M) are crucial for a water system. Without an adequate O&M system, the service levels will drop, and the consumers will stop using and paying for the service. A problem with many monitoring systems is that a remote management imposes the systems from above. As a consequence the monitoring is often unrealistic to put into practice or is not useful. A suggested approach for O&M is first to develop the monitoring in pilot areas. This can ensure that monitoring systems are appropriate the needs of users and field level managers.

Operation and maintenance is dependent on a number of factors such as:

Indicators	Issues
Performance indicators	- O&M reporting system - Minor repairs and maintenance - Major repairs and replacements - Reliability - Quality of water - Draw-down from source - Leaks and water loss in system - Spare availability - Replacement policy
Managerial indicators	- Committee/CBO functions - Staffing & training - Staff performance - Staff payment
Financial indicators	- Revenue & billing - Costs and financial management

⁹ adapted from J. Davis and F. Brikké (1995)

It is important to remember that in water systems which are only a few years old, fewer major repairs and replacement of equipment are likely to be needed. Newer systems will therefore appear to have good O&M systems, which may, in fact, not be the case.

Three ways of assessing the O&M system: quick methods

Method 1

If the water system has been operating some years, the easiest way to evaluate the O&M activities is to undertake a quick field study to determine: *What proportion of the water points are functioning?*

Method 2

To gather more information about the nature of the problems, two general indicators of O&M can be assessed through a quick study or through checking local records:

- ◆ major and minor repairs are completed within X days (for example, 7 days)
- ◆ consumer payments cover O&M costs

Method 3

Large programmes sometimes assess O&M practices by monitoring the outlets for spares parts and replacements. They check if the wholesale and retail outlets:

- ◆ are stocked with all necessary parts and equipment
- ◆ continue to sell these
- ◆ are to be found at all major market centres (implying that the spares are conveniently located for users)

With this method, information is collected on the stocking and purchase of spare parts and equipment such as pumps and pipes. If motorized pumps are used, then the cost and availability of petrol and electricity is also tracked.

It should be noted, however, that these three methods tell only if the system seems to be working, not the precise nature of the issues which need to be addressed.

Field insights**Indonesia**

Indicators of repairs:

- At least one man and woman in each household knows three regulations
- At least one man and one woman per well is skilled in repairs
- All minor and major repairs are made in less than 14 days
- One out of four adult users asked at a standpost will be knowledgeable about bank balance
- All users will know who is the contact person for repairs

Tanzania

In a project of the Tanzanian government, assisted by Danida, the following indicators are being used to evaluate the establishment of effective village O&M systems:

- Presence of job descriptions for attendants
- Agreements with attendants
- Village records on system performance
- Bank accounts established

- adapted from D. Narayan (1993), p.41

① Problem issue

A **reporting system** (which might also be called a **referral system**) is basically a tool for transmitting information and ensuring speedy repair of leaks and breakdowns in water facilities. Monitoring can help ensure that the reporting systems are fast, accurate and result in speedy repairs.

② Indicators: examples

Key individuals know how to report and to whom. Users, water point caretakers and committee members report breakdowns or leaks accurately and quickly. They refer complaints to other people or levels if action is not taken on repairs within the required time.

Definitions:

leaks = when the drops form a stream

accurately = information enables person receiving the report to bring correct tools and parts

report quickly = reports are received by person who can make repair within two days (or x days) after a leak or breakdown is observed.

Repairs made within required time, for example, in less than five working days.

③ Who collects or checks?

The reporting system can be checked by users, caretakers, committee members, maintenance staff from the water agency and/or the local government.

Extra checks are needed on the accuracy and timeliness of reporting by, for example, supervisory staff, NGO staff or local government.

④ Monitoring plan

The water committee and local government tasks: The committee members can see if a repair is not made within the required time because they live in the area. They are in a position to make sure that the report was completed correctly and transmitted to the person(s) who can make the repair. This serves to monitor the way reports are made.

At the district or project level: Field workers, supervisors and/or staff from the water agency can check during regular field work, can organize transect walks and can monitor the following types of issues at the conclusion of the training for caretakers and committees:

- ◆ **Knowledge about how to transmit information:** Ask people to explain how they transmit a report about a breakdown. There are many ways of transmitting such information, for example, by asking someone to physically carry a form to a mechanic, by telephoning the water department, by travelling personally to the repair personnel, by using postcards. The method of transmitting the report should be organized locally and may vary from one location to another, depending on what is most convenient and fastest.
- ◆ **Check accuracy of reporting:** Can the people who make the reports describe common mechanical problems accurately so that the mechanic brings correct tools and parts? Can they show how the report should be written? Ask to see a copy of the last report made, if it is written.
- ◆ **Check knowledge of referrals:** Ask the people who report what they would do if the repair is not made within X days (for example, 7 days). The key people (standpost caretaker or committee) should know where and how to refer the continuing problems. It is very important to build in ways to refer complaints to other groups if the reports are not acted on. For example, if the local mechanic does not make the needed repair, then the water committee has to refer the repair to another mechanic or higher authority.
- ◆ **Check past experience:** When was the last breakdown and how did they get it repaired?
- ◆ **Compare** a local fault report made by a caretaker or committee with the complaints or the repair records held by the mechanic or water department staff in charge of repairs. Do these contain the same dates and information? It can be very useful to make this comparison, even on a small scale. The people making the reports, or receiving them, can sometimes falsify dates or other information to benefit themselves.

5 Action based on monitoring information

There are various actions, depending on the problems identified, for example:

- ◆ Field staff could re-orient or retrain the people responsible for reporting to improve speed and accuracy
- ◆ The committee or local government could change the repair group or mechanic to find someone who is more reliable
- ◆ Retrain or re-orient the water department personnel or mechanics who receive the reports so that they are more responsive
- ◆ Local government could complain to leaders of the water agency if the fault reports are not dealt with rapidly by their local staff
- ◆ Revise the entire reporting system if it is not working

⑥ Training or orientation needed

A major commitment is needed for training and orientation in order to set up an effective O&M reporting system. The reporting system should be monitored and this requires training of those responsible such as users, caretakers, committees or local government.

Remarks

A sample reporting form is shown below. The water point caretaker is trained on how to complete the form. In the training, the attendant also plans how to have the form carried quickly and to whom.

FAULT REPORTING FORM

Standpost number:

Address of problem:

District:

Village:

Reported by:

Date of reporting:

What is the problem?

☐ Leak?

Where, exactly is the leak? (circle one)

Tap?

Standpost elbow?

Pipe?

Connector to pipe?

Valve box?

Other?

If pipe leak, what is the size of pipe?

☐ No water coming? Why?

☐ Other problem? Explain and give location
.....

- adapted from Socio-Economic Unit Foundation (SEUF), Kerala, India

1 Problem issue

Maintenance and minor repairs are routine activities that prevent major problems at a later stage. This Fact Sheet focuses on maintenance/minor repairs by caretakers of wells and small water systems. Research shows that systems with trained caretakers at water points tend to work better over the long term. Caretakers may be selected by users, or by the project, or can be self-selected. They may be paid or voluntary.

2 Indicators: examples

- Caretakers are trained, know the tasks needed for maintenance/minor repairs and can demonstrate how to use needed tools.
- Caretakers will make minor repairs within x days (for example: three days). Perform simple maintenance every y days (for example: four days or once a week).

Definition: *Caretakers* = one person or a small group of people who recognize themselves as having responsibility for maintenance and minor repairs.

Preventive maintenance involves regular checking of components and making minor repairs. For example:

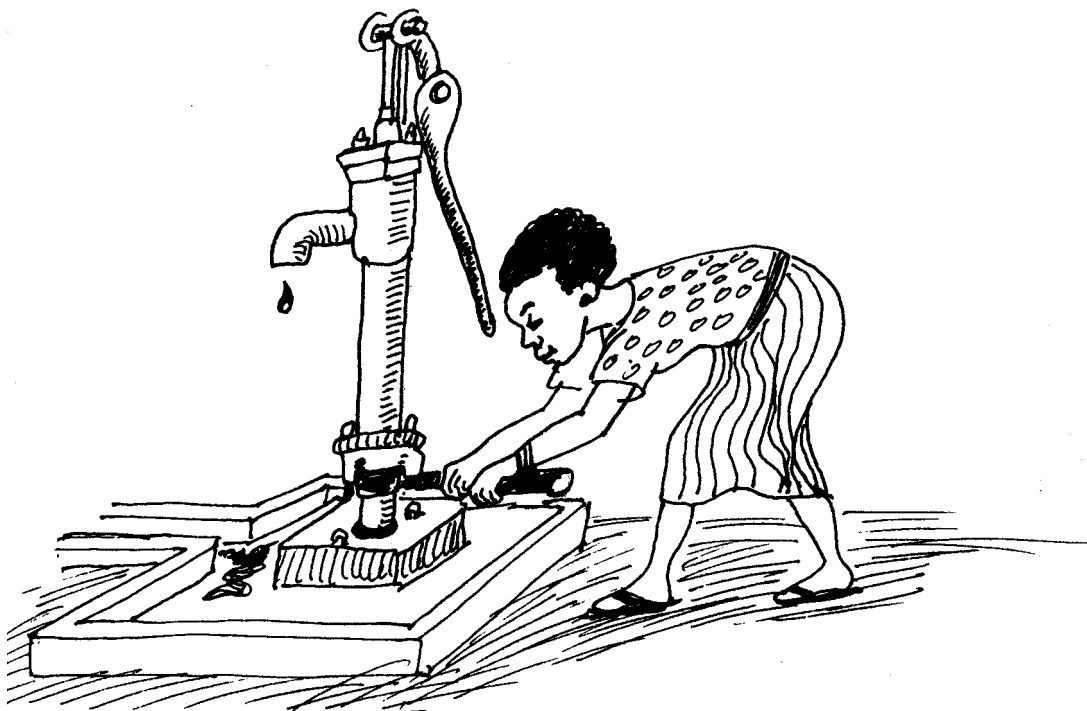
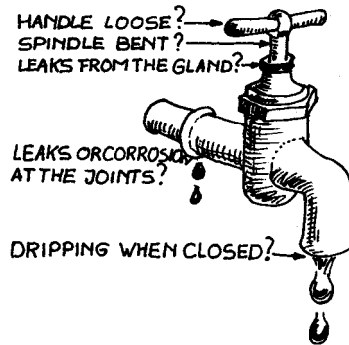
- For handpumps, preventive maintenance may involve tightening nuts and bolts, checking play in handle and number of strokes needed to fill a container, cleaning site, ensuring drainage, lubricating, replacing cups, fixing cracks in platform, changing handles, and repairing the cylinder and footvalve.
- For standposts on piped systems, preventive maintenance may include cleaning the site, ensuring drainage, checking valve boxes, fixing leaks at standpost and in service pipe, changing defective taps at standpost, fixing cracks in platform.
- For springs, preventive maintenance at source may include cleaning the tank and repairing cracks and leaks.

3 Who collects or checks?

Water point caretakers, as well as users, are responsible for maintenance and for identifying minor repairs needed. Their work should be monitored by, and supported by, the water committee and field workers.

Extra checks are needed by the field work supervisor and technical staff of the water agency who can make spot checks. In some projects, independent studies are sometimes made.

After the project period ends it is important that extra checks of maintenance and minor repairs continue to be made by, for example, local government staff, committee or women's groups. It is useful, *during* the project period, to involve the local government or groups that will be responsible for maintenance in the long run **after** the project ends.



4 Monitoring plan

Water committee members and field workers should visit the water points occasionally. Transect walks among the water points will provide information about maintenance, repairs, use of water points and other issues. When monitoring, key issues to check are:

- ◆ **Caretaker is in place, trained, has monitoring tool:** Ask if there is a caretaker or a group of people who are usually responsible for taking care of the water point. If a checklist is commonly used by caretakers, ask to see it. The same checklist should be held by the committee.
- ◆ **Water point is maintained:** Inspect the water point. It is helpful to use the same checklist which the caretaker holds, if this exists. Check for cleanliness, drainage, hygiene around standpost or minor repairs that are not taken care of. Turn on water or use pump and check flow, number of strokes, play of handle and so on.
- ◆ **Caretaker can demonstrate tasks for maintenance and repairs.** At the water point, ask the caretaker what he/she checks and ask the caretaker to demonstrate how to use basic tools. For handpumps, yield is an important indicator of effectiveness. A common problem with handpumps is worn cup seals. Therefore, it is useful to ask the attendant about this. For example, in some parts of India, a handpump should produce 15 litres (about 1 container) per minute at a rate of 40 strokes per minute. When it takes longer or more strokes are needed to fill the container, then the attendant might first think that cup seal needs to be changed. Is standpost attendant aware that many problems are related to the cup seals and valves? Has standpost attendant ever changed a cup seal?
For diesel motors, ask the caretaker what he/she checks. Fuel consumption is an important indicator. Does the caretaker voluntarily state that he/she checks changes in fuel consumption? oil leaks? sound of engine? Water level in tank, if any? Check also if petrol and grease are available?
- ◆ **Repairs made in X days.** Check the records but also ask about the repairs. When was the repair made? What type? Were there problems?
- ◆ **Double check:** Visit a few users who live nearby to ask about service levels and maintenance. If any pumping or other report forms are completed by the caretaker, do these agree with the experience of the users? For example, if the caretaker reports that the water point is open, or the pump operates each day from 7 AM, check this with some women who collect water. Ask water committee members what is done for maintenance and small repairs. Do they encounter any problems?

To double check operation, maintenance and the reporting system, it is useful, at least once in the life of a project to have a short-term study undertaken by an independent team to gather information about the functionality, reliability and repair of all water points.

⑤ Action based on monitoring information

Some common findings and actions required are:

- ◆ **Caretakers are not there in place.** They are appointed. Procedures are set up so that re-appointment can and will be made locally, perhaps by involving local authorities from the beginning.
- ◆ **Caretakers do not have tools, materials or other inputs.** Tools are often lost or sold. The private sector can be involved. Thus, spare tools and materials should also be available from private providers. If petrol and electricity are chronically not available, then serious thought is needed by senior management about changing the technologies.
- ◆ **Caretakers do not perform as expected.** Solutions, such as replacing staff, must be developed locally.

Davis and Brikké (1995, p. 68) suggest: "Remuneration schemes should be arranged to give maximum reward for the minimum downtime. Regular preventive maintenance tasks are sometimes poorly rewarded compared to payment for major repairs. Such an arrangement does not encourage care of the system as it becomes financially more rewarding for a caretaker or mechanic to let the system deteriorate until it requires major repair work".

⑥ Training or orientation needed

Projects must commit themselves to continuing training for caretakers, committees, members of NGO, local government. It is essential that an investment be made so that skills remain after the end of the project period.

Recommended literature

Davis, J. and Brikké, F. (1995) *Making your water supply work*. (Occasional Paper series; no. 29). Delft, The Netherlands, IRC International Water and Sanitation Centre.

Remarks

The following example of a caretaker's monitoring sheet is also meant to be checked by the mechanic.

Monitoring Sheet for Handpump Functioning

Pump no:.....

Month:.....

Name of caretaker:.....

	week 1	week 2	week 3	week 4	week 5
Does water come within six strokes?					
Is flow good when pumping slowly?					
Is pumping easy?					
Are nuts and bolts tight?					
Is handle firm after tightening? Is pump firm on its base?					
Is slab firm and unracked?					
Is drain clean?					
Is site clean?					
Does water seep away?					

In case of problems report to village mechanic and fill in work report form.

Check by village mechanic

Date:	Name:
Remarks:	
Signature	

The following is an example of a checklist that summarizes both the preventive maintenance and minor repair tasks for which a caretaker may be responsible. Such a checklist can be combined with drawings which give a visual reminder of the problems.

Check	Action
Service pipe	
Pipe covered?	Cover pipe with soil
Pipe leaking?	Repair or get help
Meter/valve box	
Walls cracked?	Repair with cement mortar
Cover in place?	Replace cover
Check lock	Replace lock if defective
Meter	
Meter recording?	Report if meter seems broken
Leaks?	Report if leaking
Service pipe stop valve	
Valve stiff?	Clean, repair or report
Gland leaking?	a) tighten gland nut b) replace packing if worn
Joints with pipe leaking?	Tighten joints, repair or report
Standpost	
Surface clean?	Clean if required
Cracks?	Repair with cement mortar
Poor drainage?	Identify problem and either: a) replaster surfaces to drain freely, or b) discuss problem with users
Clear soakaway?	Clean and replace stones if required
Taps	
Inspect for leaks	Replace tap washers when needed. Tighten gland nuts when needed or replace gland packing
Check handles	Fix any loose handles. Clean or re-cut threads where needed
Monitor correct use by all users	Advise users on correct way to use tap
Test flow from tap	If low flow: check service pipe stop valve is fully open and/or check for leaks
Taste water and check the colour	Report any changes immediately

J. Davis and F. Brikké (1995).

① Problem issue

Major repairs are usually carried out by the water department, private contractors or trained area mechanics using special tools and materials. They might relate to pump failures, major pipe bursts, cracked tanks, faults in the treatment plant or distribution net, wells which run dry, and so on.

② Indicators: example

Major repairs will be made correctly in less than X days of occurrence of the problem.

Definitions:

Major repairs: those which cannot be made by community members, water point caretakers or committee members

Made correctly: quality of repair is such that the problem will not reappear because of the materials used or workmanship of the repair

X days: for example, seven days or fewer

③ Who collects or checks?

Users, water point caretakers and committee members naturally check in the course of their activities. Technical staff monitor in the event of a major repair or replacement. Extra checks are useful by district personnel, field staff and technical supervisors.

④ Monitoring plan

Method 1

Community reporting system: It is crucial that community members are able to refer complaints about repairs if they are not acted on in time or are not made correctly. For example, if the local mechanic does not make a needed repair the water committee has the means to refer the repair to another mechanic or higher authority. Such referral systems are the heart of monitoring and ensuring timely major repairs. As another type of community control, the signatures of users or the committee on the repair form could also be required before payment is made to the contractor.

Method 2

Periodic or spot checks:

Project staff and senior staff in water departments should keep records of frequency of major breakdowns. These can be used to determine if there are design faults or deficiencies with the quality of repairs.

Secondly, they should compare some of the local fault reports made by a caretaker or committee against the repair records held by the mechanic or water department. Do these two reports contain the same dates and information? It is very important to make this comparison, even on a small scale. If the repair and reporting procedures are working correctly, then the people making the reports and receiving them should write the same information.

Method 3

Special study:

Each major repair which is not completed correctly or not completed within X weeks can be studied in depth. This includes examining all the evidence at a meeting with representatives of local committees and senior project staff. Lessons from these in-depth studies should be acted on to improve the repair system. Typical problems that such studies can reveal include:

- ◆ Trained repair personnel are not accessible or not affordable
- ◆ The amount of money which department engineers can use, on a discretionary basis, to purchase parts and make major repairs is too small. As a result, the field engineers must complete cumbersome and time-consuming procedures to get approval for major repairs and release of funds. This is very common and deserves detailed study to solve the problem.

Data from studies and reports on functionality or reliability of water points can also be used to identify major repairs not made or not made correctly.

⑤ Action based on monitoring information

Improve the project/programme referral system through orienting local committees and identifying or training more private repair groups.

Remove the blockages identified during the monitoring or reorganize the repair system. For example, in a town in Uganda, the water committee was forced to resign by the local government because a major repair was not fixed within three weeks.

⑥ Training or orientation needed

All parties involved in major repairs need to be oriented. Job descriptions are needed for water department personnel involved in referrals, monitoring and making repairs. It is advisable for projects to make O&M manuals for each piped water scheme. In the process of producing these manuals, many projects unfortunately neglect to hold field tests that check whether the manuals are used, and are as user-friendly as intended.

To set up referral systems, committee members and local government need careful orientation and training.

Remarks

The efficiency of maintenance personnel can be shown by work indicators for example, backlog of repairs, amount of time to make repairs, replacement.

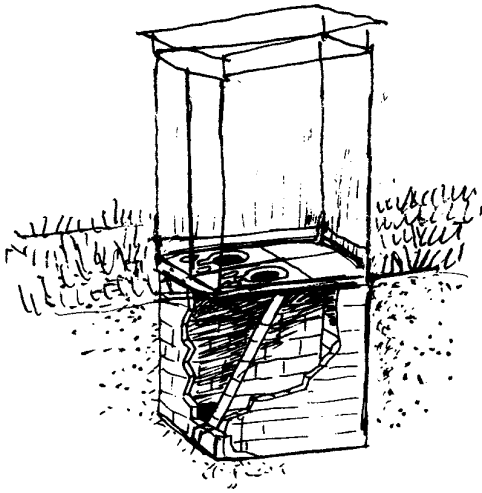
For piped water systems it sometimes happens that the system was so badly designed or over-extended that repairs will not improve reliability or quantity.

Recommended literature

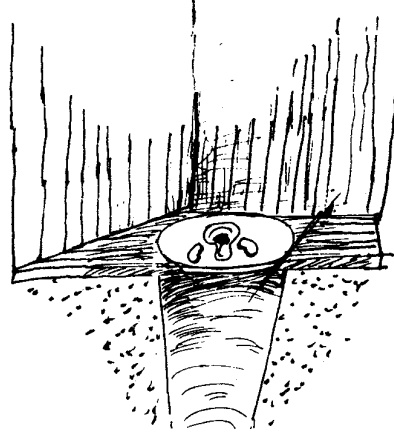
Davis, J. and Brikké, F. (1995) *Making your water supply work*. (Occasional Paper series; no. 29). Delft, The Netherlands, IRC International Water and Sanitation Centre.

Narayan, D. (1993) *Participatory evaluation: tools for managing change in water and sanitation*. (Technical paper; no. 307). Washington DC, USA, World Bank.

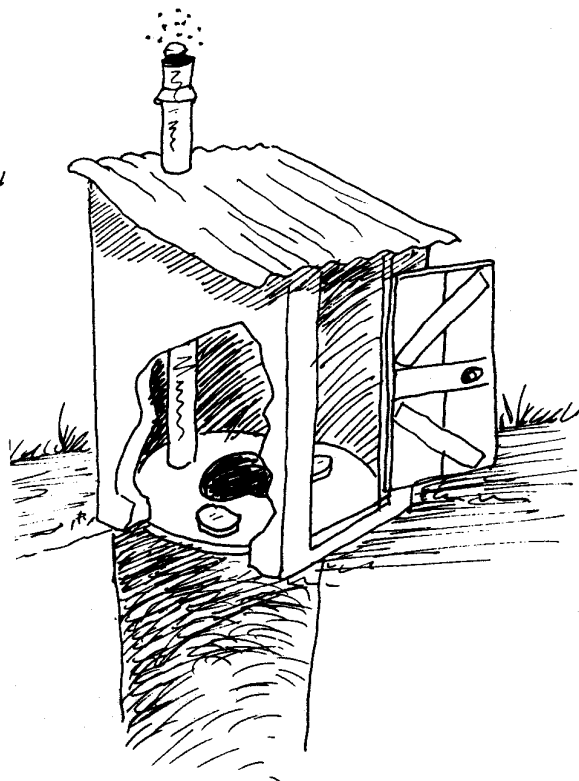
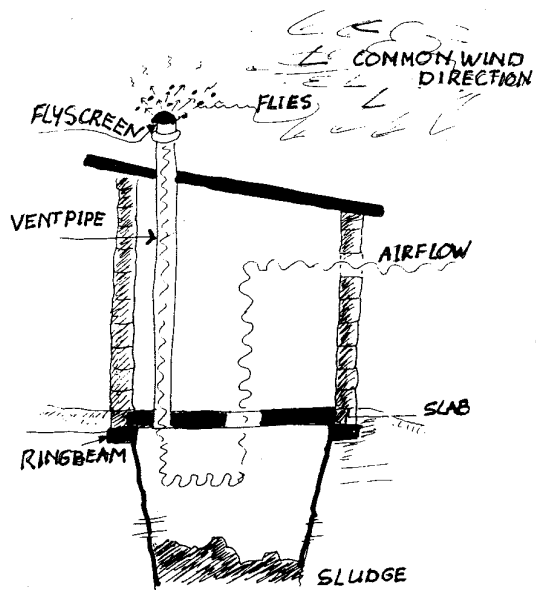
Yepes, G. and Dianderas, A. (1994) *Performance indicators: water and sanitation utilities. Set 2: Financial indicators and overview of service rates*. Washington DC, USA, World Bank.



ALTERNATING TWIN LINED PIT



CIRCULAR UNLINED PIT



VIP LATRINE

Chapter 7 *Latrines: Introduction*

Among the many issues that can be selected, this section provides three examples of monitoring:

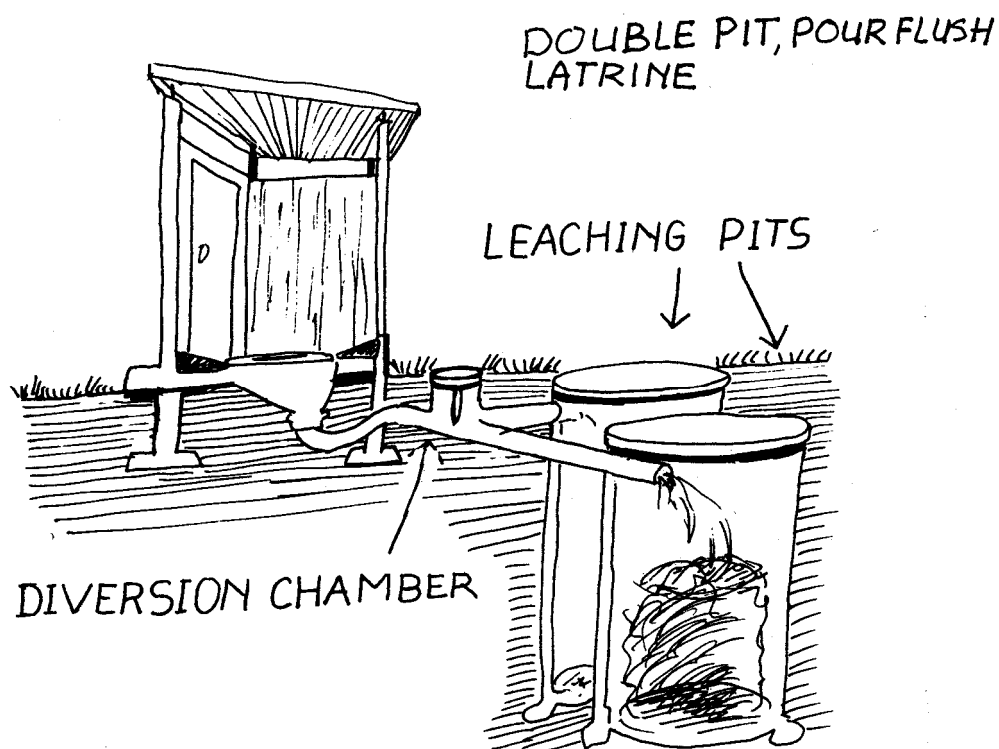
- ◆ **Demand for latrines**
- ◆ **Latrines: cost control**
- ◆ **Quality of latrine construction**

A Fact Sheet titled **Latrine Use and Maintenance** appears on page 143.

- Latrines must be used consistently.
- People must wash their hands at critical times such as after using latrines

The most effective latrine programmes usually have very strong mobilization components to create demand and have education components to ensure appropriate use. Thus, **a latrine programme is not primarily a construction programme.**

The consistent use of sanitary latrines provides a primary barrier against human faecal matter. A high coverage is also needed. As a 'rule of thumb' it is said that about 2/3 of the population should use latrines to ensure a positive health impact.



Technology choice

The technology offered should provide facilities within the reach of all income groups, and which can be used year-round. Technology choice and selection usually take into account features such as:

- ◆ Demand, willingness and ability to pay
- ◆ Water requirements, odour and expected lifespan
- ◆ Depth of the water table
- ◆ Texture of the soil and difficulty in digging pits
- ◆ The type of materials used for anal cleansing
- ◆ Potential for cross pollution of drinking water sources
- ◆ Population density and availability of space
- ◆ Availability of materials for construction (such as wood logs)

Example of table made to help select technology and design

2 = very good 1 = good

	<i>Cost for poor HH</i>	<i>Ease of construction</i>	<i>Expected lifespan</i>	<i>Water requirement</i>	<i>Wood needed for construction</i>	<i>Flies/ odour</i>	<i>Maintenance</i>	<i>Pit emptying</i>
Single pit, unlined	2	2		2			1	
Single pit, lined	1	1		2			1	
VIP single pit				2		1		
Double pit				2		1	1	2
Double pit, waterseal, junction box					2	1	1	2
Compost latrines					2	1		
Water closet (with septic tank or piped sewerage)					2	1		2

You may wish to revise this table to reflect your own situation.

Current programmes tend to reduce or eliminate subsidies and require households to meet all the costs. Unfortunately, there do not currently seem to be adequate technologies which are affordable by poor families in areas of very high water tables or where pits must be emptied (and materials such as paper, stones or sticks are used for anal cleansing). In these cases monitoring can help assess if the poor are being left out. Group or mass construction and/or cross subsidies are used in some programmes to help solve these problems.

① Problem issue

Many latrine programmes fail because more attention is paid to construction than to stimulating demand for latrines. Monitoring can focus on the demand and the activities carried out to increase demand among the public. The monitoring can then be used to improve mobilization and information activities. It can also remind staff and partner organizations about the importance of these activities. This example is based on the experience of the Danish and Netherlands-supported Socio-Economic Units in Kerala, India.

② Indicators: examples

Mobilization and information activities are planned and carried out to stimulate demand. The plans include elements such as:

- Different channels of communication are used to reach different groups such as men and women, children in schools, mothers, those going to the market and so on.
- Initial motivation for men and women, young and old, rich and poor, based on the reasons of the early acceptors (such as privacy, property values etc.).
- Sufficient time (for example, six months) is given to mobilization and communication activities before construction.
- Steps are taken to ensure that there are sufficient retail outlets, trained masons and materials locally available to meet construction demands and to stimulate competition (thus reducing costs).
- The number of poorer households which demand latrines (as shown by applications or purchase of materials) increases to X or to Y% of the households below the poverty line.

③ Who collects or checks?

A range of people and institutions may be involved in monitoring such as project managers, supervisors, owners of retail outlets, non-governmental organizations, community-based organizations and village health committees.

④ Monitoring plan

To monitor mobilization and information activities it is only necessary to identify those activities in the written plans which have been carried out. Extra checks can be useful. During a transect walk or visit to poorer sectors of the community, people in households can be asked what they think and know about latrines. Similarly checks can be made of the number of applications or purchases.

To determine to what extent demand has been stimulated, sales and applications for facilities can be checked. A small qualitative study can also be useful to identify the obstacles, that is, the reasons blocking demand creation, implementation and use of latrines. Such a study can also help identify to what extent the poorest families are served. Hint: It may be useful to ask some community members,

especially men, how much a latrine costs. This checks whether the perceived costs are higher than the actual construction costs — a belief that can reduce demand.

5 Action based on monitoring information

The possible actions can include: changing the technology or conduct of the programme, changing the geographic focus to other areas, extending the time line of the mobilization programme. Many programmes have learned that they need to revise their basic messages to begin motivating people by communicating the reasons of early latrine acceptors. Such reasons or motivations are varied, for example: the need for privacy, improved status, having a latrine raises property values.

6 Training or orientation needed

Training or orientation is needed for those carrying out qualitative studies.

Remarks

It may be necessary to advocate so that programme planners will be convinced of the need to monitor demand and of the need for sufficient time/resources to stimulate demand.



ARE LATRINE CONSTRUCTION COSTS REALLY
AS LOW AS POSSIBLE?

① Problem issue

Cost control means controlling the costs of materials and labour. In household latrine programmes where families pay part or all of the construction costs, it is very important to minimize these costs. Lower cost helps increase the coverage. High coverage (for example, two out of three households have and use a latrine) is essential for latrine programmes to have positive health results. A challenge is affordability: low income households should be able to afford a latrine which functions twelve months a year.

Cost control can be achieved by different actions. These include:

- ◆ ensuring **honest** financial transactions, purchase and disbursement of commodities
- ◆ use of **cheapest materials** of **good quality**, use of local materials from that village or town
- ◆ monitoring labour costs

Some programmes are privatized, that is, construction and payment are handled by private masons and contractors. Other programmes are undertaken by projects, by NGOs or local government. The following information deals with both possibilities.

② Indicators: examples

Construction cost lowest possible for that area	A strategy is carried out to keep construction costs at the lowest possible level for that area through, for example: - construction of demonstration latrines used to estimate the costs of materials, labour time and overhead - identification of least-cost materials which are of adequate quality through agreed tendering and inspection procedures - in privatized programmes, there are sufficient trained workers and outlets to allow for some competition. Households have knowledge of products and costs for technologies from these different outlets
Control financial transactions	A plan is made and implemented to ensure honest financial transactions so that local government, masons, suppliers, storekeepers and families follow the rules for purchase, finance and transport of materials.

③ Who collects or checks?

In projects, a wide range of people should be involved in monitoring and cross-checking. If carefully planned, this becomes part of the programme and disappears as a separate monitoring activity.

④ Monitoring plan

Method 1

To estimate costs of latrines, at the beginning of a programme in a community it is useful to have demonstration latrines built by local workers who will be involved in the programme. To the extent possible, local materials that are cheaper but of good quality should be used. The exact cost and number of hours for construction need to be recorded during the construction. Compare demonstration latrines from different areas, soil types and water table conditions to set prices for each geographic area. When two to three demonstration latrines are used to arrive at basic costing, the construction activity can be used to train local masons about how to build according to specifications. Follow-up monitoring is used to ensure that the average cost of a latrine in the area (amount of material used, labour time) does not exceed that of the demonstration latrines, unless the owner wishes to pay more for special features.

Method 2

In privatized programmes, where construction is carried out by masons or contractors who are directly paid by the consumers, the monitoring can also be useful in controlling the upper limits of construction costs. This can be done by surveying the labour and materials outlets, and stimulating more outlets if needed. It is also important for the people to know about these retail outlets and to know the costs which can be expected. They must also be able to contact the trained labourers/contractors.

Method 3

It is important that local government, masons, suppliers, storekeepers and families follow payment, purchase and transport rules. Staff may carry out surprise inspections of construction and tendering on a regular basis, for example, once a month. Surprise audits are very useful. A financial and physical audit could be held, for example, once in three to six months to check vouchers, storehouse and tenders. To check tendering, it is useful to have random checks of the prices of commodities sold by retailers and wholesalers in the local area.

Note:

It is extremely useful to consult with and ask local artisans, vendors and users about how prices and costs can be reduced. They will almost always provide useful information.

⑤ Action based on monitoring information

All possibilities to reduce costs, without sacrificing quality, should be followed in response to the monitoring.

Recommended literature

Kurup, B.K. et al. (1994) *The community-managed sanitation programme in Kerala: Learning from experience*. (Project and programme papers; no. 4E). Delft, The Netherlands, IRC International Water and Sanitation Centre.

λ Example

The community-managed sanitation programme of the Socio-Economic Units in Kerala, India, monitored latrine construction costs carefully. Variations in the average cost of building materials were tracked by the project as part of the effort to control costs. Staff members would meet regularly to compare costs and materials used. Monitoring also involved local masons and suppliers. There were spot checks of supplier prices and quality of materials sold. Surprise financial and physical audits were held in each location.

Change in costs of a latrine (Indian rupees)

MATERIAL	Quantity	1988-1989	1989-1990	1990-1991	1991-1992	1992-1993	1993-1994	1994-1995
Cement	2.5 bags	356.30	342.59	222.50	273.13	293.44	315.63	324.17
Sand	60 pans	73.73	90.44	92.00	104.00	135.50	146.70	144.00
Brick	1000 pieces	479.24	493.19	470.00	460.00	715.00	778.38	803.75
M.S. Rod	7 kg	94.32	110.95	96.00	93.35	91.91	89.51	95.15
Door	1	178.35	140.54	128.00	130.00	155.75	172.50	173.00
Closet & trap	1 set	98.25	109.80	112.00	120.10	122.33	185.21	205.98
Floor tile	22 pieces	25.25	27.50	28.60	33.00	45.68	41.25	42.17
Roof tile	12 pieces	15.00	15.00	15.36	16.50	20.34	20.25	21.00
3/4" rubble	5 pans	45.93	21.00	20.00	17.50	26.38	26.13	26.75
1/4" rubble	1 pan	5.33	5.20	5.20	5.38	8.10	8.33	9.37
S.W. pipe	3 pieces	46.50	40.20	40.50	42.15	47.93	49.35	50.70
Door latch	2 pieces	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Binding wire	100 gms	1.00	1.00	1.00	1.00	1.00	1.50	1.50
Glass piece	1	5.00	5.00	3.00	3.00	3.00	1.88	1.50
Labour	36 man hours	506.35	225.00	244.50	287.50	320.75	330.25	336.67
COST PER LATRINE UNIT		1949.75	1637.41	1488.66	1596.60	1997.09	2176.85	2245.70

This table shows, for one area, the changes in prices over a six-year period. The total price of a latrine increased from 1949 rupees to 2245 rupees, which was less of an increase than in other programmes.

The increase in the costs of a latrine was less than the level of inflation. In particular, this means that in one area where construction was the most expensive, the increase in construction costs over the six-year period was about 30% less than the inflation in the prices. In another area where construction was much less expensive, the increase in construction costs of a latrine was 17% less than the general inflation in construction prices.

The programme also compared its construction costs to other programmes supported by the State Rural Development Department, by a national programme and by the World Bank. The costs of a latrine in community-based projects was more than 20% less than the other projects, while the quality of the latrine seems to have been better.



① Problem issue

Latrines that are well constructed will last longer, be easier to clean and be more consistently used. Construction of high quality can also stimulate the demand for latrines or for latrine up-grading among clients.

② Indicator: example

Construction quality follows agreed rules and written plans.

③ Who collects or checks

A wide range of people may be involved in monitoring construction, such as:

- ◆ Masons
- ◆ Sanitation supervisor – during and after construction, but before the final payment
- ◆ Family or household which pays, indicating their approval
- ◆ Spot checks by programme staff

The organized involvement of these groups in monitoring means that there will be many extra checks.

④ Monitoring plan

Monitoring only after construction is not very useful. To ensure good construction, it is necessary to monitor or check just before, during and after. To do this, a checklist is useful, which may contain drawings and plans. It should be simple enough to be used by a wide range of people: masons, supervisors, local committees, the householders themselves. If everyone has the same checklist – and knows how to read it – the quality of construction will improve. The final payment for contractors and masons should be based on completion according to plan. In projects, it is useful for supervisors and project leaders to make sample spot checks. For example, one latrine per neighbourhood is checked by a senior professional; one out of 20 latrines by a supervisor; one in three is checked by a field worker; every latrine is checked by a local construction supervisor.

⑤ Action based on monitoring information

Complaints about construction quality of latrines must be handled quickly or the programme can suffer in terms of credibility. Typical actions are:

- ◆ Householders refer complaints to project supervisors and/or local government
- ◆ Payment for defective work is stopped
- ◆ Sub-standard contractors or masons are not hired for further work in the future
- ◆ Householders are given lists of 'approved' masons and contractors to select among

⑥ Training or orientation needed

The training of workers and those involved in construction should be done with the checklist.

Remarks

In one programme in Asia, users know where to complain and refer construction problems. All latrines for which there is a construction or operational complaint are examined in detail by staff. This includes discussions with users and sometimes, the construction workers or private contractors. Major errors due to faulty construction are repaired at no expense to the owners. This is an important way to ensure credibility of the programme. Sometimes the user complaints are not realistic and the staff can help solve such problems by explaining the construction and way in which the latrines operate.

The next page shows an example of a monitoring form for a community-based latrine programme managed by local government with an NGO. This card is held by the household and must be filled in, signed with the correct signatures and presented before construction can start. The card is the major monitoring tool as well as the major management tool for the programme. It includes required participation in hygiene education classes by prospective latrine owners. Information is given in the form for two models: ordinary latrine with superstructure and construction only to the plinth level.

Monitoring card for a latrine programme

SOCIO-ECONOMIC UNITS KERALA WATER AUTHORITY Hygiene Education and Latrine Construction					
Ward House No:..... No. of family members					
Name and address:					
Serial No.:..... Ordinary/ Waterlogged/ Plinth level design:.....					
Details of beneficiary contribution					
Date	Receipt number	Amount paid	Balance	Panchayat	
1.					
2.					
3.					
4.					
Details of participation in Hygiene Education Classes					
	Classes/subjects	Date attended	Name of participant/Signature	Signature of field staff	
1.	Need for sanitary latrine				
2.	Technical aspects				
3.	Use and Maintenance				
Structure of latrine		Ordinary design – double pit	Plinth level design – double pit		
Measure of the room		90 x 100 cm	90 x 100 cm		
Height of the wall		180 x 175 cm	-		
Diameter of the pits		100 cm	100 cm		
Diameter of the pit lids		100 cm	100 cm		
Depth of the pits		100 cm	100 cm		
Effective depth of the pits		90 cm	90 cm		
Measure of roof		150 x 130 cm	-		
Details of receipts of goods for the construction of the latrine					
No.	Item	Ordinary design	Plinth level design	Date/Signature of recipient	Signature of WWC secretary
1.	Bricks	800 or 1000	300 to 350		
2.	Cement	105/110 Kg	75 Kg		
3.	Earth pipe	3 pieces	3 pieces		
4.	Rubble	60 pots	35 pots		
5.	Rings (depending on soil)	4 pieces	4 pieces		
6.	Door	1	-		
7.	Closet, tap	1 set	1 set		
8.	Door padlock	2 pieces	-		
9.	Door hook	1	-		
10.	Glass 5" x 5"	1	1		
11.	Roof slab (6mm rod)	1 set	-		
12.	Pit slab	2 sets	2 sets		
13.	Floor tiles	21 pieces	-		
14.	Roof tiles	13 pieces	4 pots		
15.	¾" metal	4 pots	-		
16.	¼" metal	1 ¼ pots	-		
17.	Closet cover	1	1		

Monitoring card for construction of a double-pit, pour-flush latrine

LATRINE CONSTRUCTION CHECKLIST

for supervisor, field worker, local government and mason

- Pits are more than 10 m from well used for drinking water
- If this is an area of high subsoil water (water table less than 300 mm below ground level for several months):
 - inlet pipe should be at ground level
 - pits are raised 300 mm with compacted earth around top
 - 300 mm filling compacted around pits
 - plinth raised accordingly

Double pits

- Pits are not located where surface water can stagnate or flow
- Distance between pits is 90 cm to 100 cm
- Effective depth (from pit bottom to bottom of inlet pipe) is 90 to 100 cm
- Vertical joints in pit are not cemented. In loose or sandy soil, alternate layers may be cemented
- In cement concrete ring lining, the holes are below the inlet pipe and are about 200 cm apart

Pipes

- Drain pipe projects about 75 mm into pit
- Drain pipe slopes down about 1:10 or 1:15
- For dry pits, top of pit cover is not below natural ground level. For covers above the ground level, earth fill is well compacted all around the cover, sloping to avoid a step being formed

Junction Box

- Junction box follows all details in drawing. Drains are 'U'-shaped
- One channel is completely blocked
- Minimum slope of channel is 1:10 or 1:15
- Top of junction box must be above ground level

Superstructure

- Inside dimension about 90 cm x 100 cm. Shortest wall is not taller than 170 cm
- Floor surface slopes slightly towards the pan
- Footrest about 20 mm above floor level and turned out from squatting pan in the front (about 40 degrees)
- Pan and trap are fixed providing 20 mm water seal. The joint is watertight. Top of the pan is level with latrine floor
- Superstructure has ventilation spaces

Other

- The specifications laid down in the drawing have been followed and the work is finished neatly. No cracks
- The covers of the pits, drains and junction chamber are placed properly and sealed tight but with a coarse cement mixture
- The users have been educated on the use and maintenance of the latrine. They know how to operate the junction box

B. Kurup (1996), p. 38-39

Chapter 8

Use of Facilities and Hygiene Behaviours: Introduction

This section provides examples of monitoring issues related to the use of water and sanitation services, including hygiene behaviours. There are Fact Sheets for each of these topics:

- ◆ **Use of safe water sources**
- ◆ **Quantity of water used**
- ◆ **Handwashing and bathing**
- ◆ **Keeping water clean from source to mouth**
- ◆ **Domestic hygiene**
- ◆ **Latrine use and maintenance**

Background

Construction and maintenance of water or sanitation facilities alone are not sufficient to provide health benefits. The facilities must be consistently used, as intended. They must be accompanied by hygiene behaviours such as handwashing, use of sufficient water, use of latrines by all members of the household. Without such behaviours, people will continue to suffer from water and sanitation-related diseases.

Water and sanitation-related diseases include various types of diarrhoeas, worms, skin and eye infections and vector-borne diseases such as bilharzia (schistosomiasis) and malaria. The most effective barrier against many of these is good hygiene.

Major Preventive Measures

- Safe disposal of human excreta
- Personal hygiene including handwashing and using sufficient quantity of water
- Household hygiene and animal management
- Food hygiene
- Consumption of safe water
- Safe wastewater disposal and drainage

Under each of these headings there are many possible behaviours and activities. The following table lists almost every aspect of a person's behaviour – related to water, sanitation and hygiene – which may pose a risk to health. The challenge for most programmes is to identify a small number of priorities among these that will give the greatest health benefits in a particular situation.

Safe disposal of human excreta - Choice of defecation place - Anal cleansing and disposal of cleansing material - Cleaning and maintenance of toilet/latrine - Handwashing		<i>Other</i> - Use of faeces as fertilizer and for fish production - Animals eating faeces
Use & protection of water sources - Choice of water source - Water collection & transport - Water treatment - Waste water disposal/drainage		- Water source protection and maintenance - Ecological degradation
Water & personal hygiene		
<i>Water hygiene at home</i> - Handling & storage - Treatment - Disposal	<i>Personal hygiene</i> - Handwashing, face-washing, bathing - Hygiene after defecation - Personal hygiene during natural events such as menstruation, birth, death, illness	
Domestic & environmental hygiene		
<i>Households</i> - Removing garbage - Control of animals and animal faeces - Sweeping and cleaning of floors, compounds	<i>Environmental hygiene</i> - Water and drainage - Solid waste disposal - Cleanliness of streets and public places (markets, schools, clinics etc.)	
Food hygiene		
<i>Handling practices</i> - Cleaning kitchen or food preparation area - Handwashing	<i>Storage practices</i> - Covering and location of stored foods - Length/temperature of storage	
<i>Preparation practices</i> - Washing raw food & fruits - Temperature/length of cooking and reheating	<i>Eating and feeding</i> - Handwashing - Use of clean eating utensils - Washing and storage of utensils	

-adapted from M. Boot and S. Cairncross (1993)

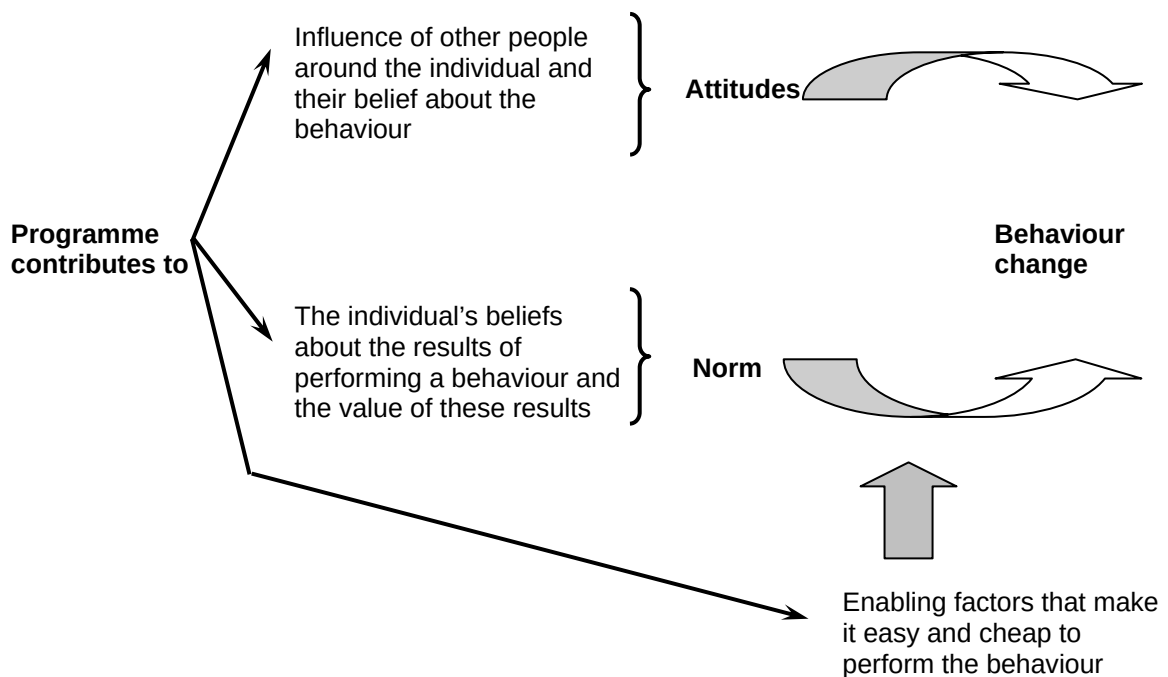
Within this domain of hygiene behaviour, it is interesting to note that WHO has selected three as being most relevant to the control of diarrhoeal disease (WHO, 1993):

- ◆ Safe disposal of human excreta
- ◆ Handwashing at critical times
- ◆ Maintaining drinking water free from faecal contamination

There is a need to identify priorities depending on the situation and location. Demand can play a part in this. For example, in some communities people might demand and pay for water or garbage disposal. However for some important hygiene measures such as handwashing or using latrines, people may be far less interested. Therefore, hygiene promotion cannot be ‘demand-based’ in the same sense as the implementation of new water facilities.

An important lesson from programmes over the past decades is that hygiene promotion and hygiene education should not only be focused on women and children. Men — fathers, brothers, uncles, masons, teachers, leaders—must be involved or the hygiene promotion efforts will often fail.

Hygiene deals with behaviours, that is, what people do. Developing new behaviours takes time. Hygiene behaviours will not change simply by ‘telling’ people to do something. A well-known model of behavioural change is provided by John Hubley.



- adapted from J. Hubley (1993)

Monitoring health and hygiene

Some people think that water and sanitation programmes should show (relatively quickly) measurable health impacts. In some cases, this happens. Thus, the elimination of cholera and guinea worm can be directly measured. In fact there has been considerable success in eliminating these diseases. However monitoring for health impacts is not usually that simple. There may be other variables involved, such as changes in diets. Furthermore, measurement through standard procedures such as clinic records is not usually very accurate. Thus, in 1976 an expert panel of the World Bank advised against further "attempts to isolate specific causal water supply — health relationships" within the Bank because such studies were characterized by high costs, inadequate knowledge and poor results. (Warner, 1990). Therefore this section deals largely with monitoring hygiene behaviours that can cause health improvement, not with monitoring health impact directly.

Participatory monitoring

In recent years many participatory monitoring and evaluation procedures have been developed. These tend to be more time-consuming and tend to require more training than conventional non-participatory approaches, but they are very powerful and rewarding. Participatory monitoring combines assessment with awareness building and problem solving that leads to group action. Participatory monitoring is frequently used to monitor hygiene behaviours, because it can explore behaviours, values and attitudes.

Examples of various participatory methods and tools

Methods	Tools	Used to change or reinforce behaviour about...
Structured observations	A checklist or spot check observation schedule	Defecation sites, disposal of young children's faeces, waste disposal
Semi-structured or open interviews	Interview schedule, list of questions	Defecation sites, handwashing, handling of children's faeces, perceptions of hygiene, diarrhoeal illness
Picture-initiated focus-group discussions	Selected pictures to introduce the topic and to stimulate discussion	Choices of defecation sites, practicality of handwashing, access to safe drinking water sources
Mapping	Local materials such as stones/leaves or paper and pens for group preparation of maps showing local features, roads, houses etc.	Coverage and access to latrines and safe drinking sources; waste disposal and environmental sanitation
Three-pile sorting	Set of locally relevant pictures to be sorted and discussed by different groups (rich/poor, men/women, different ethnic groups)	Local beliefs, perceptions of hygiene behaviour; reasons why certain behaviours are perceived to be 'good', 'bad' or 'in-between'
Pocket chart	Pictures, pockets, voting papers, means to suspend pictures and pockets	Types of sanitation and water facilities used versus facilities people aspire to have and to use, value placed on latrines and improved water sources

- adapted from A. Almedom and A. Chatterjee (1995)

The following is an example of an observation form for a community walk that could be completed by community members with field workers.

Reporting what is seen. Example of a structured observation guide used during a health walk	
Water	Sanitation
1. What are the available water sources? 2. Which of these water sources are protected**? 3. How far are the drinking water sources from most people's homes? water source distance _____ a) less than 100 metres _____ b) 100 - 500 metres _____ c) 500 metres to 1 km. _____ d) more than 1 km 4. What activities take place at or near the safe water source? a) washing water containers b) washing clothes c) bathing/washing self d) watering animals e) other 5. Who collects water? a) women b) children c) men 6. What utensils (and means) are used to fetch the water at the water source? 7. How is the water transported from the source to the home? 8. Is the water treated at the source? How? a) filtering with a piece of cloth b) chlorinating c) other ways 9. How is drinking water stored in the home? 10. How is drinking water handled in the home?	1. Do you see faecal contamination a) along roads or footpaths? b) near the water source c) in/near the fields d) outside the houses e) inside the houses? 2. What is the contamination observed? a) human faeces? b) cow dung or other animal faeces? c) other 3. How many houses do people say have latrines? 4. How many of the houses you visited have latrines? 5. Where is the latrine located? a) inside the courtyard b) outside the courtyard c) what are reasons for location? 6. Observe the latrine. a) does it have a slab? b) is the floor safe to stand on? c) does the latrine give enough privacy for women/girls? d) other things 7. Is the latrine used? a) is the path leading to it clear? b) no garbage, faecal matter or mud inside? c) reasonably free of smell? d) is there water nearby? e) is there ash or soap nearby? 8. In households with latrines, list some reasons for having a latrine stated by (a) women, (b) men

** Protected water wells will be covered, have a clean platform and walls without cracks so that water can not drain back into the well.

A. Almedom et al. (1997), pp. 66-67

① Problem issue

This Fact Sheet deals with monitoring which water sources are used for different purposes – for drinking, cooking, making tea, washing clothes, bathing, and so on. The choice of a water source is obvious when, for example, alternative sources are lacking or there are household water connections. In many places, however, people use more than one water source. The decisions as to which source to use can be governed by many factors such as location, taste, cost, reliability, as well as the safety of the source. This means that providing safe water sources does not automatically mean that they will be used or will provide a health benefit as intended.

Thus monitoring can be helpful in identifying aspects of the programme which may need to be changed to improve the use of safe water sources.

② Indicator: examples

All water used for drinking, cooking, washing beetle leaf and bathing baby will be taken from a safe water point.

OR

All water used for domestic purposes (in the household) will be taken from a safe water point and traditional sources will be used for agricultural purposes only.

Definition: A safe water point is a protected construction which has little or no possibility of being contaminated.

③ Who collects or checks?

This should be monitored by people who are interested in hygiene behaviours. Since women in many societies select the sources for domestic uses, it is probably essential to ensure that women (as field workers, members of community-base organizations, researchers and/or women members of water committees) manage the monitoring.

④ Monitoring plan

Method 1

The monitors visit old, unsafe sources and ask users for what purpose the water is being used. A checklist or observation guide is very useful.

Method 2

Pocket voting is very useful in cases where the subject being assessed is sensitive or people may find it difficult to state their views publicly and accurately. Pocket voting, which was developed as a SARAR tool within the water and sanitation sector (L. Srinivasan, 1990), can provide both qualitative and quantitative information. It stimulates discussion about why safe sources may not be used and can motivate people to use them. An example of pocket voting is shown at the end of this Fact Sheet.

⑤ Action based on monitoring information

Action will depend on the results of the data collection. Follow-up actions might include:

- ◆ Strengthening the education programme to emphasize use of safe water for drinking
- ◆ Improved site selection procedures for subsequent water points in the programme
- ◆ Addressing water quality issues such as excess iron
- ◆ Changing the sources

⑥ Training or orientation needed

Training is required for those who facilitate the pocket voting exercise.

Remarks

Pocket voting can be time-consuming and requires advance preparation. Therefore it may be useful to enhance the value of the activity by:

- ◆ Using pocket voting in each location to serve other purposes such as for mobilization, education as well as monitoring.
- ◆ Doing pocket voting in a sample of communities only, that is, representative communities. In this case, if the monitoring shows something is wrong, additional communities similar to the ones in the sample should be checked.

Recommended literature

Srinivasan, L. (1990) *Tools for community participation: a manual for training trainers*. (UNDP/PROWESS Technical Series). New York, NY, USA, Promotion of the Role of Women in Water and Environmental Sanitation Services, PROWESS.

Boot, M. and Cairncross, S. (1993) *Actions speak: the study of hygiene behaviour in water and sanitation projects*. Delft, The Netherlands, IRC International Water and Sanitation Centre.

The following information is adapted from F. Brikké (1999). WHO and IRC, The Netherlands.

Pocket voting

The method can be divided into three phases: Phase 1 – preparation of the tools and explanation; Phase 2 – voting; Phase 3 – discussion. Each phase may be done jointly with the concerned users.



Phase 1:

Drawings are prepared beforehand, preferably by local artists, to which envelopes are attached. In the case of water supply, each drawing represents a possible water source (or sanitation option or hygiene behaviour for other indicators). Place or suspend the envelopes in a place away from the view of the group so that each person will have some privacy while voting.

Phase 2:

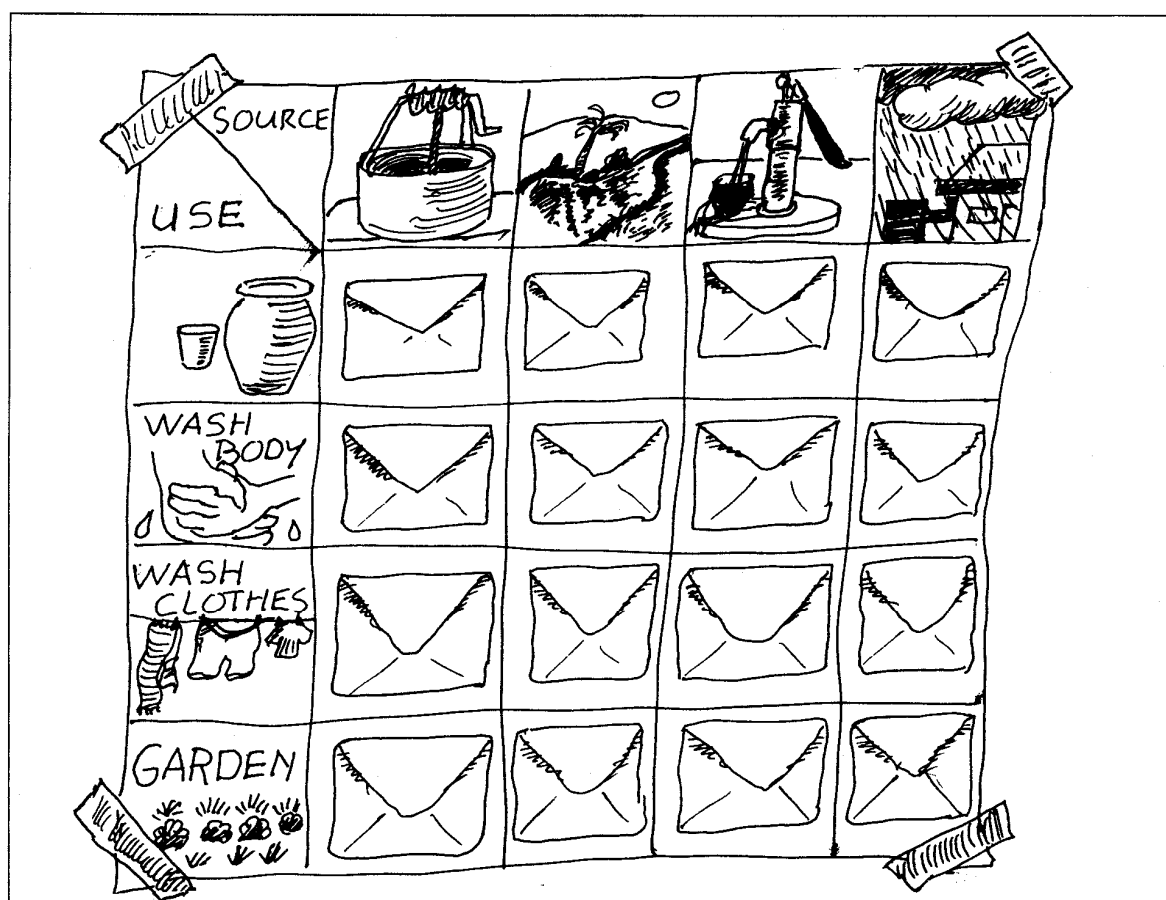
Explain the activity and review the cards with the participants to make sure that everyone has a common understanding. The number of slips given to participants equals the number of different uses of water. Optionally, the slips can be coloured (one colour for men, another for women; one for staff, another for members of local government and so on). The facilitator asks the group: Where do you collect water for drinking? Each participant votes by putting their piece of paper in an envelop. Upon completion, a volunteer takes the slips out of each envelop and the votes are registered, for each group (such as men or women) on a paper or poster. Continue with the voting by asking other questions such as: Which source of water do you use for bathing? ...for cooking? ...for washing clothes?

Phase 3:

The total of the votes are put on the poster and are discussed with the group. The discussion should be used to find out the reasons behind the voting. The discussion may also be used to plan follow-up.

Pocket Matrix

A matrix is prepared on a large piece of paper. It shows different water sources on top and different uses of water along the side. The procedure is the same as above except that each person votes for each use at once, rather than question-by-question. Practice with the group first to be certain that they understand how to vote.



① Problem issue

The quantity of water used is very important for hygiene and health. As a rough rule, where people use only one water source 20 lpcd (litres per capita per day) is usually considered to be the minimum needed for personal and family hygiene¹⁰. Where sources are split, 12 to 15 lpcd is sometimes the minimum goal. While each situation will differ, this is an example of how one project (K. Shordt, 1998) calculated the minimum recommended amount of safe water for personal and family hygiene. Note that in this project area, animals do not use the safe water source.

litres per capita	Where only one water source is used	litres per capita	Where other water sources are used
1	drinking	1	drinking
1	cooking	2	cooking and some washing of utensils
5	washing hands and face two times a day	5	washing hands and face two times a day
1	washing hands more times a day	1	washing hands one more time a day
10	bathing (once in two days) or washing clothes (once in two days)		
2	washing dishes and utensils		
20	total litres per capita per day	9	total litres per capita per day
additional: 15 litres of safe water for washing a baby each day			

It can NOT be assumed that merely constructing new facilities will result in people using sufficient water for improved health or hygiene. There may be many reasons why people continue to use less safe water. These include:

- ◆ Inadequate access to a safe source
- ◆ Source does not function as expected
- ◆ Quality of water is unacceptable
- ◆ Cost of water is too high for poor people
- ◆ There is no demand for safe water, that is, the hygiene promotion has failed
- ◆ Traditionally people used little water and have not changed
- ◆ Beliefs in personal hygiene are not related to water

This monitoring example is taken from experience in north-east India and east Africa.

¹⁰ However, there does not seem to be much research supporting this statement.

② Indicators: examples

At least 10 litres per capita per day (lpcd) of safe water is collected where sources are split.

At least 20 lpcd is collected where there is only one water source (excluding uses for animals)

③ Who collects or checks?

Field workers should check quantity used at least on a random basis using the strategy shown below.

This issue is so important that extra checks and balances are needed: Supervisors and evaluators should do spot-checks. Small studies of this important issue could be undertaken by community groups also using the strategy shown below, but using clustered samples from the entire programme area.

④ Monitoring plan

Method 1: Monitoring on a random basis, as part of the on-going field worker activities

1. First estimate the amount of water collected in one trip to a safe water source (we assume that most people use similar containers). Use a litre cup to measure the amount of water which goes into the standard containers used for collecting water. It may be necessary to estimate the number of litres carried by women or girls separately.
2. Field worker (or supervisor, assessor or member of CBO) visits one or two richer households in each neighbourhood. In a pleasant, conversational way, ask questions such as the following of a woman in the household:
 - ◆ *Is the water source working all right? Are you satisfied?*
 - ◆ *What do you use water from this source for?*
 - ◆ *How many trips did you make yesterday to fetch water? (or: How many trips will you make today in all?)*
 - ◆ *Was this water used for washing clothes yesterday? (or: Will you use the water for washing clothes today?)*
 - ◆ *How many people in your house used this water?*

Divide total amount of water taken by number of people.

(example: 4 trips x 15 litres per trip divided by 5 people = 12 litres per capita per day)

If the water is sold by container, then ask: *How much did you pay for each container?*

3. Go to two or more poor looking houses and ask the same questions.

4. Compare the results: Are the richer households using much more water per person than the poorer households? If the rich are using more, is this because of pricing or for other reasons such as lower demand? Ask and discuss with some households. In this example from a project in east Africa, the poor used less than the amount of water needed for basic health/hygiene because of high pricing. The whole pricing mechanism of the project had to be reviewed.

Method 2: Small group exercise

This exercise could be carried out with a small group of women from relatively wealthy households and another from less wealthy households. Begin with a discussion or pocket chart voting about which sources are used for different activities. Then continue with questions such as those shown above. During this discussion, ask about the reasons for using — or not using — more water from the safe source. The discussion could be continued by asking about households which are located far from the safe sources — or by using a map. This information can be useful in designing programme activities. Compare the results from the two groups.

5 Action based on monitoring information

Reasons for using less safe water	Examples of possible action
Inadequate access to safe source	Review and improve site selection. Improve social access
Source does not function as expected	Improve O&M system, availability of spares
Cost of water is too high for poor people	Review costs of O&M and how tariff was set
Source inconveniently located.	Improve site selection in subsequent water points
There is no demand for safe water	Improve the hygiene promotion

This table illustrates how much **more water** people tend to use when the water point is conveniently located:

Supply type	Typical consumption (litres per person per day)	Range
Standpost/well about 1 km away	7	5 – 10
Standpost/well about 500 metres away	12	10 - 15
Village standpost/well less than 250 metres away	30	20 – 50
Yard connection	40	20 - 80
House connection with several taps	150	70 - 240

L. Huisman et al. (1981)

① Problem issue

Handwashing may be one of the most important hygiene behaviours needed for reducing the incidence of diarrhoea. However, the issue is not only **whether** hands are washed, but also how. Handwashing requires a sufficient quantity of water, friction by rubbing both hands vigorously and a friction agent such as soap, ash or sand. The act of friction loosens bacteria and rinsing washes them away. Washing at critical times — after defecation and before eating and cooking, after handling babies' faeces and before feeding babies — is important, although just the total number of hand washings per day may be a useful indicator. (M. Boot and S. Cairncross, 1993, pp.14-16)

In addition, household organization is important. That is, the things required (such as a cup and/or bowl, water, cleansing agent, place to throw away used water) should be near each other and conveniently available.

Face-washing and bathing are important in reducing the spread of infectious eye and skin diseases such as trachoma and scabies. In humid climates more frequent bathing is needed.

② Indicators: examples

Handwashing	
Direct indicator	All people will wash both hands rubbing vigorously with a friction agent and rinsing (about 3/4 litre of water or more) at critical times (after defecation and before eating and cooking, after handling babies' faeces and before feeding babies).
This direct indicator can be difficult to measure. When someone is asked if he or she washes hands at certain times, they may not answer truthfully. Observing handwashing can require considerable time in an ongoing programme. Therefore, it may be more practical to use an indirect indicator.	
Indirect indicator	A child of about nine years of age can demonstrate how to wash hands correctly in their rinses, uses a friction agent such as soap, ash or dirt. These materials are easily available and do not have to be collected from different places. Out of three children asked in different households at least two will demonstrate correctly.
Bathing	
Children will report bathing their whole body that day or the day before. Children will report washing face and hands at least two times that day or day before.	

③ Who collects or checks?

During the project period the field worker, supervisor and/or a community-based organization such as a women's group collects or checks.

4 Monitoring plan

For handwashing

On a regular basis, in visiting each school or community, the field worker (or member of a community-based organization) asks a child to demonstrate how to wash hands. The way in which the child performs should be observed as well as the household organization, that is, the ease in collecting and using the materials. Usually family members and others gather to watch. If they are confident about the behaviour, they tend to ‘coach’ the child less. NOTE: If the child does it incorrectly (for example washes only one hand or uses very little water) then it is best not to correct the child and family in public. This could cause considerable embarrassment to the child.

Sampling

This information can be collected on a sample basis during a survey (for example, one in ten households). However, it may be more effective to incorporate this demonstration activity into the on-going programme over a long period of time (more than one year). By so doing, the collection of information also reinforces the importance of handwashing and can provide continuing motivation for families. In this way the collection becomes in-built to the programme.

It also is useful for the supervisor to do a spot check during community visits. Anyone can ask a child to demonstrate correct handwashing and this helps reinforce the behaviour.

For bathing and face-washing

Away from adults, ask a child or a group of children. Ask them also about their younger brothers and sisters.

5 Action based on monitoring information

This is the experience of a project:

“Detailed observations (asking for demonstrations) in two sites showed that it was not easy for women to wash their hands. The cooking areas are not organized for handwashing. The cooking process is long and punctuated with many other activities so that washing hands before cooking does not make much sense. Conclusion: Handwashing can’t be performed easily.”

Internal project report, K. Shordt (1994)

If the monitoring shows that the children cannot demonstrate handwashing correctly and easily, then perhaps the motivational factors need to be examined, specifically, how handwashing relates to other cultural beliefs or how the household can be organized for easy handwashing. For this, a small study may be useful. Subsequently, hygiene promotion activities can be revised or developed.

For bathing and face-washing, if the information shows that the desirable behaviours are not developing, further consultation with community groups or mothers may be useful for learning about the underlying reasons why. This can also be done formally as qualitative research in a limited number of locations.

⑥ Training or orientation needed

All groups (supervisor, extension worker, project staff, teachers, NGO and CBO members) should know how to wash hands, when to do so and what household or school organization is needed to make the behaviour ingrained.

Remarks

While the monitoring is fairly straightforward, the development of these behaviours may require long-term effort. In some cases, families are too poor to buy soap and are not accustomed to using another cleansing agent. However, research (B.A. Hoque, 1995) indicates that using sufficient friction and water, even without soap, sand or ash, will provide a health advantage. While most programmes recommend handwashing after defecation, this is not always practical (for example, for people working outside the house). In such cases, a message emphasizing at least handwashing before eating and feeding babies may be more relevant.



Recommended literature

Boot, M. and Cairncross, S. (1993) *Actions speak: the study of hygiene behaviour in water and sanitation projects*. Delft, The Netherlands, IRC International Water and Sanitation Centre.

Kaltenthaler, E. et al. (1988) *Traditional handwashing in Zimbabwe and the use of the Mukombe*. Zimbabwe, Blair Research Laboratory.

Almedom, A. and Curtis, V. (1995) "Studying hygiene behaviour; where are we now?". In: *Waterlines*, vol. 13., no. 3., p. 2-5.

Hoque, B. A. et al. (1995) "Research methodology for developing efficient hand washing options: an example from Bangladesh". In: *Journal of Tropical Medicine and Hygiene*, vol. 98., p. 469-475.

① Problem issue

New, safe water sources are provided at considerable expense and effort. These benefits can be undermined if the water becomes contaminated before it is used. Attention must be given to how water is transported and stored in the household. Various research reports have shown that drinking water from safe sources can become highly contaminated if it is not handled correctly in transport, storage and use.

② Indicators: examples

Water transport	- Containers used to carry water are cleaned as recommended by the programme at least once in Y days.
Water storage	- Drinking water is stored off the ground, is covered and has a ladle or cup nearby with a handle. - Storage vessels are cleaned as recommended by the programme at least every X days.
Agency capacity	- Field staff can explain the recommendations for water transport and storage and can explain the reasoning behind these. - The programme has a strategy for communicating and monitoring the safe transport and storage of water.

③ Who collects or checks?

Monitoring should be undertaken by those who have an interest in reporting accurately. For issues such as water transport and storage, this could be field staff, particularly women staff, their supervisors or a community-based organization such as a women's group or NGO.

④ Monitoring plan

Method 1:

Some programmes use checklists for monitoring hygiene around the standpost and other checklists for household hygiene. Questions can be included in these checklists regarding cleanliness of transport containers and storage vessels with ladles. It can also be helpful to use these checklists in monitoring and during training or orientation of field workers, standpost attendants and men/women in households.

Method 2:

Spot checks by field staff and supervisors at water points are useful. These spot checks are best done by observing users at the water points during peak hours such as early in the morning or before cooking meals.

Method 3:

Transport and storage could be included in special sample studies of user/client behaviours. Such studies can be carried out by NGOs, universities, consultant groups and community-based organizations.

To assess the knowledge of field staff, it may be useful to ask a group (for example, during a staff meeting) to list or write the hygiene behaviours that they emphasize. For each of these, the field staff should be able to give a simple and clear explanation of the behaviour and why each is important for health.

⑤ Action based on monitoring information

Too often projects under-emphasize education and motivation activities related to hygiene. Typical actions aimed at improving the transport and storage of water could include:

- ◆ Qualitative studies to identify the reasons behind present behaviours
- ◆ Education activities including training
- ◆ Staff training for both technical and community staff
- ◆ Motivating shopkeepers or other groups such as field workers to stock and sell ladles or small cups with handles

Remarks

Ladles or cups with handles are often recommended so that people do not dip their fingers into clean, stored water. In some places these are not easily or cheaply available. This is a need on which programmes should act.

Jerricans are used in many African countries to carry water. These are more difficult to clean than buckets, pots or bowls. For this reason, special attention may need to be given to the cleaning of jerricans.

Safe traditional practices

In coastal areas of Eritrea, many families, particularly those who are nomadic, fetch and store water in pouches. To drink, the pouch is squeezed, sending a stream of water into the mouth. Thus hands and fingers do not touch the water.

In many parts of India, drinking water is poured from a glass or cup directly into the mouth. Thus, people do not put their lips on drinking cups.

1 Problem issue

Domestic hygiene includes cleanliness within and around the household, animal management, disposal of solid wastes/wastewater and efforts to control insects. The issues and behaviours vary depending on the situation.

Many projects focus on some domestic and environmental hygiene issues as soon as possible upon entering communities. This is because some environmental hygiene changes are fairly easy to initiate and the changes can be very evident. Early results can motivate the community and legitimize other project activities. For example while waiting for construction, some communities work on improving solid waste disposal or penning animals.

2 Indicators: examples

Solid waste disposal	- No faecal matter or garbage can be seen on the floor of houses or in the household compound. - Solid waste is disposed of by burying and/or using dump sites which are at least X metres (for example, 100 m.) from any dwelling.
Animal management	- Contact of animals (and their excreta) with humans is limited by (a) setting barriers across the household threshold; (b) penning or staking animals; (c) fencing water sources ¹¹.
Food hygiene and insect control	- Reheating of food follows programme recommendations. - Cooked food is protected from insects by covering or storage in a closed container/cabinet. - Stagnant water, garbage and animal faeces are not found within the household compound. - Young children's faces and hands are washed at least three times a day to help protect them from flies and insects.
Understanding & awareness	- Community members (rich/poor, men/women/children) are aware of the key domestic hygiene issues and can explain how these are linked to health.
Planning	- There is a strategy for working with community members to identify and mobilize people around locally important domestic hygiene issues. - Field workers can explain correctly the links of each domestic hygiene issue to health and how/when these issues are dealt with in their work.

3 Who collects or checks?

Who collects depends on the situation, but should include those with particular interest in the issue such as committee members, members of women's groups, health extension workers. Children can

¹¹ The excreta of pigs and chickens can be particularly dangerous.

also be very effective monitors. Field workers can organize participatory activities for monitoring as well as for education, mobilization and problem solving.

④ Monitoring plan

Method 1:

To check understanding and awareness, three-pile sorting is useful. The monitoring activity can also serve to motivate community members.

Three-pile sorting is frequently used in hygiene promotion. Its purpose is to learn of the extent to which people are aware of hygiene issues. It is also useful for introducing sensitive topics for discussion. It can be used to measure changes in hygiene understanding over time.

Three-pile sorting can build people's confidence in analyzing their own problems. It is flexible and can have many adaptations, for example, using pictures of different water technologies or latrine technologies with sorting by desirability, cost and so on.

Time: 30-45 minutes

Materials: A set of 9 to 15 cards, each of which has a picture of something that could be interpreted as good, bad or in-between from the viewpoint of health, sanitation or water supply and so on. Usual pictures are: handwashing with soap, sweeping trash, swimming in a dirty pond, washing clothes.

Procedure: Form a circle. Show the cards and ask what they are (to make sure people understand the cards).

Give them the cards to study.

Then ask them to sort the cards into three piles: good, bad, in-between. Encourage people to discuss their choices and the reasons for them. Listen carefully and learn while discussions are taking place.

Feel free to raise questions that would help the groups think further about aspects not considered.

It is possible to have people select a card from the BAD category and make a list of actions that could help solve the problem. They should decide who would be responsible for each step.

A. Aldemdon (1995)

Method 2:

Household observations can be carried out by committee members, field workers, members of CBOs. A checklist is useful. A programme in Bangladesh used an observation checklist as a primary educational tool for women in households and for monitoring by field workers who visited each household.

On the next page is an example of a checklist. This checklist can also be prepared together with women in the community and the local water and sanitation committees. Such a checklist could be used with a systematic sample of households or, if that is not possible, at least on a spot basis.

Example spot check observation form

HOUSEHOLD OBSERVATION				
FAMILY CODE				
Observation code 0 = NO 1 = YES 8 = was not observed 9 = does not apply				
House	1	Is food covered?		
	2	Is water which is stored inside the house covered?		
	3	Is the floor/ground in the house and the yard clean and free from garbage?		
	4	Are the animals penned or tied up outside the house (especially outside the living and sleeping areas)?		
Latrine	5	Does the house have a latrine?		
	6	Is the latrine platform free from garbage, excreta, faecal cleansing materials?		
	7	Does the latrine show signs of use? (example: discoloured bowl, some odour, path is used leading to latrine, children say they use it)		
	8	Is water for handwashing available nearby?		
	9	Is soap available nearby the latrine?		

- adapted from M. Boot (1993), p. 61

Method 3

Ask small groups of men in places where they may naturally meet such as a bus stop, tea house or marketplace, what health messages are used by the project and why. Discuss with them also from the point of view that they should know about the hygiene and health education in which their wives and children are involved.

⑤ Action based on monitoring information

There are many possible actions in response to the monitoring information. These could include:

- ◆ Undertake a study with community members to find out reasons behind and possible solutions for unsafe behaviours
- ◆ Reinforce and undertake more education and public information activities
- ◆ Retrain the field workers for improved education and public information activities

Recommended literature

Boot, M. and Cairncross, S. (1993) *Actions speak: the study of hygiene behaviour in water and sanitation projects*. Delft, The Netherlands, IRC International Water and Sanitation Centre.

1 Problem issue

Constructing latrines is not, in itself, enough to ensure good hygiene. To provide health benefits, latrines (or toilets) must be USED consistently. Furthermore, a large proportion of the households should have access to and use latrines or toilets in order to prevent human faecal matter from being in contact with humans through flies, water, on paths and streets and so on. It is generally assumed that to ensure a health advantage about 2 out of 3 households should consistently use latrines. Handwashing after defecation is another behaviour that is needed to ensure that the provision of latrines brings the intended health benefits.

2 Indicators: examples

Coverage	- Sanitary latrines exist in at least two out of three households. A sanitary latrine is designed so that there is no physical contact possible between humans and human faecal matter.
Consistent use	- Latrines are used by all members of the family more than four years of age. - Raw human faecal matter is not put on fields (for countries where human excreta is used as fertilizer in agriculture). - The faeces of young children (who may not yet be able to use latrines) is disposed of in a sanitary way as suggested by the programme. - People wash their hands after defecation.
Maintenance	- Latrines are clean as shown on a checklist. - Soap or cleansing material and water is near latrine and conveniently located.
Sustained facilities	- When latrine pits are full, the latrine is replaced or the pit is emptied and their contents are disposed of safely.

3 Who collects or checks?

Many people can be involved in monitoring, if the programme plans adequately. This may include, for example, field workers, water and sanitation committees, community-based organizations, school children.

4 Monitoring plan

Issues/Indicators	Various methods
Coverage	- Make maps with community members showing houses that do and do not have sanitary latrines. - Check clinic or local government records, if they collect this information.
Consistent use	- Observe signs of latrine use (paths to latrine are used, there is some smell in the latrine, and so on). - Ask a child where he/she defecated on that day and the previous day. - Use pocket voting and discussion with a group of women. - Ask some people directly, but because answers tend to be optimistic, it is useful to cross-check using one or more of the above approaches.
Maintenance	- Inspect using a checklist (see example below).
Sustained facilities	- Discuss (or conduct focus group discussion) with a group of users, local contractors or masons. - Undertake a small sample study (by a CBO, for example).

λ Example

A checklist is prepared that describes cleanliness in concrete terms on a checklist (no faecal matter to be seen, water available nearby and so forth). The women on the committee, or members of a women's group, or students from a local college (perhaps for a small fee) visit all new latrines and check them one, three and six months after construction. The households are informed at the time of construction that there will be surprise visits to follow up on the facility. This also motivates the householders to keep latrines cleaner because they know about the monitoring.

5 Action based on monitoring information

There are different possible actions depending on the monitoring information. These could include: having more public information programmes, undertaking a qualitative study to determine what will improve the use of latrines, or possibly mobilizing communities to increase the demand for latrines before construction. It can be very useful to check the design, technology and costs if it appears that certain groups of people (for example, poorer households) are not able to use or have access to sanitary latrines.

⑥ Training or orientation needed

Those who collect the information using a checklist, pocket chart or undertaking a study will need orientation.

Remarks

Home visits to inspect latrines should be undertaken in a friendly way, and with the agreement of the household, because the issues involved may be sensitive.

Monitoring can also serve to inform and motivate people. It can remind them about the use and maintenance of latrines, and the reasons for these behaviours.

In some societies the disposal of anal cleansing paper and other cleansing materials can be a nuisance or pose health problems. Some households will put anal cleaning materials in a separate box so that the pit does not fill up quickly. In general this should be discouraged. Where this poses problems, the programme should have a clear and well-known policy.

λ Example

To record their observations, women members of water committees or local organizations such as nursing colleges use a checklist, a translation of which is shown on the next page (B. Kurup, 1996). Because literacy is high, it is not necessary to use pictorial symbols for monitoring, as is done in areas with low literacy levels.

Checklist for latrine use and maintenance

1. Local government area		
2. Neighbourhood	3. House no.	
4. Latrine No.	5. Date of construction	
6. Number persons in house		
Number of persons using the latrine		
7. Condition of pan and trap:		
a. Cleanliness good (without faeces, sand, mud, etc.)	YES	NO
b. Does latrine flush well? (If not, check junction box/pit)	YES	NO
c. Foul smell	YES	NO
d. Yellow colour	YES	NO
e. Scratches or breakage in the pan	YES	NO
8. Behavioural practices:		
a. Water kept inside the latrine	YES	NO
b. Water kept outside the latrine	YES	NO
c. Soap kept nearby	YES	NO
d. Use by children older than three years (ask a child, if possible)	YES	NO
9. Check whether the person is aware of the purpose of water seal	YES	NO
10. Is the water seal visible and clean?	YES	NO
11. If latrine has been in use more than two years ask "Did you change the pit?"	YES	NO
If yes indicate the date		
12. Check whether person is aware of the purpose of junction box	YES	NO
Date	Name and Signature	

① Problem issue

Satisfied clients tend to pay for, maintain and use facilities as intended. Monitoring consumer satisfaction can therefore be important. In addition, if programmes aim (as they should) to make benefits available to the poor, to women and to disadvantaged ethnic groups, then monitoring is essential.

One approach to this is perceived cost-benefit analysis where groups of users, often divided into men and women, rich/poor, different ethnic groups, identify the level of benefits and costs for themselves from a system or project. From their own perspective, they answer the question: *Are the benefits worth the costs to me?*

② Indicators: examples

Different consumer groups (poor/richer, men/women, different ethnic groups) voluntarily identify benefits from the improved water system such as convenience, health, economic advantages. They indicate that these benefits are worth the costs which they incur.

③ Who collects or checks?

Collection might be done by someone who is seen as an objective outsider, so that the consumers may be encouraged to respond accurately. It should be made clear by the person collecting this information that no new projects or 'rewards' can be expected as a result of the answers.

This task is probably best accomplished through participatory monitoring.

④ Monitoring plan

This monitoring plan tries to measure to what extent a service meets the user demands and whether the benefits are worth the costs (R. Dayal, 1998). A set of small drawings is needed indicating a range of potential benefits of the improved service, such as more water, less waiting time, shorter distance, water available for various productive uses, better hygiene, boys/girls can go to school, facilities for laundry, cattle.

Step 1

The group of participants is asked to lay out the cards in a row and describe what possible benefit each picture stands for. They are then invited to select those drawings which represent a demand currently met by the service, and lay aside the other cards.

Step 2

In the second step they are invited to rate the degree to which, as a group, they are getting this particular benefit. This can be done by placing between one, two or three seeds or beans next to each selected picture or by writing the score between 1 and 3. Having completed the activity the cards are put into an order of priority/score.

The facilitator might then help them calculate the total score obtained as compared to the total theoretical maximum (the number of identified benefits times five). Thus, if the users identify that the service meets five types of user demands, the maximum possible score would be $5 \times 3 = 15$. The actual score is the sum of the individual demand scores as a fraction of 15. For example, a group of poorer women might indicate that they get about 5/15, that is, less than half of these benefits, as marked in the table below:

Demands of users (before the service came) that service presently meets.

Scoring sheet

Score	Demands of poor women	Demands of richer women
✓	Less than $\frac{1}{2}$	Less than $\frac{1}{2}$
	More than $\frac{1}{2}$	More than $\frac{1}{2}$
	Almost all (90% or more)	Almost all (90% or more)

The activity would end at this point if perceived benefits only are being monitored.

Step 3

In the third step the participants are asked to mark which of these benefits are worth contributing for in payments, time, effort and/or materials. The scoring and activity should be separated by rich/poor, men/women, different ethnic groups. Each of these groups can have very different observations and scores.

The total outcome of this activity gives an idea of the strength and variation in perceived cost benefits of the users in general and of each typical group (rich men, poor men, rich women, poor women). The results may partially explain the degree of support to sustaining the service. The conclusions need however to be checked with each group in an in-depth discussion after the analysis of the scores, since the interpretation of an outsider may be incomplete or wrong.

Are the benefits from the service worth the costs?

Scoring sheet

Score	Value for the costs (poor women)	Score	Value for the costs (richer women)
	< ½		< ½
	> ½		> ½
	Almost all (90% or more)		Almost all (90% or more)

⑤ Action based on monitoring information

If the participatory monitoring activity, which will probably be undertaken on a small scale, shows problems or unexpected results, then these should be investigated further. Actions could include follow-up workshops, more community monitoring, or experiments on a small scale to address the problem.

It is important to transmit information about user satisfaction to senior leaders in the agency and government, to stimulate follow-up actions.

⑥ Training or orientation needed

Training and practice are needed to conduct the participatory monitoring.

Recommended literature

Dayal, R., Wijk, C. van and Mukherjee, N. (1998) *Participation, gender and demand responsiveness: making the links with impact and sustainability of water supply and sanitation investments*. New Delhi, India, UNDP-World Bank Water and Sanitation Program.

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