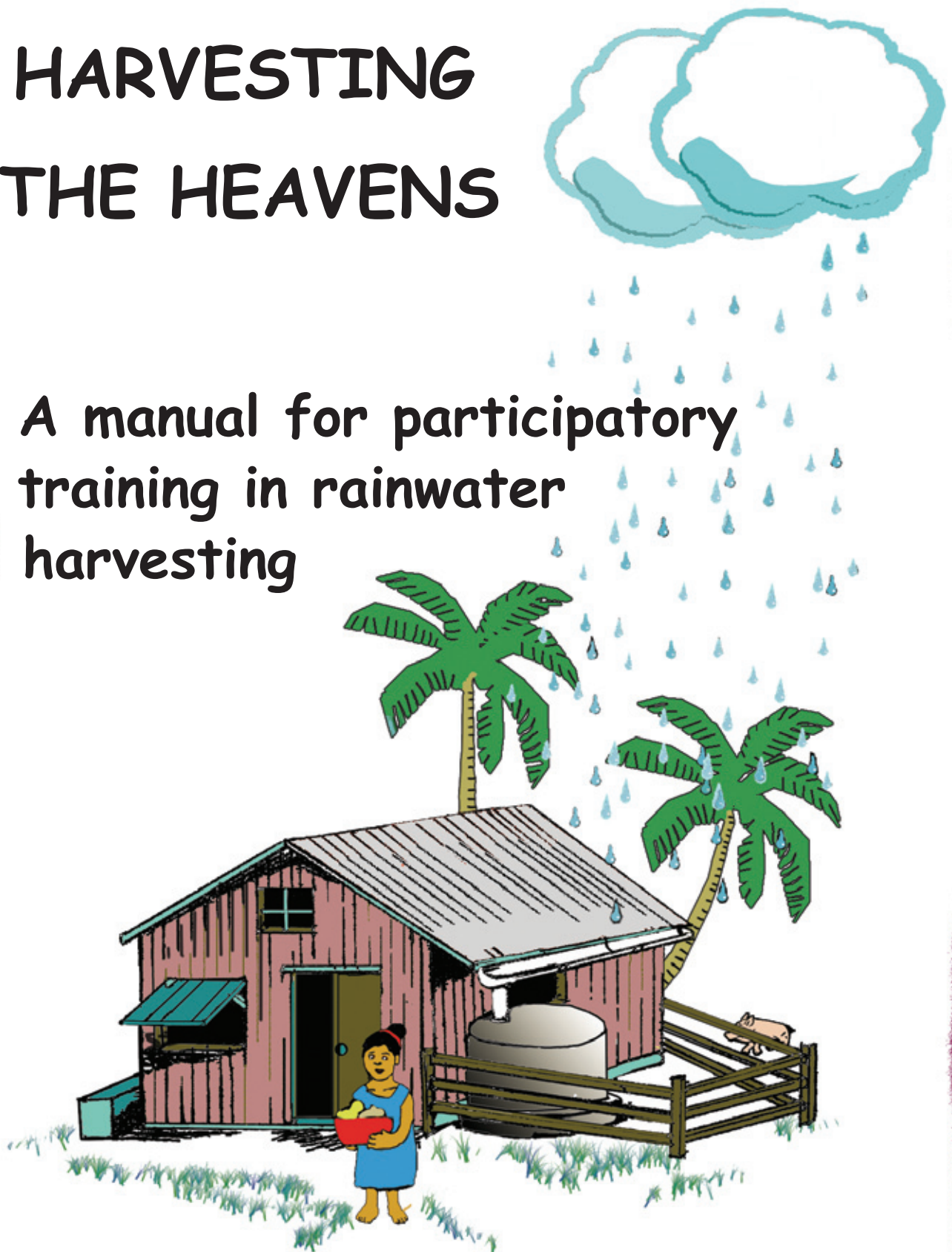


# HARVESTING THE HEAVENS

A manual for participatory  
training in rainwater  
harvesting



SOPAC



UNEP



 Sida

Prepared for printing by the  
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# HARVESTING THE HEAVENS

## A MANUAL FOR PARTICIPATORY TRAINING IN RAINWATER HARVESTING

Compiled by the South Pacific Applied Geoscience Commission (SOPAC)  
for the United Nations Environment Programme (UNEP)  
in conjunction with the Tonga Community Development Trust (TCDT)  
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## Preface

This Manual on Participatory Training in Rainwater Harvesting was developed as part of the United Nations Environment Programme (UNEP) project titled "Pilot Project on Empowering Women in Rainwater Harvesting in the Pacific Atoll Islands" with funding from the Government of Sweden.

The Manual was developed to complement a "Training of Trainers" Workshop for community extension workers together with local counterparts from the Village Women Development Programme (VWDP) and the Tonga Community Development Trust (TCDT) held in Vava'u, Tonga from 12 to 14 May 2004.

The Manual is targeted for use by Non-Government Organisations (NGOs), Community-Based Organisations (CBOs) or people involved in rainwater harvesting, and contains a number of participatory techniques, tools and activities based on best practices from a variety of sources. The techniques, tools and activities were used during the "Training of Trainers" workshop and allowed improvements to be made to the Manual based on the input and feedback of participants.

It is important to note that continual adjustments to the approach, training activities and tools are encouraged based on experiences at the field level, as participatory development is an ongoing process.

This project is part of the UNEP initiative to promote rainwater harvesting in the two regions of Africa and the Pacific. EarthCare Africa implemented the African component in Kenya whereas the South Pacific Applied Geoscience Commission (SOPAC) implemented the Pacific component in Tonga. UNEP facilitated the exchange of information between the two regions. A UNEP representative attended the "Training of Trainers" workshop and was able to provide the valuable "Kenyan experience" and input towards the activities, tools and Manual.

In addition to the Manual there is also a set of Guidelines for Rainwater Harvesting in Pacific Island Countries, which are intended to advocate the use of rainwater harvesting for domestic water supply among a wide audience and provide guidance for practitioners in how to improve the sustainability of rainwater harvesting projects.

We hope that you are able to use this Manual for training in the communities with which you work and adapt it to suit your situation and share lessons learned with SOPAC and the Tonga Development Trust.

Good luck with the training!



## Acknowledgements

This Manual represents the combined efforts and achievement of numerous people in preparation for the "Training of Trainers" Workshop held in Vava'u, Tonga from 12 to 14 May 2004 as part of the United Nations Environment Programme (UNEP) project titled "Pilot Project on Empowering Women in Rainwater Harvesting in the Pacific Atoll Islands" with funding from the Government of Sweden.

In particular we would like to recognise the contributions made by Sarah Whitfield in developing the activities and tools for the "Training of the Trainers" Workshop, which have formed the basis for this Manual.

We are also grateful to the Tonga Community Development Trust (TCDT) for the in-country organisation of the "Training of Trainers Workshop" in Vava'u. We are particularly thankful for the support provided during the workshop by Mr Pita Fatai and all TCDT Vava'u staff.

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Thank you - Malo 'aupito!

## INTRODUCTION

### The Training of Trainers Workshop on Rainwater Harvesting

The Training of Trainers (TOT) Workshop on Rainwater Harvesting took place in Vava'u, Tonga from 12 to 15 May 2004. Involving community extension workers from the Village Women's Development Programme (VWDP) of the Tonga Community Development Trust (TCDT), the training was based on a participatory approach that emphasised 'learning-by-doing'. Using a step-by-step process, workshop participants were introduced to various participatory tools and took part in participatory activities and exercises that they could potentially use during future training on rainwater harvesting in communities.



Gathering in the Governor's Meeting Room in Neiafu, the training programme began with an exercise designed to reach consensus on the overall objectives of the workshop. Participants took part in an activity which resulted in an examination and self-definition of the concept of community participation. This was followed by the 'Two Circles' exercise where participants examined gender roles and relations with regard to water-related responsibilities in the community. During these exercises participants were divided into three single sex groups — one group of men and the remaining women divided into 'young and lively' and

'older but wiser' in order to facilitate a more open discussion among peers, as well as identify any apparent similarities or differences in perspectives.

The second day of the training focused on the important connection between water quality and health. Activities included a small group brainstorming session about good and bad quality water during which participants received an introduction and review of water-borne diseases. Other exercises included 'T(h)ankful of Bad Water: A Who Done It?' and 'Good Advice, Bad Advice' which provided an opportunity for participants to showcase their acting abilities, as well as their keen perception of community viewpoints in relation to water and health. At the end of the day participants highlighted role plays as a particularly effective (and fun!) way to reinforce learning and convey messages.



The third day began with the field trip to Utungake — one of the communities where rainwater harvesting systems had recently been built — to discuss the technical aspects of operation and maintenance of rainwater harvesting systems. Following the site visit, participants returned to the community hall, divided themselves into two groups and completed 'The Maintenance and Repair Matrix'. Upon returning to Neiafu the groups presented their completed matrices and discussed any visible gaps or missing information.

In order to address the lack of sustainability in past rainwater harvesting initiatives the rest of the day consisted of an analytical and planning activity to get to the core problems and identify some potential solutions. Participants felt the field visit was particularly enlightening and clearly demonstrated the challenge of development work.

In order to reinforce local ownership and decision-making, the final morning was set aside as a planning session for participants to discuss and decide among themselves on future activities, specific objectives and next steps.

## Who Can Use This Manual?

This training manual is a practical guide to be used by extension workers who are involved in rainwater harvesting projects or programmes. It is designed to help them support community members to build technical knowledge and skills related to the maintenance and repair of rainwater harvesting systems, as well as address critical social and community issues.

Although the manual is principally designed as follow up to the Training of Trainers Workshop that took place in Vava'u, we hope community workers in other Pacific island countries find it useful. While the manual focuses on rainwater harvesting, the participatory framework and the activities that follow are well suited to adaptation for other purposes. Members of water committees, community leaders, government ministries, water boards, as well as other partners and organisations working in the areas of health, education and youth development are all encouraged to make use of the manual.

We hope that by using the manual, extension workers, NGO staff and other partners build skills and develop ideas that can be used for other development activities and community initiatives.

## How To Use This Manual

Part I of the manual provides some background information that can be read prior to undertaking a community-based participatory workshop. It addresses the rationale or reasoning for using participatory techniques and tools during a community workshop on rainwater harvesting, and explains the importance of the order of the workshop.

Part II is designed to help extension workers plan, organise and design a participatory workshop in the community. A checklist is provided at the end of this section that can be used as a planning tool.

Part III briefly notes some principles and techniques of participation and includes some hints and tips for facilitators. A facilitation and brainstorming exercise is provided to help facilitators and community trainers practice their skills.

Part IV is devoted to a step-by-step explanation of various participatory activities and tools that can be used during a workshop on rainwater harvesting. Over the years and around the globe a number of participatory tools have been developed in relation to water projects and programmes. A selected number of activities and tools were chosen for the TOT workshop and these appear in this manual. Several additional exercises have been included that trainers may wish to try out during the community workshops or future trainings.

It is extremely worthwhile to consider using participatory methods to conduct ongoing monitoring and evaluation of any community initiatives relating to the operation and maintenance of rainwater harvesting systems. Gathering this information will ensure community training and workshops remain relevant to the needs of community members. It will enable everyone involved (including extension workers but particularly community members themselves) to address problem areas and regularly make improvements based on lessons learned. Various tools are available and future training in participatory monitoring and evaluation methods may be helpful. However, as a start an additional exercise is included at the end of this section that will help community members to start thinking about how to monitor and evaluate their efforts and initiatives.

Additional reference material in the form of fact sheets is located at the end of the manual. This information can help support your training workshop in the community. You may wish to read the fact sheets beforehand and refer to them if needed during the relevant session.

Many of the participatory exercises in this manual result in key points and visual materials that are identified and developed by community members themselves. These are important outcomes of any workshop because this information and material can later be used for posters, pamphlets, educational activities and general awareness-raising campaigns in the community about water, health and the importance of sustainable rainwater harvesting.

Good luck - we hope you find the manual useful for your work!

# I BACKGROUND

## I BACKGROUND

### Why hold a participatory workshop on rainwater harvesting in the community ?

Throughout the Pacific many rainwater harvesting systems have fallen into disrepair. Sometimes the water they provide makes families sick. Sometimes people simply do not have the necessary knowledge or skills to maintain their rainwater harvesting systems. Perhaps they have never been taught how to fix a leaking tap, disinfect the water in the tank or attach netting in order to keep out mosquitoes. However, there are various other obstacles that keep people from maintaining and repairing their rainwater harvesting systems. Here are just a few of the reasons why people may not maintain their systems:



- **Lack of motivation.** People may decide they have other more important priorities and uses for their time and money.
- **Lack of funds.** People may not have enough money to pay for materials or spare parts, especially when large scale repairs are needed.
- **Lack of skills.** More time and guidance may be required to practice the skills they have learned.
- **Lack of self-confidence.** Some individuals may be too embarrassed to ask for help or advice.
- **Fear of change.** Some may not want to learn or try something new. Traditional or cultural roles may also stop women or men from making decisions or undertaking particular maintenance or repair activities.
- **Poor communication.** Household members may have never discussed the specific areas of responsibility with regards to maintenance and repair.

**A participatory workshop on rainwater harvesting will help community members address the important inter-connected social and technical aspects of rainwater harvesting systems that will ensure they have access to good quality rainwater for many years to come.**

Simply providing technical advice or the 'know how' to maintain and repair rainwater harvesting systems will not help community members deal with these underlying issues. Distributing pamphlets or holding a workshop that only provides technical information will not lead to the change in behaviour that is required to ensure rainwater harvesting systems are well-maintained. In order for households to have continued access to good quality water it is important to address both the technical and social aspects of rainwater harvesting.

Often the technical aspects are considered the first and only step needed to help people maintain and repair their rainwater harvesting systems. Providing information on 'How?' to undertake maintenance and repair is often considered sufficient. However, it is important to first address the question 'Why?'



A participatory workshop on rainwater harvesting can help community members address both of the technical and social aspects. Participation has to do with developing people's capacities. This can be achieved by building and strengthening their existing knowledge, expertise and skills. Women and men in the community (as well as girls and boys!) often have a lot of untapped knowledge and skills. Within a participatory workshop, participants have the opportunity to use this knowledge and skills to analyse issues both individually and as a group. The

approach allows people to share their own experience and benefit from the experiences of other community members. Participatory activities enable participants to identify their own obstacles to the effective maintenance and repair of rainwater harvesting systems and together decide what needs to be done to solve problems. Local knowledge and skills ensure future efforts will be effective.

Since a participatory workshop acknowledges the skills and abilities of all community members, efforts to involve women are central. A participatory approach creates an environment where women's voices are heard and they feel empowered to speak and share their views and experiences. A truly participatory process will

**Participation often takes longer but a truly participatory process will achieve positive results and sustainable outcomes.**

enable women and men to contribute equally and learn all of the skills needed for maintenance and repair. It will encourage women and men to examine the reasons behind specific gender roles in relation to rainwater harvesting. It will enable women and men to consider taking on non-traditional tasks when it makes sense to do so. A participatory approach can help to improve communication both at household and community level. Although it takes time, ongoing participatory approaches have been shown to change and transform gender relations for the better.



A participatory workshop aims to maximise the responsibility of community members. It encourages people to make decisions and take action instead of simply responding to initiatives proposed to them by others. It is intended to lead to a sense of ownership. This is necessary to bring about long-term sustainability. The participatory approach underlines the importance of community participation but more importantly, the critical aspects of community management in rainwater harvesting. It also establishes or strengthens community-based mechanisms for support and decision-making in relation to rainwater harvesting.

## Why is the order of the workshop important?

Motivation, commitment, incentive and level of awareness are critical factors in the maintenance and repair of rainwater harvesting systems. In order to ensure the long-term sustainability of rainwater harvesting systems these factors need to be addressed at various levels within the household and community. The step-by-step approach of the training programme is necessary to build this motivation for the operation and maintenance of rainwater harvesting systems. Through an examination of the links between water quality and health, participants clearly see the importance of maintenance in relation to the good health of their family. Participants come to appreciate that prevention is the key to good health. This encourages people to place maintenance and repair activities as a top priority. Once this high priority has been established, household and community members are more likely to devote the necessary level of attention to the technical aspects of maintenance and repair of their rainwater harvesting systems.



***'I learned a lot, little by little.'***  
**Participant from the TOT Workshop**



II

HOW TO PLAN,  
ORGANISE  
AND DESIGN A  
PARTICIPATORY  
WORKSHOP

## II HOW TO PLAN, ORGANISE AND DESIGN A PARTICIPATORY WORKSHOP

### Duration and Timing

A 3-day workshop (like the TOT workshop in Vava'u) will allow you to cover the basics but will likely not allow sufficient time for in-depth analysis, discussion and planning. Thorough planning of the workshop is essential. Carefully consider what you and the community members want to accomplish, and write down what time frame is needed. Bearing in mind people's various household and community responsibilities it may be necessary to schedule several shorter sessions over a longer period of time. Perhaps it is possible to plan one or two full days, along with 10 or more morning or afternoon sessions over a period of one month. Discuss and plan with the community what will be the most effective schedule for the workshop or training.

Ensure that sessions are timed so that participants will not be occupied with other responsibilities. For instance, will everyone be out fishing, gardening or participating in a church meeting during any of the workshop sessions? Build in sufficient flexibility for possible changes. Funerals, weddings, births and other community functions will affect the timing of the workshop. Ask community members about any upcoming events or holidays.

It is important to try and maintain high levels of participation throughout all of the sessions. Participants should commit themselves to attend the workshop full time and/or attend all of the training sessions. It disrupts the sessions if people arrive late or leave early. At times this may not be easy, particularly if they take place over a longer period of time. If participation drops off ask community members for advice and suggestions on ways to change the programme content or timing.

### Selecting Participants

Consider how to reach as many members of the community as possible but do not hold a workshop with too many participants. The number of participants should ideally be around 24, with no more than 27 people so three small groups can be formed to facilitate discussion and encourage participation among all participants. You may have to hold the same session several times in order for everyone to be able to participate.

At least half of the participants should be women. If necessary, ask community members to make arrangements for child care and catering to enable women, particularly young mothers, to participate. Overall, and for some specific activities, mixed groups of women and men will be necessary. Other activities or sessions will benefit from single sex groups.

In many communities children and young people play household and community roles in relation to rainwater harvesting. Young people also have useful ideas and should be provided with the opportunity to share their experiences among themselves and with their elders. They are the future guardians of the community's water resources and will also need to learn how to maintain rainwater harvesting systems. Try to think of ways to include young people in participatory training, perhaps using separate workshops or through school-based initiatives.

### Trainers

The workshop or training sessions can be conducted with one facilitator but it is much better to have two facilitators who are both familiar with participatory techniques. This allows the facilitators to take turns to conduct sessions, monitor the process and note its impact.

## Venue

Select a venue that is comfortable, has good light and has sufficient space for participants to move about freely and split up into small working groups. Think about the possibility of any outside noises interfering with the workshop. Make sure there is enough wall space or place to post flip charts.

## Transportation

If necessary, discuss with the community any transportation needs and costs so that all participants can attend the training and safely return home in a timely manner. If necessary, ensure older members in the community receive assistance to get to the venue.

## Artist

Many participatory techniques and activities that have been developed globally use pre-made tools and drawings, such as pre-drawn human figures and props, posters, photos, etc. While many of these visual aids have proven to be very useful, the techniques and activities selected for the training in Tonga require little or no advance preparation or the skills of artistically talented individuals.

Development of tools and material within the community is an important part of the learning process. The aim is to enable community members to develop their own awareness-raising tools and material. If there is an expressed need or desire among the community, the services of an artist can be employed during or after the workshop to refine drawings or illustrate particular outcomes for wider use.

## Equipment and Supplies

It is useful to have the following materials on hand but using some ingenuity it is possible to undertake many of the activities with even less.

- Flip charts
- Butcher paper
- Typing paper
- Markers (regular and coloured)
- Pens, pencils (regular and coloured - nice to have other art materials if possible)
- Erasers
- Cards
- Masking tape
- Scissors
- Glue

Be creative wherever possible. Consider using leaves, flowers, sticks, shells, coconut husks, seeds or other natural materials.

Now relax and enjoy the workshop!

The checklist on the following page can be used to help you plan your workshop. You can also design your own checklist based on the specific needs of your own training.

## Workshop Checklist

### Duration and Timing

- Is the workshop a good length - not too long or too short?
- Did I consider all upcoming events and holidays?
- Can everyone attend the sessions at the scheduled time?
- Did I build in enough flexibility to the programme to allow for changes?
- Did I discuss and plan the training with women and men from the community?

### Participants

- Is there an appropriate number of participants for each session?
- Are at least half the participants women?
- Is child care arranged to allow young mothers to participate?
- Are young people able to participate in some form of training or activity?

### Venue

- Is the venue comfortable, light and airy?
- Is there enough space to move around easily and form small groups or do role plays?
- Is there space to post flip charts and posters?
- Is the venue free from outside noises and disruptions?

### Trainers

- Are two skilled trainers or facilitators available to conduct the workshop?

### Transportation

- Have transportation needs and costs been discussed and arranged if necessary?
- Do any older or disabled people need special assistance to get to the venue?

### Equipment

- Did I make a list and collect all the materials that I need to bring to the workshop or training sessions?

III  
PARTICIPATORY  
PRINCIPLES AND  
TECHNIQUES

### III PARTICIPATORY PRINCIPLES AND TECHNIQUES

#### Self-reliance

A training workshop in the community is not the main objective. Participation is about helping the community to help themselves. The aim is to create motivation among community members and build knowledge and skills to bring about the full involvement in the initiative and ownership among local community members, with a special emphasis on women where required. Participatory tools will help you to create an effective learning experience for community members to understand and then carry out specific activities on their own related to rainwater harvesting systems.

#### Learning by doing

Participants learn best by doing and arrive at their own theories through an analysis of their own experiences. Participants are exposed to tools for investigating and analyzing reality and develop important skills needed for ongoing planning and implementation of activities. This analysis is needed to bring about positive change.

#### Ownership

Participants (and sometimes facilitators) should be reminded that a participatory workshop belongs to the participants or community members. Facilitators do not bring magic solutions. Encourage participants to let you know if they are not happy or want specific changes.

#### Estimating session times

The duration of the activities will vary depending on the size and make up of the group, the level of experience, interest, opinions, as well as many other factors. As you gain experience facilitating the activities, you will be better able to judge the time required for different sessions. When using a participatory approach it is important to build flexibility into the daily agenda.

#### Set up

For plenary sessions participants should sit in a circle without desks or anything in front of them in order to encourage open communication.

#### Forming groups

Participatory activities can include individual exercises, work in pairs or group work involving 3 or more participants. Many of the activities break up participants into two or three groups of 4 or 5 people. These groups then return to plenary session where all participants present their outcomes and join in a discussion about various issues. Separating participants into small or large groups can be done in a variety of ways. Participants can self select their own groups and decide their own criteria. For some exercises it is advisable to have participants form groups according to certain variables such as sex, age, etc. This may be needed to facilitate discussion or to enable the activity to encourage analysis and produce data from specific members of society. For other activities groups can be formed based on any number of fun criteria, i.e. people wearing red or blue.

#### Adaptations

The activities outlined in the following section are examples and should be adapted where necessary to fit specific situations.

## Participatory Techniques: Some Hints and Tips

- First give creativity a chance in order to avoid premature judgments that can hinder participation because participants fear criticism. Individuals have energy and talent that is often undiscovered and untapped. For example, open-ended tools and visual aids encourage creativity and can stimulate discussion of real life issues. Creativity can often help people to look at a situation in a new way.
- Create a mutual learning environment. Remember everybody has something to share and something to learn, including trainers and facilitators.
- Participation should involve a flexible approach. Nothing is set in stone. Changes to the training programme and selected activities are useful and should be encouraged based on ongoing input from participants.
- Allow participants to make their own decisions and undertake their own analysis. Don't do the group's work. Individuals and community members are capable of identifying issues, concerns, specific problems and prioritizing these according to their own needs and criteria.
- Ensure an enjoyable experience for everyone through the creation of an open and relaxed atmosphere. Participants should feel comfortable sharing their views and speaking candidly.
- Remain objective and validate all opinions. Remember there are no wrong or right answers.
- Encourage everyone to participate but remember individuals participate in different ways. Wherever possible encourage all participants to get involved by facilitating discussions, writing notes from discussions on the flip chart, etc. But remember some people only feel comfortable talking in small groups but are still participating. Others may talk constantly in the large group but may not be contributing a great deal or listening well to others.
- Select activities that will help to impart information and encourage analysis and decision-making in a participatory way. Avoid using a 'bag of tricks' selecting activities that are fun but confuse rather than help participants to learn. Remember the way activities are carried out is as important as the selection of activities.
- Allow sufficient time for discussion. The group discussion which follows an activity is often a critical part of the learning process. The discussion is not meant to gather specific answers. Facilitators are not limited or restricted to the questions noted for each activity but should probe and follow up on any interesting comments made by participants.
- Keep an eye on the time. Monitor group work and discussions. Help move participants along if needed.

## Are you ready to conduct a participatory training workshop in the community?

Before holding the community workshop you may wish to practice the skills you learned in the workshop. It might be useful to first plan and practice some of the sessions and get feedback from one another. The Facilitation and Brainstorming exercise can be used by a group of extension workers to practice and improve their facilitation skills before undertaking a workshop in the community.

It is useful to regularly share experiences and continue to learn from each other. As you hold workshops you can monitor and evaluate your own strengths and weaknesses both individually and as a group. You may also choose to discuss what additional skills or resources are required and how these can be obtained. The following questions are suggested as a possible starting point:

- What did you plan?
- What did you learn?
- What went well and what could be improved?
- What would you do differently next time?
- What major difficulties were encountered and how could these be avoided?

### Continuing to Build Skills

Once the motivation to maintain rainwater harvesting systems has been well established and community members have received an overview and basic introduction to the social and technical aspects of operation and maintenance, you might want to organise a participatory demonstration where everyone is able to get actively involved in performing various maintenance and repair activities.



## Facilitation and Brainstorming: A couple of exercises for trainers and extension workers

### Activity 1: Facilitating

#### Objectives:

- Participants learn what facilitation means and its importance to development
- Participants identify the tasks of a facilitator and discuss the qualities of a good facilitator
- Participants use facilitating skills in their planning process.

**Time:** 1 1/2 hours

#### TASKS OF A FACILITATOR

##### Before a session the facilitator:

- Plans the design of the training or workshop, including the sessions and activities.
- Prepares the materials and equipment needed for the training.

##### During the training the facilitator:

- Reviews the previous session.
- Explains the tasks, steps and time allowed for the process.
- Answers or clarifies questions as required.
- Guides the discussion and keeps it focused on the issue.
- Gives a summary of the discussion.
- Takes notes if no one is assigned this role.

##### After the training the facilitator:

- Initiates an evaluation of the session.
- Writes up outcomes of the session.
- Initiates modification or revision of the process as required.
- Evaluates impact.

**Materials:** cards or small pieces of paper, flip charts, markers

**Procedure:** Give each participant two small cards.

Give the following instructions one at a time and wait for them to finish each step before proceeding to the next:

1. On each card write a word that you think of when you hear the word facilitating.

2. Get into groups of three, place all your cards together and look at the words.
3. Using the words form one concept of the word facilitating. Write your concept or definition on the flip chart.
4. Post all the flip charts.
5. Discuss and agree on a common understanding and definition. Give out Fact Sheets 1a 'Facilitator's Checklist' and 1b 'Qualities of a Good Facilitator' and ask the participants to discuss and make any changes or additions.

## Activity 2: Brainstorming

1. Ask five or six volunteers to do a role play. Tell them the brainstorming session is called 'How to encourage people to attend a village meeting about water'.
2. Allow the volunteers a few minutes to organise themselves and select someone to be the facilitator for the session.



If you wish you can tell the volunteers (not the facilitator!) the following: To make the exercise more dynamic a few of the team members can make the task of the facilitator more challenging. For example, one person can be very quiet and shy, another can be loud, ignore others and take over the discussion, another might choose not to pay attention or two people can decide to disagree strongly about a particular idea. These participants should still act realistically and not get overdramatic. Choose no more than two 'challenging participants' so the facilitator is not overwhelmed.

***'Participation is actually increasing...'***  
TOT Workshop Participant

3. Ask the volunteers to present the role play and the rest of the participants to observe carefully.

Tell the volunteer facilitator the following information:

You and your team are planning a village meeting next week. You have had problems getting people to attend the meetings. You are the facilitator and you want your team to think of as many ideas as possible to solve this problem.

Some people may be comfortable speaking in large groups while others may be more comfortable in smaller group discussions. A varied selection of activities or exercises, where people work in pairs and small groups can help to encourage participation. Activities such as role plays help to get everyone involved, particularly those who are not as confident to express their ideas.

Facilitate the brainstorming session in 20 minutes by following these steps:

- i. Ask each member of your team to write all his or her ideas on a piece of paper.
  - ii. After they have finished ask each one to read out the first idea on their list. Write this on the flip chart.
  - iii. Ask the next person to read out the next idea on their list without repeating what has already been said.
  - iv. Once all the ideas have been written down, review the list on the flip chart.
  - v. Summarise the session.
4. Thank the participants and volunteer facilitator. Facilitate a discussion of the presentation. Ask the participants the following questions:
- Did the facilitator ask everyone in the team to share ideas? If yes, how did she or he do it? If not, what suggestions do you have?
  - Was the facilitator listening to each idea? Did she or he accept all the ideas shared or were some ideas ignored?
  - Did all team members contribute their ideas?
5. Discuss brainstorming as a method to facilitate participation, why it is used and what are its advantages.

**Note to facilitator:** Brainstorming is a technique or method to generate as many ideas as possible about a subject. Participants continuously express their ideas without discussion or judgement from the facilitator or other participants on whether the idea is good or bad. All the ideas are written on a flip chart or cards. Together the group can select which ideas are useful. Two options for brainstorming include:

- 1) People call out their ideas and the facilitator writes each idea on a flip chart.
- 2) Each participant writes down a series of issues, topics, questions, words on small pieces of paper or cards. These are then posted on the wall for everyone in the group to discuss.



IV  
PARTICIPATORY  
ACTIVITIES  
AND TOOLS

## IV PARTICIPATORY ACTIVITIES AND TOOLS

### Introduction of Participants

#### Overall Objectives:

- Help participants get to know one another in a relaxed way.
- Set an informal tone for the workshop.
- Build peer relationships and for the purpose of the workshop it may also help to lessen the role of hierarchical or status-based relationships within the community.

**Activity:** Let Me Introduce Our Similarities and Differences

#### Activity 3: Let Me Introduce Our Similarities and Differences

**Time:** 20 - 30 minutes

**Materials:** None

**Preparation:** None

#### Procedures:

1. Ask people to pair up, ideally with someone they don't know and spend 5 minutes talking and learning about one another. Ask people to find things which they share in common, as well as areas where they really differ.
2. When everyone returns to the circle ask each pair to take turns introducing one another to the group, and sharing any similarities and differences they discovered.
3. Conclude by saying that you hope that everyone learned something new about one another.



## Objectives and Expectations

### Overall Objective:

- Participants determine their own objectives and outcomes of the workshop. This allows everyone to develop a common understanding of the purpose of the workshop and enables the training or workshop to become the property of the participants.

**Activities:** Hopes and Fears, Respecting Norms

### Activity 4: Hopes and Fears

#### Objectives:

- Participants set their own objectives for the workshop.
- Highlight the participation process and encourage community ownership of the workshop and its outcomes.

**Time:** 20 minutes

**Materials:** Pieces of paper, markers, tape

#### Procedure:

1. Ask participants to write down individually on pieces of paper 1 - 3 (or more) things they would like to happen at the workshop and 1-3 things they would not like to happen. For example - 'I hope I learn how to fix a rainwater tank'. 'I fear the workshop will be too technical'.
2. Ask them to post the pieces of paper on the wall under the two headings 'Hopes' and 'Fears'.
3. With help from the participants consolidate the cards. Ask a volunteer to read out 'Hopes'. Facilitate a discussion of the group's hopes and ask everyone to come to an agreement about the overall objectives of the workshop.
4. Repeat the process with 'Fears' and discuss how these fears might be alleviated. These can be re-written in a positive way as 'Hopes'.
5. Post the lists and revisit them throughout and at the end of the workshop to ensure objectives are being/were met.

**Note to facilitator:** The hopes or objectives need to be realistic and attainable. They refer only to what can be achieved at the end of the workshop or training programme. You may want to reword the 'Hopes' as 'Objectives or Things we will achieve at the end of the workshop'.

## Activity 5: Respecting Norms

### Objective:

Participants determine the rules or norms governing the conduct of participants throughout the workshop. In other words, they agree on guidelines for appropriate 'behaviour'. It may also encourage participants to use good communication and listening skills throughout the training or workshop.

**Time:** 15 minutes

**Materials:** Flip chart paper, marker

### Procedure:

1. Ask everyone to contribute ideas about how to make the workshop a positive experience and learning environment for everyone (i.e. start on time, respect all views, have patience and don't interrupt, finish on time, don't walk in and out of sessions, no mobile phones, etc.).
2. List the answers on the flip chart. Obtain consensus on the final list.
3. Point out that respecting the workshop 'norms' or 'rules' is everyone's responsibility.
4. Post on the wall throughout the workshop and revisit the list once in a while if necessary.

## Refreshers

### Objective:

These are quick exercises to give new energy to the group if participants are tired or slow to begin an activity. They can help recharge or energize participants first thing in the morning, after lunch or after a particularly intensive exercise. It also allows everyone to have some fun and maintain or build a positive atmosphere. Refreshers can have a general focus or be adapted specifically for water-related issues. There are many more possibilities — perhaps you can think of some other short refresher activities for your workshop?

**Time:** 10 minutes

**Materials:** None

**Activities:** Big Fish Little Fish, Differing Agendas



## Activity 6: Big Fish, Little Fish

### Procedure:

1. Participants stand in a circle. One person stands in the middle.
2. The person in the middle calls out 'Big Fish' and uses gestures to indicate the opposite - a little fish. The person in the circle facing this person responds by saying 'Little Fish' but uses the opposite gesture - for a big fish.
3. The person in the middle changes frequently from 'Big Fish' to 'Little Fish' and quickly turns to face different people trying to catch them off guard. Anybody who responds incorrectly either verbally or by gesture drops out. The circle will get smaller and smaller.
4. Periodically change the person in the middle of the circle if you wish.

## Activity 7: Differing Agendas

This activity has been adapted from the 'Chairs' activity that was done during the TOT workshop. You might want to consider doing this activity out of doors if you are concerned about getting things wet!

**Materials:** Cups, three wash tubs or buckets of different colours (perhaps red, blue and white), water

### Procedure:

1. Cut out enough pieces of paper for the number of participants. On one third of the papers write 'Fill the red wash tub with all of the water'. On another one third of the papers write 'Fill the blue wash tub with all of the water' and on the remaining pieces of paper write 'Make sure your tub (the white one) has the most water'.
2. Place the tubs in a triangle far apart from each other. Fill the white tub with water. Hand out one cup to each participant and one piece of paper where they will find 'Their Mission'.
3. Ask them to read the piece of paper and follow the instructions when you say go. Tell them not to show their paper to their neighbour.
4. Say Go! Step back and observe. After a few minutes if people aren't talking you might want to remind them that they are able to speak to one another.
5. Stop everyone when they seem to be at a loss of what to do next.
6. Bring everyone together and discuss what happened.

7. Close the session by reminding participants that communities are made up of all sorts of different kinds of people with different life experiences. People often have differing agendas or different ideas about what they want to accomplish. This is why communication, and often compromise, is necessary in order to decide on and reach a common goal.

**Note to facilitators:** This is also a good activity to do to open a session on community participation and community management.

## Daily Evaluation Activities

Begin each day with a brief review and group assessment of the previous day's activities. This review helps to provide continuity to the learning process and enables facilitators to respond to the interests and needs of participants.

### Objectives:

- Gather feedback on the relevance of selected activities and the level of participant interest in the tools.
- Highlight learning and enable participants to reflect on and measure personal progress.
- Assess degree of behavioural change and skill development.
- Provide guidance to trainers to adjust future activities or programme in response to feedback from participants.
- Validate the opinions of participants and increase ownership.

**Activities:** Feedback Cards, Happy, Sad and Neutral Faces

## Activity 8: Feedback Cards

### Procedure:




1. Distribute 2 small pieces of paper to each participant.
2. Ask participants to write down their answers to the following questions:
  - What was most helpful or interesting today? What did you learn today?
  - What could have been improved?
3. Take the cards and summarise overnight. Provide feedback the following morning.

### Activity 9: Happy, Sad and Neutral Faces

**Procedure:**

1. Prepare a table like the one below using sentences that relate to the workshop objectives and expectations that were decided in the beginning by the participants.

**Table 1 Daily Evaluation Table**

DAILY EVALUATION			
Today I...	Sad Face 	Normal Face 	Happy Face 
Learned new ideas or gained new skills		✓	
Contributed ideas or offered my opinions	✓		
Listened carefully to everyone's ideas or opinions	✓		
Had fun			✓

2. At the end of the day ask participants to place a tick in the appropriate box as they are leaving.
3. Discuss the outcomes the following morning with the group, particularly if there are many sad faces. Alter the agenda if necessary or apply any lessons learned.

## Final Review and Evaluation

### Overall Objectives:

- Summarise and reinforce ideas, new concepts, skills and knowledge obtained during the workshop.
- Participants identify their increase in learning and behaviour change, both at a personal level and overall as a group.
- Gather recommendations to improve future training.

**Note to facilitators:** After you have finished your final evaluation activity thank the participants for their hard work and acknowledge any additional help or support you received before or during the workshop. Close with a simple thank you and an offer to provide ongoing support if needed.

**Activities:** Personal Accomplishments, Mural or Collage, Questionnaire. The activities used for daily evaluations can also be used for a final evaluation by focusing on the overall workshop.

### Activity 10: Personal Accomplishments

**Materials:** small pieces of paper, pens or pencils

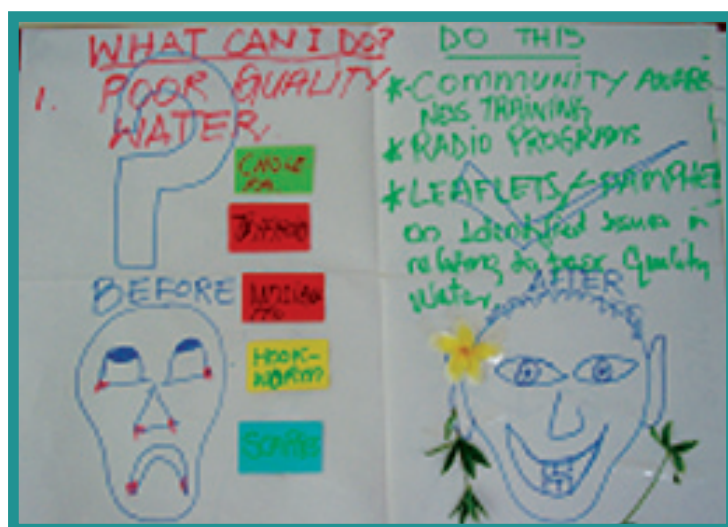
#### Procedure:

1. Ask participants to write down at least 3 new things they learned from the workshop. These could be practical skills, as well as changes in attitude, view or perspective.
2. Post the pieces of paper. Ask everyone to come and read what was written.
3. Summarise the contributions and together discuss what people learned during the workshop.

### Activity 11: Mural or Collage

**Time:** 1 hour or more. If time allows and the participants wish, the mural can be completed with more care and in more detail before it is presented during the closing ceremony.

**Materials:** Pen, paper, coloured markers, coloured pencils, and any other art supplies such as paint and brushes, glue, tape, light and locally available items such as coconut husk, leaves, twigs, flowers, shells, etc.



**Procedure:**

1. Ask participants to draw a group mural expressing their thoughts at the end of the workshop. They should aim to depict the skills and knowledge they learned but are also free to include funny events or amusing things that were said, done or seen during the workshop. Encourage the use of colour and creativity in the creation of the mural.

**Note to facilitators:** This is also a good activity to use with children and youth to follow up youth-specific activities or learning.

2. The completed mural can then be presented during the closing ceremony. Afterwards it can be posted in a communal space or community hall as a reminder of what was learned during the training.

**Activity 12: Questionnaire**

A short questionnaire or written evaluation can be developed and completed by all participants at the end of the workshop.

1. Ask participants to think back to the first day of the workshop when they were asked to think about their expectations for the workshop. Post the list of expectations.
2. Ask them to think back to the daily feedback sessions. Explain that it is time to think about the workshop as a whole particularly whether the workshop accomplished its objectives and met expectations.
3. Tell participants that evaluating the workshop is very important and comments will be used to improve future training.
4. Distribute evaluation forms, allowing sufficient time for participants to complete the forms.

## Community Participation and Community Management

### Overall Objectives:

- Participants identify their own vision and definition of 'community participation' and 'community management'.
- Participants address the importance of community participation in rainwater harvesting but also gain insights into different individual and group-specific perspectives on certain issues within the community.
- Reinforce the idea that participants play an active role in participatory activities, planning and analysis.

**Activities:** Our Community Our Concepts, Map Building

### Activity 13: Our Community Our Concepts

#### Objectives:

- Introduce and develop a common understanding of the concepts of community participation and community management.
- Encourage group analysis and decision-making.

**Time:** 1 1/2 - 2 hours

**Materials:** markers, coloured pencils, butcher paper, tape, scissors, glue

#### Procedure:

1. Divide participants into small groups of 5 or 6 people, ideally based on sex and/or age.
2. On the piece of butcher paper ask participants to draw or write all the things that 'Community' means to them. Remind them that all ideas are good ideas and there are no right or wrong answers.
3. When they have finished ask them to follow the same process with the concept of 'Participation'.
4. After they have finished ask the groups to connect the two concepts into one representation of 'Community Participation.'
5. Bring the groups together. Ask each group to present and explain their representation of 'Community Participation'.

**Note to facilitator:** You might want to take a short break or do a refresher at this point.

Discuss the outcomes and the process.

- What are the similarities in the different posters? Are there any differences?
  - Did everyone in the group always agree on what should be included in the poster? How did people in the group deal with different ideas?
  - Why do you think we did this exercise? How do you think it relates to this workshop on rainwater harvesting?
6. Now ask the group what they think the similarities and differences might be between 'Community Participation' and 'Community Management'. Brainstorm and list the features of 'Community Management'. (Fact Sheet 2 provides some guidance for some points of discussion).
7. Brainstorm and list the strengths and weaknesses of a community management approach to rainwater harvesting. This part of the exercise is important because community management might not be well understood or even desired in the case of individual household ownership of rainwater harvesting systems.

**Discussion & Brainstorm**  
**COMMUNITY MANAGEMENT IN RAINWATER HARVESTING**

Strengths (The benefits...)	+	Weaknesses (The problems & pitfalls...)
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## Activity 14: Map Building - Rainwater Harvesting Systems in the Community

### Objectives:

- Members gather information and identify the current state or condition of rainwater harvesting in their community through the creation of a map.
- A fun and interesting way to stimulate a discussion of real life issues.
- Help participants develop critical thinking skills as they relate to daily life.
- Can highlight the process of change on both a physical and social level.

**Note to facilitator:** The map can also be used for a variety of purposes to highlight other issues and problems in the community.

**Time:** 1+ hours

**Materials:** Flip chart paper and markers and/or materials such as pebbles, twigs, shells, coconut husks, etc.

### Procedure:

Divide participants into groups of no more than 5 or 6 people. Single sex groups are recommended.

Instructions for participants:

1. Draw a map of your community. Include any physical landmarks you think are important (i.e. church, school, beach, houses, roads, community hall, etc.). It is important to focus on all aspects relating to freshwater and in particular rainwater harvesting. Include non-functioning tanks as well as functioning rainwater harvesting systems.
2. On the map note any specific information relating to the rainwater tanks, including where they were built, who provided funding, when they stopped working.
3. Bring everyone together and ask each group to present their map.





## 4. Discuss the maps.

- What are the similarities between the maps? What are the differences?
- What do you think these differences tell us? (Perhaps differences in priorities or knowledge based on roles in the community).
- What do the maps tell us about rainwater harvesting systems?
- What has changed over time?
- Is there anything else the maps tell us?

Conclude by noting how the maps highlight that communities are made up of different types of people with different needs, interests, skills, problems, social status, experience, etc. These differences underline the importance of including a variety of groups and individuals in any initiative that involves community participation and community management.



**Note to facilitator:** This is a good activity where children and youth can also participate. Working with their peers they can also share their knowledge and perspective amongst themselves and then with other adult members of the community.

## Gender Roles and Gender Relations in the Community

### Overall Objectives:

- Examines gender roles and relations, as well as cultural traditions and social expectations within a community and how these change over time.
- Examines where women (and/or men) are now and where they want to be. Concerns both practical and personal aspects — i.e. increased knowledge and skills, workload minimized, exposure to new ideas, more confidence, ability to make decisions, etc.
- Examines level of comfort and potential barriers or obstacles for women (and men) to take on new tasks that require unfamiliar skills or degree which tasks may increase workload.
- Enables self assessment by collecting data on problems and situations.
- Allows community members to gain a fuller understanding of problems, contribute insight into possible causes and develop solutions.

### Activity: Two Circles

### Activity 15: Two Circles

#### Objectives:

- Highlight the important and interconnected roles women and men play in a community.
- Highlight cultural and societal influences that determine gender roles and decision-making.
- Stimulate a discussion about changes in the roles of women and men and the relations between and among groups of men and women.
- Demonstrate the different views and perceptions individuals may have even when they belong to a group that shares many similarities.
- May also highlight the changing nature of natural resource management.

**Note to facilitator:** This activity, and particularly a thorough discussion of gender roles and gender relations, is very important to the long term success of rainwater harvesting.

**Time:** 1 - 1 1/2 hours

**Materials:** Flip chart and markers

**Procedure:**

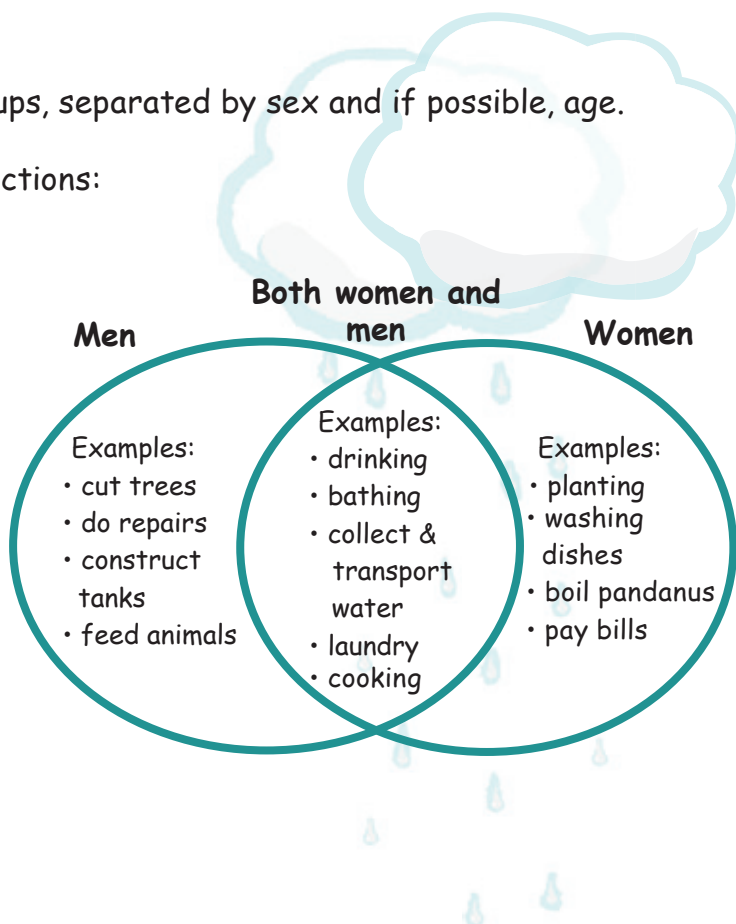
Ask the group to split into two or more groups, separated by sex and if possible, age.

Provide the groups with the following instructions:

Draw two circles that overlap in the middle. One circle should be labeled or identified as 'Women' and the other circle labeled or identified as 'Men' and the space in the middle where they overlap should be labeled 'Both Women and Men'.

Write down in the appropriate space the activities that men and women do in relation to water and in the middle space the things that women and men both do in relation to water.

Ask the groups to post and present their posters. Discuss the process and outcomes. Ask someone to volunteer to note comments on the flip chart (or the drawing).



- Was it easy to decide who does what? Was everyone in the group in agreement?
- Do women and men, or any of you individually, enjoy doing these tasks? Why and why not? (Can put a check mark beside the enjoyable activities, + or -, happy/sad face, red circle for enjoyable, blue circle for neutral, black for not enjoyable. Many activities might be both, depending on the circumstances).
- Why do men do certain things and women do others? What do young boys and girls do?
- Are there any activities that men do that women can also do? And vice versa?
- Have these roles changed over time? If yes, why? If no, why not?

**Discussion & Brainstorm**  
 WHY DO WOMEN AND/OR MEN DO THESE ACTIVITIES?

**Discussion & Brainstorm**  
 WHAT HAS CHANGED?  
 WHY HAS THIS CHANGE OCCURRED?

Continue with the discussion as issues arise.

**Note to facilitator:** It is useful for the activity and discussions to be in single sex groups as mixed groups may inhibit the full participation of women. The two groups then come together and each should post and report the results of their separate discussions. The sharing of ideas and opinions among men and women is very important to see where differences and similarities may lie.

## Water Quality, Health and Hygiene

### Activities

#### Overall Objective:

- Gauges the level of understanding about the links between water quality, health and hygiene and raises awareness where required.

**Activities:** Water (B)rainstorm, Good and Bad Advice

### Activity 16: (B)rainstorm about Good Quality Water and Bad Quality Water

#### Objective:

- Participants identify their knowledge and understanding of water quality, health and hygiene.
- Stimulate a discussion about household, community and gender-based responsibility and decision-making.
- Illustrate the range of creative responses when using open-ended techniques.
- The information gathered during this exercise can be developed into a poster or pamphlet, incorporated into water campaigns or simply posted in a public location as a reminder to community members.

**Note to facilitator:** This is an important activity because many people may not have a clear understanding about the connection between water and health.

**Time:** 45 minutes (10 for brainstorming, 35 for discussion)

**Material:** pieces of paper or cards, markers, tape, flip chart

#### Procedure:

1. Give each participant 8 cards or pieces of paper and a pen.
2. Ask participants to finish the following sentence and write their answers on pieces of paper. 'Good quality water...!' 'Bad quality water...!'. Encourage people to be creative and suggest that they use drawings or anything else in addition to sentences.
3. Ask them to post the cards under the appropriate heading.
4. For each heading ask one participant to group the cards that mean the same thing and then read aloud all the answers each time starting with 'Good (or Bad) quality water...!'.

**A group discussion follows:**

- Are there any other ways you can tell the water quality is good and bad? (Post any additions to the headings).
- What is the connection between water and health?

At this point you might find it useful to share some information about water-borne diseases (Fact Sheet 3)

- What are some of the results of bad water?

**Discussion & Brainstorm**  
**CONSEQUENCES OF BAD WATER**

- What are the advantages and disadvantages of rainwater harvesting?

**Discussion & Brainstorm**  
**RAINWATER HARVESTING**  
**ADVANTAGES / DISADVANTAGES**

**Activity 17: T(h)ankful of Bad Water - Solve the Who Done It?****Objectives:**

- Examine health, repair and maintenance issues with respect to rainwater harvesting systems in a fun way.
- Use creative thinking to analyse issues.
- Participants identify potential obstacles to the operation, maintenance and repair of rainwater harvesting systems, address problem areas and discuss mechanisms to solve disputes.
- Stimulate a discussion about household, community and gender-based responsibility and decision-making.
- Participants examine and come to appreciate opposing perspectives within a community in a dynamic way.

**Time:** 45 minutes

**Procedure:**

1. Cut paper into five pieces and on each piece of paper write the suspects:
  - Mosquitoes
  - Pigs
  - Bacteria
  - Leaves
  - Family next door with stomach aches and diarrhoea
2. Ask one person to volunteer to be the Detective. Separate the remaining participants into groups of 4 or 5.
3. Give each group a piece of paper with one of the 'Suspects'.
4. Tell the groups the following scenario: 'The family is sick with stomach aches and diarrhoea. Any of the suspects might have made the family sick. Each group should discuss the way they might have caused the crime and come up with a general statement.'
5. When the groups are all ready the Detective calls each suspect in turn to sit in front of the others and provide their statement. For example she or he can say, 'The family is very sick. I am the Detective in this case and I am going to get to the bottom of this case! So what's your story?'

After the statement the Detective can ask the suspect questions if needed.

6. Ask participants to recap the findings and share what they learned from the exercise.



Pig faeces near water sources can make people sick.



Stagnant water can be a breeding ground for mosquitoes which transmit dengue.

## Activity 18: Good and Bad Advice

### Objectives:

- Participants use role play and creativity to uncover and/or reinforce their own knowledge and understanding of the issues.
- Participants examine and come to appreciate opposing perspectives within a community in a fun and dynamic way.
- Participants develop analytical and problem-solving skills.
- The skits and outcomes of the discussion can also be incorporated into awareness-raising materials, for example as mini case studies or illustrated cartoons with dialogue.

**Time:** 1 hour (30 minutes for the story, 30 minutes for group discussion)

**Materials:** Flip chart paper, markers, tape

### Procedure:

Ask participants to separate into mixed groups with 4 people in each group. Explain that this activity is a role play. Give the following instructions:

1. Each group should make up a short skit about water. The story should have one main character — a woman who is affected by a water-related problem.
2. The three other characters can be anyone from the community (for example, her husband, a parent, one of her children, a relative, neighbour, teacher, church leader, government official, etc). Each of these three people offer the woman contradictory advice to solve her problem.
3. The story should finish with 'to be continued' leaving the main character undecided about the right course of action. Each group should provide a title for their story.
4. Each group then presents their skit.

After each story ask participants to suggest one or more possible conclusions.

After all the groups have presented ask participants to select the best story.

Follow with a group discussion.

- What kinds of good advice and bad advice do people often get in relation to water? List ideas under the headings 'Good Advice' and 'Bad Advice'.

**Table 2 Good and Bad Advice Relating to Water and Health**

Water and Health	
Good Advice	Bad Advice
Example: <ul style="list-style-type: none"> <li>• Boil water</li> <li>• Wash hands regularly &amp; use antibacterial soap</li> <li>• Seek medical help</li> </ul>	Example: <ul style="list-style-type: none"> <li>• Break a coconut husk and rub it on your skin (i.e. for scabies)</li> <li>• Wait out the illness</li> <li>• Massage out the sickness</li> </ul>

- What are some of the consequences when people follow bad advice?
- Who makes decisions in the household, in the community, on the island, and in the country regarding (drinking) water and why? Has this always been the case? If not, how and why has this changed? (This discussion can be taken much further by separating into small groups for more detailed discussion).
- What other methods are used to solve household problems or community disputes regarding water? Do these always work? When and why not? (These questions can also be addressed in smaller, perhaps single sex groups).

*'I like doing skits - they help me to remember the things I learn.'*

*'Skits are very powerful on their own.'*

Comments from some participants at the TOT Workshop



## Maintenance and Repair

This is an area where traditional teaching materials are often used. However participants will learn the content faster and retain information better if the session is genuinely participatory.

### Overall Objectives:

- Participants identify their own level of understanding of the operation, maintenance and repairs needed for rainwater harvesting systems and fill in any gaps in technical knowledge.
- Participants identify the roles, responsibilities and the funding requirements for the operation, maintenance and repair of rainwater harvesting systems.
- Provide an active way for community members to get involved in the learning process.

**Activities:** Rainwater Harvesting Memory, Field Visit, The Matrix – Maintenance and Repair of Rainwater Harvesting Systems, The Costs and Benefits of Maintaining your Rainwater Harvesting System



## Activity 19: Rainwater Harvesting Memory

### Objective:

A short simple activity to introduce or review the technical aspects of rainwater harvesting.

**Materials:** Pens, writing paper and the items below

### Procedure:

Prepare this exercise when the participants are not in the room. Gather in advance as many of the following items as possible:

- Mosquito screen
- Hammer and nails
- Roofing material
- Glass
- Kettle
- Mosquito coils
- Broom
- Rake
- Fencing material
- Bucket
- Bottle of water
- Saw
- Toilet paper
- Leaves
- Drawings of a pig, dog and birds

Arrange all of the items on the floor or on tables. Items may overlap but you should be able to see enough to identify each item. Cover the items with a cloth, sheet or mat.

Ask everyone to come into the room. Give them each a piece of paper and a pen.

### Provide the following instructions:

'Underneath the mat are various items. I will uncover the mat and you have several minutes to look at the items. I will cover the items again and you should write down as many items as you can remember.'

Uncover the items and allow only several minutes for viewing. After everyone has written all they can remember. Uncover the items. Ask who got 10 answers, 12, 15, 16 and so on until you find out who remembered the most. Ask the participants to explain why the following items have been selected.

Remind participants that it is often difficult to remember something after only seeing it once. This short activity shows why it is important to review many times the things that will be discussed and viewed in the workshop in relation to rainwater harvesting.

## Activity 20: Field Visit

**Time:** Minimum 1 hour

**Method:**

The facilitator accompanies groups of maximum 5 or 6 people on a visit of rainwater harvesting systems in the community. Participants are given the diagram on the following page, along with a pen in order to make notes if they wish.

At each stop ask participants to carefully examine in detail all of the parts on each rainwater system (See Fact Sheet 4). Ask participants to share the things they notice. The facilitator can help by asking questions such as:

- Is there anything that you see that might affect the quality of the water?
- Does anyone have any suggestions about possible repairs?
- Have any repairs already been made? What materials were used? How long do you think this repair will last?
- What might happen to certain parts during a cyclone? Can any preventative measures be taken to avoid damage to the system or the water?

Immediately after the visit have participants complete The Matrix.

After completing the Matrix or perhaps later in the programme it might be useful to do another field visit to see if participants see new things that they did not notice beforehand.

***'Field trip was so powerful and challenged us as development work.'***  
Participant from the TOT Workshop



Table 3 Example of The Maintenance and Repair Matrix

<b>THE MATRIX</b> <b>Maintenance and Repair of Rainwater Harvesting Systems</b>				
Parts of a rainwater harvesting system	Ongoing Maintenance	Repairs	Who is responsible?	Who will pay and how will the funds be raised?
Roof				
Gutter				
Tank				
Tap				
Downpipe				
Overflow				
Fence				
First Flush Devices				

The matrix design is flexible and can easily be altered as required.

## Activity 21: The Matrix — Maintenance and Repair of Rainwater Harvesting Systems

### Objectives:

- Understand the technical aspects of maintenance and repair.
- Investigate the potential trouble spots where technical problems can happen.
- Reinforce knowledge gained during the field visit.
- Create a tool for later use in the community.

**Time:** 1 hour

**Material:** paper, markers, flip chart, tape

### Procedure:

Participants separate into groups of no more than 8 people each.

Each group completes the matrix.

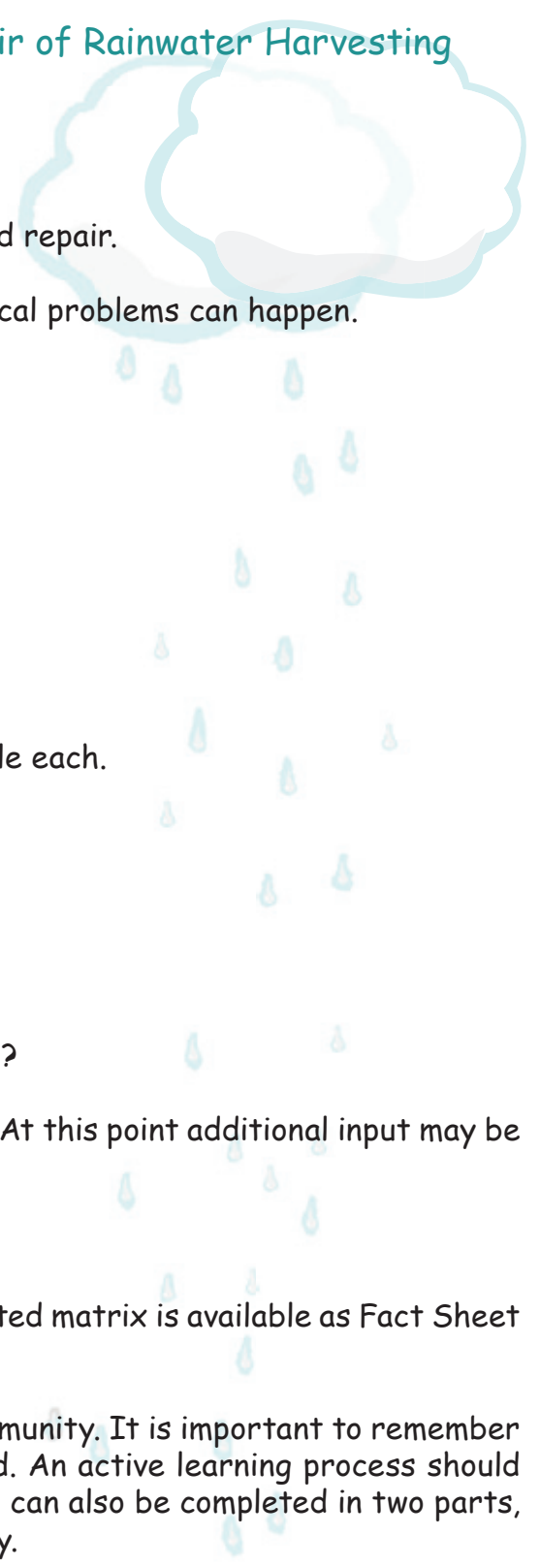
The groups then come together, present their matrices.

### A group discussion follows:

- What are the differences between the two matrices?
- Has everything been covered — is anything missing? (At this point additional input may be required from the facilitator).
- What did you learn from this exercise?

Participants can then complete one final matrix. (A completed matrix is available as Fact Sheet 5).

The matrix can later be posted as a reminder for the community. It is important to remember that a completed matrix should not simply be distributed. An active learning process should take place first during the training workshop. The Matrix can also be completed in two parts, with the last two columns addressed as a planning activity.



## Activity 22: The Costs and Benefits of Maintaining Your Rainwater Harvesting System

### Objective:

This exercise was not undertaken during the TOT workshop. However it is an important activity to address the motivation and incentive needed to maintain and repair rainwater harvesting systems in the long term.

The outcomes and discussion of this exercise can also be used to make posters or other awareness-raising material about rainwater harvesting.

**Time:** 1 hour

**Materials:** Paper and markers

1. Complete the table. Remember to consider all of the different dimensions – including the human or social costs and benefits, as well as the financial. Think about what happens and what you do when the water is good and the water is bad.
2. Beside each point write who pays and who benefits in each situation.

**Table 4 Cost and Benefit Table**

Before: A broken or ineffective rainwater harvesting system		After: A well maintained rainwater harvesting system	
Costs	Benefits	Costs	Benefits
Examples: <ul style="list-style-type: none"> <li>• Family gets diarrhoea from bad water</li> <li>• Kids miss classes, parents can't go to work</li> <li>• Have to get water from neighbour who gets annoyed after some time</li> <li>• Fuel costs transporting water</li> <li>• Get a sore back carrying water</li> </ul>	<ul style="list-style-type: none"> <li>• Don't have to bother cleaning tank</li> <li>• Don't have to spend time or money for tank repairs</li> <li>• Neighbour can do all the work!</li> </ul>	<ul style="list-style-type: none"> <li>• Financial cost to repair and maintain system for tools, screens, hardware, part replacement</li> </ul>	<ul style="list-style-type: none"> <li>• Lots of clean water all year round</li> <li>• Healthy family</li> <li>• Better attendance at school and work</li> <li>• Don't have such high water bills - save money</li> <li>• Get fit cleaning tank</li> </ul>

**Discussion:**

- What are similarities and differences between the points of each group?
- What are the costs of not maintaining or repairing your system? Who bears these costs? How are these costs distributed?
- What are some of the direct and indirect benefits of rainwater harvesting systems? Who gains from a well maintained rainwater harvesting system?

**Planning****Overall Objectives:**

- Identify logical and efficient procedures to arrive at solutions and define need for personnel, funds or equipment.
- Provide a planning tool that can help identify if there is a need to raise funds, request additional training or technical assistance, plan ongoing activities, etc.

**Activity:** Balloon Exercise — Core Problems and Solutions

**Activity 23: Balloon Exercise (Core Problems and Solutions)****Objectives:**

- Participants identify the core problems, i.e. the challenges, constraints and obstacles to the maintenance and repair of rainwater harvesting systems (these might fall under broad categories such as financial constraints, limited technical skills and capacity, poor initial construction, lack of planning, miscommunication, lack of motivation, incentive and awareness, difficulty in acquiring spare parts, etc.).
- Enable people to develop their own plans and solutions in order to avoid these obstacles in the first place. Reinforce concept of community self reliance.
- Develop analytical and problem-solving skills and ability to reflect on causes and effects.

**Note to facilitator:**  
This is a very important exercise but it does take some time and requires assistance from the facilitator.

**Time:** 1 1/2 hours +

**Materials:** Paper and markers

**Procedure:**

1. In a large group ask the participants what things they saw with the older (or perhaps even the newer) rainwater harvesting systems during the field visit. List the responses on the flip chart.

2. Explain the following: What you saw are the physical symptoms or the results of a lack of maintenance and repair of the systems. It is important to understand the underlying reasons WHY rainwater harvesting systems fall into disrepair and try to find solutions. This is the purpose of this activity.

Divide participants into small groups of no more than 10 people each. Provide each group with several sheets of paper and some markers.

Provide the following instructions:

1. Take one of the physical symptoms of disrepair and write it on the top left hand corner of a piece of paper.
2. Ask yourselves why this happens. Write down one of the reasons, circle it and draw a line to the physical symptom. If you have other reasons write them down, circle them and draw a line to the original physical symptom.
3. With each reason ask why it happens and circle your answer. Keep asking why with each new response. You will have a line of balloons everywhere linked together with lines.
4. When you cannot go any further you have reached a core problem that needs to be addressed. Circle the core problem in a different colour. You should be able to read the logic of the chain forwards and backwards.
5. Continue the same process with another physical symptom on the same piece of paper. If there is not enough room use another paper. Some symptoms might allow you to look at the problem in different ways or you will decide that others are the result of the same core problems. If the same problems are already written on the paper draw a line to them.
6. When you have finished drawing balloons with all of the symptoms complete Table 5. List all of the core problems on the table. For each problem write down possible solutions and list the stakeholders who will be involved. Emphasis should be on solutions that encourage self-reliance.

**Note to facilitator:** This exercise can also be used to examine the consequences of the lack of maintenance and repair. Instead of asking 'why it happens' in Step 2 participants list one or more 'consequences or results' of the situation. For each consequence they should draw a new balloon and link it to the first problem. They will continue drawing and linking other balloons representing the consequences of these consequences. When a whole chain of balloons has been created ask participants how and where the chain of negative consequences can be broken. In this case the exercise helps to build awareness, understanding and motivation for ongoing maintenance and repair (similar to Cost and Benefit exercise in Activity 22).



Example Balloon Exercise

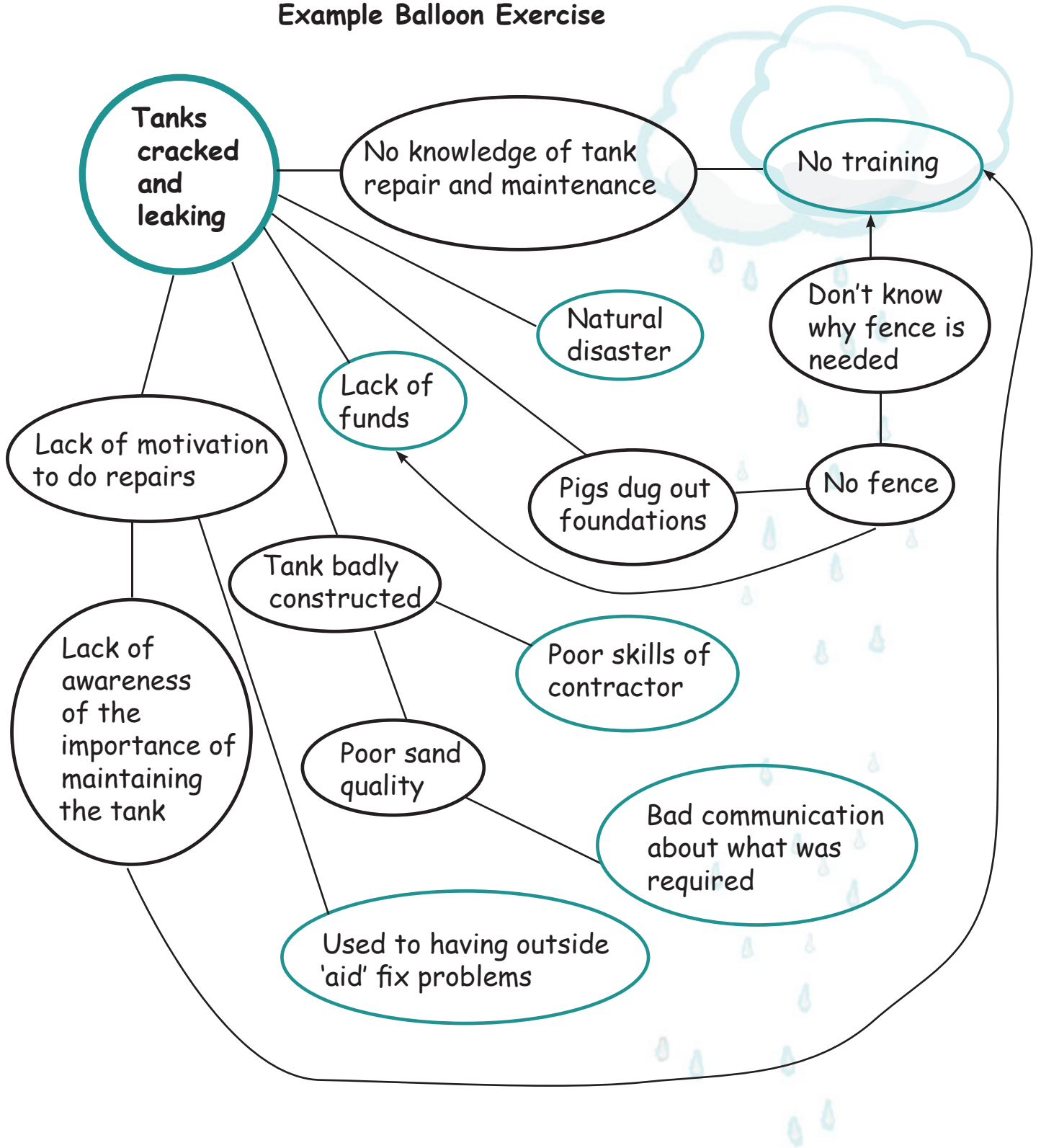


Table 5 Core Problems and Solutions

<b>CORE PROBLEMS</b> Why things don't get fixed or are not properly maintained?	<b>SOLUTIONS</b> What can be done to solve the problem?	<b>STAKEHOLDERS</b> Who should be involved to help solve the problem - or ideally help avoid the problem in the first place?
Examples: Lack of money/financial capacity	<ul style="list-style-type: none"> <li>• Get a job</li> <li>• Get together with women's group to organise fundraising, catering weaving mats to sell, etc</li> <li>• Ask NGO to help with income-generating project</li> </ul>	<ul style="list-style-type: none"> <li>• Husband/Wife</li> <li>• Household</li> <li>• Women's Group</li> <li>• NGO, Peace Corps</li> <li>• Etc.</li> </ul>
Lack of motivation, incentive, awareness or understanding		
Limited technical skills in household		
Bad communication between project planners		
Construction workers, Community members, NGOs, All parties		
Poor skills of contractors		
Poor planning		
Etc.		

## Activity 24: Next Steps - A Simple Table for Making Future Plans

### Objectives:

- Help participants make realistic plans for future activities.
- Encourage participants to consider the possible roles and responsibilities of various parties both inside and outside the community.
- Reinforce the concept of community self-reliance in water management.

**Time:** 1-1 1/2 hours

**Materials:** Paper and markers

### Procedure:

1. Divide participants into groups of 5 or 6 people. Single sex groups are recommended.
2. Ask each group to complete a table similar to Table 6.
3. Bring everyone together and ask someone from each group to present their table.
4. Ask the group to discuss any similarities and differences in the tables.
5. Using consensus, ask the group to consolidate the information and make one final table that clearly outlines future steps and plans.

**Note:** It is not the job of the facilitator or extension worker to organise the community. Emphasize to participants that water committees are not necessarily the only or best way to ensure ongoing community management or address specific problems. Other good structures may be in place and it is up to the community to decide the best way to organise themselves.

Table 6 Next Steps and Making Plans

Specific Objective <sup>1</sup>	Activities <sup>2</sup>	Who <sup>3</sup>	By Whom <sup>4</sup>	When <sup>5</sup>	Resources <sup>6</sup>
By March 2005 a water committee is well established and meeting once a month	<ul style="list-style-type: none"> <li>• Select pro-active members for committee</li> <li>• Write terms of reference + workplan</li> <li>• Choose people to hold posts i.e. secretary, treasurer, chair etc.</li> </ul>	Everyone in community to select and agree on committee members	Pastor, head of women's group, head teacher	February 2005	Visit by extension workers (part of regular community visits)
By December 2005 every household has at least two people who are able to undertake any and all repairs					
By December 2005 every household has a fully functioning rainwater harvesting system					

1. What do you want to achieve (i.e. the end result or situation) and in what timeframe?
2. The steps or activities that will need to be carried out to achieve the objective.
3. Who will be involved in the activities?
4. Who will be responsible for planning and managing the action?
5. When will each activity take place?
6. What resources and types of technical assistance are required? (Financial, Human, Material, etc.).

## Ongoing Monitoring

Following your workshops, everyone in the community now understands that it is very important to regularly maintain and repair their rainwater harvesting systems. But how do you know people in the community are using what they have learned? Do all households and communities have the necessary incentive, commitment, resources, knowledge and skills to operate and maintain their rainwater harvesting systems in the long term? What happens when something is not going according to plan for a particular household? What can be done to help that family solve the problem?

Once plans have been made, community members will need to continually or regularly monitor progress towards meeting their objectives. The monitoring should collect information such as:

- Is there a decrease in 'down-time' of broken down parts?
- Are people regularly cleaning their tanks and gutters?
- Are people getting sick from water-borne diseases (diarrhoea) less often?
- Are more community members, particularly an increased number of women, participating in a variety of rainwater harvesting maintenance and repair activities?
- Are water taps kept protected from contamination by animals?

This ongoing monitoring might consist of:

- Monthly meetings of a water committee or taskforce;
- Regular interviews with individuals or household members;
- Quarterly focus group discussions among different sectors of the community, e.g. women's groups, youth groups or village elders;
- Yearly site visits.

The monitoring activities and tools do not need to be complicated. For example, households can record on a calendar how often they do repairs, when they clean their tanks, or how often family members are sick and regularly submit short forms to the water committee. The above are only some ideas or suggestions. Together community members should decide what methods and tools will work best for them. However it is important to keep in mind that regardless of which monitoring methods are used they should:

- 1) take place on a regular basis;
- 2) include information or data that can be measured over time; and
- 3) clearly record or document progress towards meeting the specific objectives identified by households and the community as a whole.

Monitoring of rainwater harvesting systems will need to take place over many months and years and should involve the full participation of all community members - women and men, both young and old.



V

FACT SHEETS

## V FACT SHEETS

This final section contains fact sheets which provide additional information. These fact sheets are intended to be used as a reference by facilitators or community extension workers. Rather than simply hand out the fact sheets to community members it is much more effective if people take part in the exercises first in order to think things through themselves in order to learn step by step and come to their own conclusions.



## FACT SHEET 1a

### FACILITATOR'S CHECKLIST

#### Remember to...

- Create a good learning environment and make everyone feel comfortable.
- Give guidance to participants throughout the process.
- Monitor reactions or feelings of participants throughout the activity.
- Address any doubts or uncertainties among participants.
- Pose ideas or ask leading questions that stimulate discussion and help participants to share their own ideas.
- Encourage participants to share viewpoints and experiences with each other.
- Make sure techniques are effective in helping participants express their own views and participate as much as possible.
- Share any new ideas and other information related to the subject being discussed.
- Clarify issues or messages that need to be further explained or understood.
- Respond to the expressed or observed needs of participants.
- Ensure everybody is included in the process and nobody is left out or is deliberately not participating.
- Help the group stay focused on the subject being addressed.
- Sustain the interest or motivation of the group in the activities.
- Regularly check the time schedule.
- Help to solve problems or conflict situations.
- Maintain good feelings within the group.
- Appropriately deal with any interruptions.
- Help participants give feedback about the activities and process.
- Assist the group to arrive at decisions that are needed.
- Summarize ideas or reports at the end of the session or the day.
- Make necessary changes to the process as required.



## FACT SHEET 1b QUALITIES OF A GOOD FACILITATOR

### A good facilitator...

- Trusts other people and their abilities.
- Respects other people's ideas and experiences.
- Is willing to listen.
- Has confidence and is humble.
- Is interested in people and friendly and sensitive to their needs and feelings.
- Is flexible and dynamic.
- Is open to feedback and willing to adjust or change accordingly.
- Is aware of her or his own strengths and weaknesses and willing to learn.
- Has a good sense of humour.
- Gets things done.
- Is organised mentally and physically.
- Understands and believes in participatory processes.
- Works well with a team or group
- Speaks clearly and uses simple words and short sentences.

## FACT SHEET 2 COMMUNITY PARTICIPATION AND COMMUNITY MANAGEMENT

### SOME THOUGHTS FOR DISCUSSION

#### Diversity within a community

A community is made up of individuals with their own views, opinions and perspectives all based on their own life experiences. These individuals have various different identities based on their relationships with other people in the community. For instance, a woman in a community can be many things to many people including a teacher, a wife, a daughter, a mother, a sister, a member of a church group, a volunteer for youth, and a friend. She will not necessarily share the same viewpoint as any one person in her community. Her opinions and points of view will change depending on the issue, the specific circumstances and any personal relationship she has with the people involved.

Community participation can be defined in different ways but for the purposes of a community initiative it is important that everyone have a common understanding. Generally, it is a method or process by which community members make use of their abilities, energy and resources to take initiative and action to improve their situation. Different groups in the community become actively responsible for deciding what improvements are needed, and how to plan, implement and manage these improvements. There are different levels of participation. Community members move from passive to increasing involvement to active participation to ownership as they take on more and more responsibilities and become able to further initiatives entirely on their own. Full and effective community participation in development activities is not easy. This diversity makes humans complicated creatures - that is what makes them so interesting!

#### What is management?

We manage things every day in our lives. Think about managing your household or managing your finances or managing your garden. What is involved? We often don't think of these activities in these terms but managing any type of activity requires planning, developing a strategy, setting objectives, with the hope of achieving results with a certain timeframe, however short or long term that may be. It also involves organisation, responsibilities and tasks, decision-making, coordination, communication, monitoring and problem-solving. Management generally involves many different social, technical and financial aspects. How would these aspects of management apply to a community initiative?

### Community management builds on community participation but is different and goes further...

- The community has control over the management of their own water supply systems and over the use of the water. However not all communities will want to take on this role.
- Views of all sections of the community are reflected in management decisions. Strong community leadership is a major factor in the success of community-managed water supplies. Women are highly influential in community-managed water supplies.
- The community commits people and raises money towards the construction and maintenance of the water system. A significant contribution from the community is needed for success.
- Community management is an approach, not a fixed formula that makes best use of resources available in the community with support where required from NGOs, government agencies, regional organisations and private sector.
- Supporting agencies provide advice and technical support but all key decisions are made by the community. This requires a clear understanding of needed resources.
- Community members and agency staff acquire new skills and confidence in applying them. Special capacity-building techniques are generally required. It is more challenging for agency staff but ultimately more satisfying.
- Partners may include NGOs, government agencies, regional organisations, the private sector and other communities. The relationships among partners may change over time as the community develops greater capacity to manage its own affairs and begins to choose for itself where support is needed.
- Collaboration among communities can be very valuable in terms of sharing resources replicating projects through community networks. Communities can help one another by sharing knowledge and experience and by pooling resources to acquire technical support.
- The benefits of community management can extend beyond water. Community management builds confidence and can stimulate wider development efforts.
- Government continues to play a valuable role. Community management is most successful when there is strong government support.
- There is always more to learn about community management, in particular the willingness and capacity of communities to take responsibility for their own water supplies and about the capacity of supporting agencies in their new facilitation roles.

*Adapted from Community Management Today, IRC International Water and Sanitation Centre*

### FACT SHEET 3 RAINWATER AND HEALTH

#### FAECAL-ORAL DISEASES

Organisms from human or animal faeces can reach the mouth and make a person ill and cause diarrhoea. These organisms can be spread by hands, clothes, food, as well as cups, glasses, plates and utensils used for eating and drinking.

**Taps on rainwater tanks and containers used to collect and store rainwater can become contaminated and spread disease.**

#### DISEASES SPREAD BY INSECTS

Diseases such as dengue and malaria are spread by insects.

**Mosquitoes can breed inside rainwater tanks or in pools of water in gutters or beneath leaking tanks or taps and then spread disease.**

#### DISEASES RELATED TO WATER SCARCITY

Proper bathing is necessary to stop skin diseases like scabies.

**During droughts, infrequent bathing due to a lack of available water in rainwater tanks can make diseases get worse.**

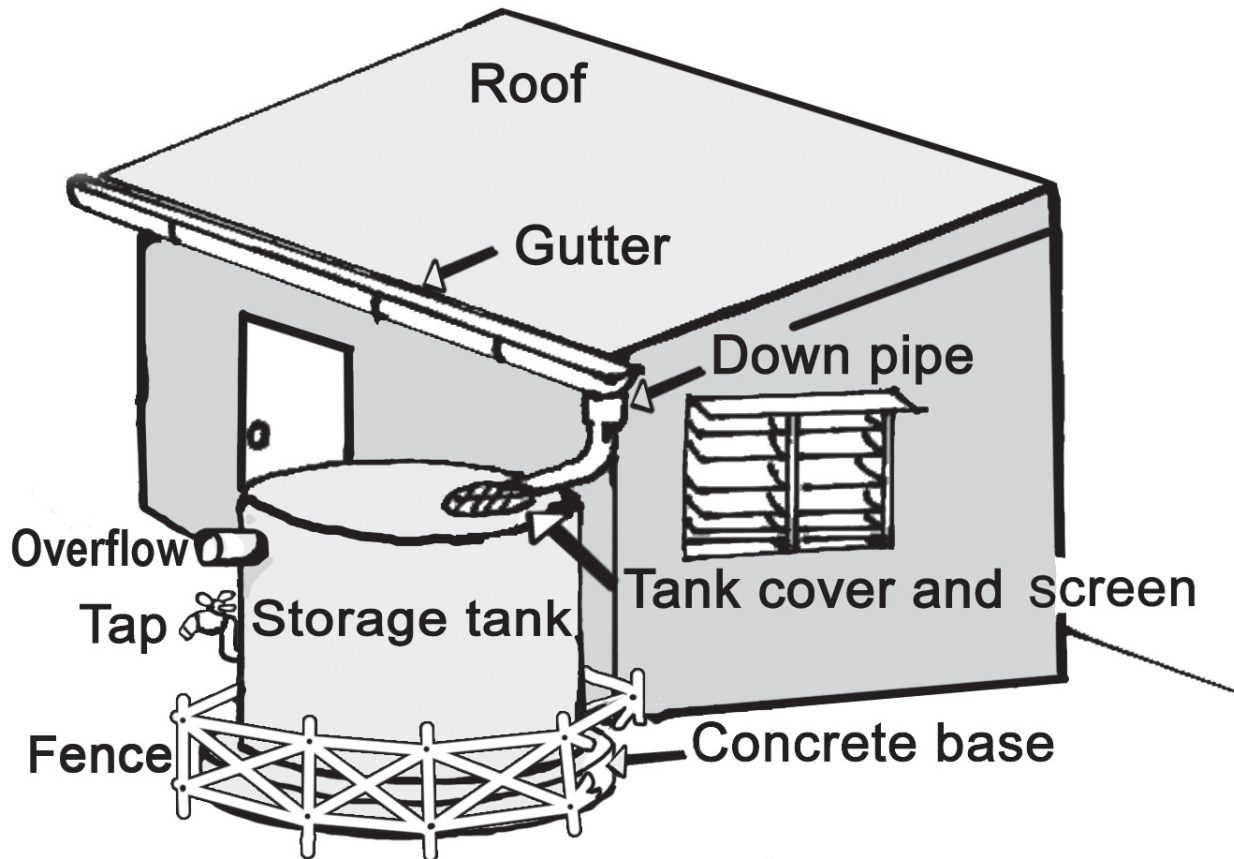
#### HOW RAINWATER AFFECTS YOUR HEALTH

#### WATER-BORNE DISEASES

Disease-causing organisms can be present in drinking water and can cause diseases such as diarrhoea, cholera and typhoid.

**Rainwater collected in the tank can become contaminated when leaves, bird or rat droppings get into the tank.**

### FACT SHEET 4 PARTS OF A RAINWATER HARVESTING SYSTEM



## FACT SHEET 5 THE COMPLETED MATRIX

### THE MATRIX Maintenance and Repair of Rainwater Harvesting Systems

PARTS	ONGOING MAINTENANCE AND REPAIRS	HOW OFTEN?	MATERIALS	TOOLS
Roof	<p>Wash off roof with water when dust/dirt accumulates diverting runoff away from tank inlet.</p> <p>Trim and cut trees around tank.</p> <p>Replace rusted roofing.</p> <p>Fix holes for maximum runoff.</p> <p>Paint if rust is present using lead-free paint.</p>	<p>Check monthly and especially after long period of dry weather and cyclone and heavy wind.</p> <p>When required.</p> <p>When required.</p> <p>When required.</p> <p>When required.</p>	<ul style="list-style-type: none"> <li>· Roofing iron</li> <li>· Paint</li> <li>· Water</li> </ul>	<ul style="list-style-type: none"> <li>· Hand saw</li> <li>· Nails</li> <li>· Hammer</li> <li>· Brush</li> </ul>
Gutters	<p>Clean and washout bird droppings, leaves etc. with water.</p> <p>Check and repair gutters.</p> <p>Add more guttering to increase water collected.</p> <p>Ensure guttering is slanted to ensure steady flow of water avoid pooling of water, collection of dirt, debris, etc.</p>	<p>Check monthly and especially after a long period of dry weather and cyclone or heavy wind.</p> <p>When required.</p> <p>When possible.</p>	<ul style="list-style-type: none"> <li>· Water</li> <li>· Guttering</li> <li>· Gutter hanger</li> <li>· Gutter fittings</li> </ul>	<ul style="list-style-type: none"> <li>· Brush</li> <li>· Screwdriver</li> <li>· Screws</li> <li>· Hammer</li> <li>· Nails</li> <li>· Level</li> </ul>
Tank	<p>Clean. (See Fact Sheet 6)</p> <p>Repair leaks.</p> <p>Disinfect.</p> <p>Cut nearby tree roots.</p> <p>Ensure lid is sturdy and secure to prevent animals and children from falling in.</p>	<p>Once a year.</p> <p>When required.</p> <p>(See Fact Sheets 7 &amp; 8)</p> <p>When required.</p> <p>When required.</p>	<ul style="list-style-type: none"> <li>· Water</li> <li>· Disinfectant</li> <li>· Cement</li> <li>· Sand</li> <li>· Gravel</li> <li>· Proper lid</li> </ul>	<ul style="list-style-type: none"> <li>· Brush</li> <li>· Shovel</li> <li>· Wheelbarrow</li> <li>· Saw</li> <li>· Trowel</li> </ul>

PARTS	ONGOING MAINTENANCE AND REPAIRS	HOW OFTEN?	MATERIALS	TOOLS
Tap	<p>Fix leaking taps. If new taps are needed brass taps are stronger.</p> <p>Sponge out excess water to ensure it does not pool or collect under tap.</p> <p>Place stones or gravel on bottom of collection area to help drainage.</p>	<p>When required.</p> <p>When required.</p> <p>When required.</p>	<ul style="list-style-type: none"> <li>· Tap</li> <li>· Washer</li> <li>· Plumbing tape</li> <li>· Glue</li> <li>· Rubber</li> <li>· Stones/gravel</li> </ul>	<ul style="list-style-type: none"> <li>· Spanner</li> <li>· Wrench</li> <li>· Pliers</li> <li>· Screwdriver</li> </ul>
Downpipe	<p>Repairing holes and replace if screen is damaged.</p> <p>Ensure there are no gaps where mosquitoes can enter or exit.</p> <p>Repair leaks at elbows.</p>	<p>When required.</p> <p>When required.</p> <p>When required.</p>	<ul style="list-style-type: none"> <li>· Stainless steel wire mesh</li> <li>· Twine</li> <li>· PVC pipe</li> <li>· Glue</li> </ul>	<ul style="list-style-type: none"> <li>· Pliers</li> <li>· Tin snips</li> </ul>
Overflow	<p>Securely fasten mosquito screen over the end of the overflow pipe/valve.</p> <p>Ensure there are no gaps where mosquitoes can enter or exit.</p> <p>Repair screen if damaged.</p>	<p>When required.</p> <p>When required.</p> <p>When required.</p>	<ul style="list-style-type: none"> <li>· Wire mesh</li> <li>· Twine</li> </ul>	<ul style="list-style-type: none"> <li>· Pliers</li> <li>· Tin snips</li> </ul>
Fence	<p>Ensure fence is high and strong enough around tank and collection area to keep out pigs, dogs and small children.</p> <p>Repair any gaps or damage to fence.</p>	<p>When required.</p> <p>When required.</p>	<ul style="list-style-type: none"> <li>· Fencing wire</li> <li>· Poles</li> </ul>	<ul style="list-style-type: none"> <li>· Nails</li> <li>· Hammer</li> <li>· Digging hoe</li> </ul>
First Flush Devices	<p>Remove downpipe from tank inlet to divert water. Securely replace the downpipe after first flush.</p>	<p>Before starting to collect water, and especially after a long period of dry weather, a cyclone or heavy wind.</p>	<ul style="list-style-type: none"> <li>· PVC pipe</li> <li>· Pipe fittings</li> </ul>	<ul style="list-style-type: none"> <li>· Pipe wrench</li> </ul>



## FACT SHEET 6 HOW TO CLEAN YOUR WATER TANK

### Remember to Clean Your Water Tank Once a Year

You will need:

- Liquid chlorine (such as Dash or Janola) or chlorine tablets
  - Bucket
  - Brush
  - Eye and hand protection (glasses, rubber gloves)
1. Drain any water in the tank to level at tap. Transfer water to clean contaminant free storage or temporary vessel.
  2. Add 1 bottle of bleach or X number of chlorine tablets to the remaining water in the tank.
  3. Climb inside the tank. Using a brush thoroughly scrub the bottom and sides of the tank.
  4. Remove the water and bleach solution with a bucket.
  5. Refill the tank with water.
  6. Leave the water to settle overnight before use.

**Wear proper hand and eye protection when preparing and handling chlorine solutions to avoid burning skin and damaging eyes.**

## FACT SHEET 7 CALCULATING THE AMOUNT OF WATER IN YOUR TANK

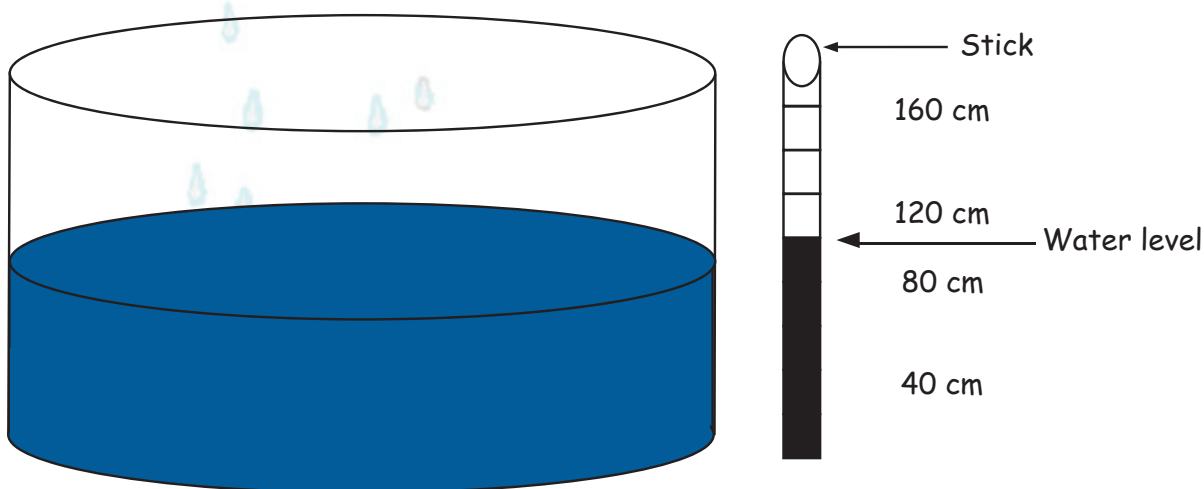
Most tanks that have been constructed in 'Utungake and Matamaka for the demonstration project in Vava'u have a standard design with a total volume of 3,000 gallons or around 11 m<sup>3</sup> (11,000 litres). To measure the height of the water level:

1. Take a long clean dry stick.
2. Put the stick through the covering hole until it reaches the bottom of the tank.
3. Using a ruler or a tape , measure the length of the wet part of the stick in centimeters (cm).

In the table below you can then read the approximate volume of the water.

Height of water level in tank (wet part of the stick) (cm)	Approximate volume of water in tank (Litres)	Approximate volume of water in tank (Gallons)
15	1000	260
30	2000	560
45	3000	840
60	4000	1120
70	5000	1310
85	6000	1590
100	7000	1870
115	8000	2150
130	9000	2430
145	10000	2710
160	11000	3000

In the example provided below, the height of the water level in the 3,000 gallon tank is more or less 100 cm. From the table above the approximate volume of water in the tank would be just under 7000 litres or 1870 gallons.



## FACT SHEET 8 DISINFECTING YOUR RAINWATER TANK

You should disinfect your tank only when one or more of the following situations are present:

- People are getting sick from drinking the water with sore stomachs and diarrhoea;
  - Animal or human waste, including bird droppings have entered the tank;
  - After tank repairs or maintenance where people have entered the tank;
  - The water has been tested and there is a known bacterial contamination.
1. Calculate the volume of water in your tank (see Fact Sheet 7).
  2. Add  $\frac{1}{2}$  bottle (125 ml) of plain household grade unscented and uncoloured bleach (with 4% active chlorine) to every 1,000 litres of water currently in your tank.

### Amount of water in the tank

1,000 litres  
2,000 litres  
3,000 litres  
Etc.

### Amount of bleach

125 ml  
250 ml  
375 ml  
Etc.

3. Wait 24 hours after putting in the chlorine to allow enough time to disinfect the water before you drink it. Any chlorine smell and taste in the water will go away after a short time. If you find the taste of chlorine unacceptable boil the water for at least 5 minutes before drinking it.

**Remember to wear proper hand and eye protection when preparing and handling chlorine solutions to avoid burning skin and damaging eyes.**

Notes:



Notes:







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