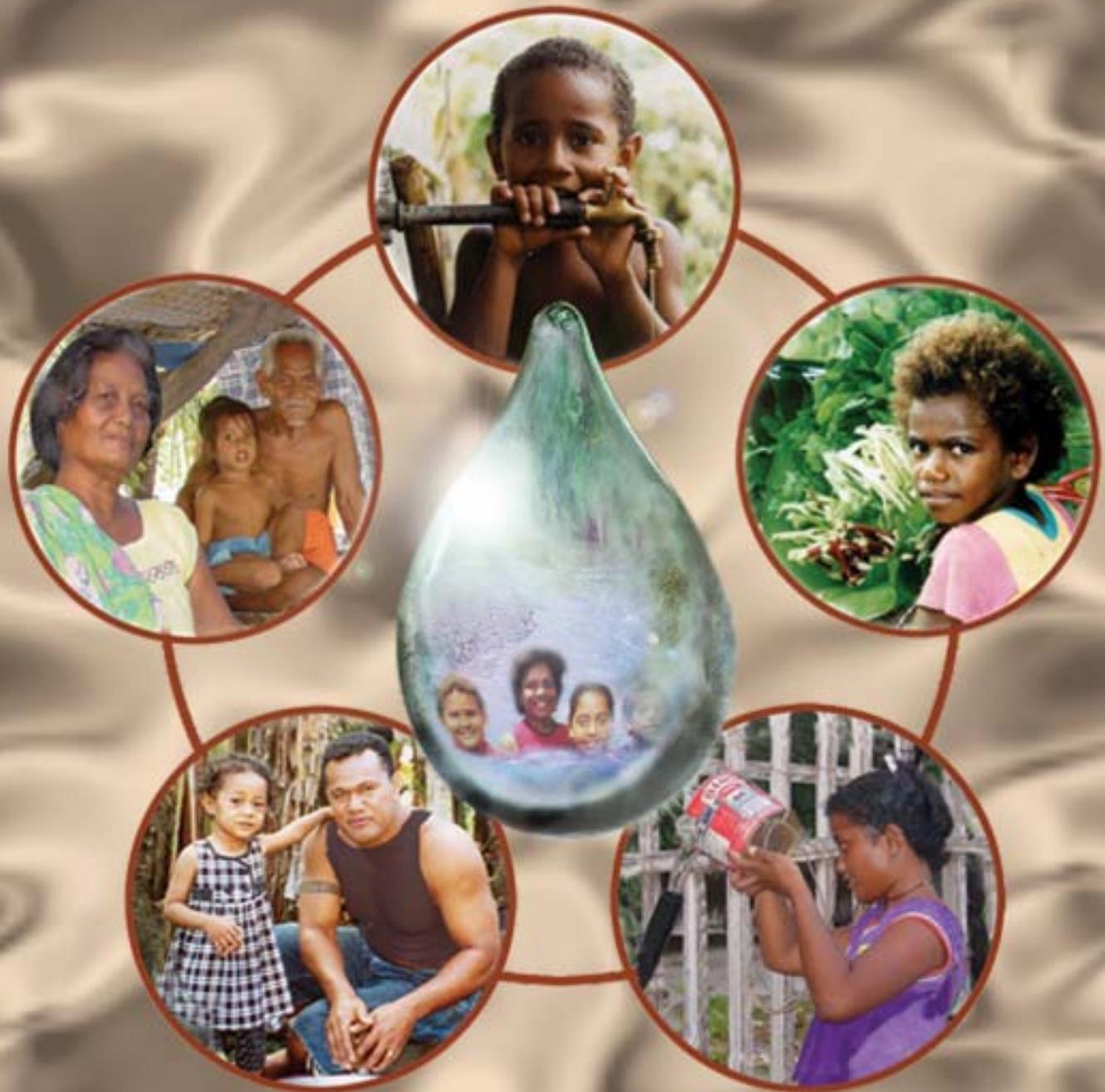


# Tapping Connections between People & Water





## Acknowledgements

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## Table of Contents

### Introduction

	Page
1. Who is respected? .....	6
2. Who uses the water and understands what is needed? .....	10
3. Who is responsible for managing the water and sanitation needs? .....	14
4. Who owns the land and the water? .....	17
5. How will the family decide which is the best water and toilet system? .....	19
6. Who will maintain the water and sanitation system? .....	25
7. What is community and who has been excluded? .....	35
8. Information and Contacts .....	40

# Introduction

Everyone uses water and everyone needs some kind of sanitation. There are many different ways to meet these needs.

It depends on the Island where you live: the climate, the landforms, and the source of water. The water may come from a spring, or a river or from a groundwater lens. The way that water is used also depends on the traditions and customs of the family and community, their income and the size of the population. There are also a number of simple technologies to choose from. All these issues need to be considered.

**This handbook is about connections:**

- connections between people and water;
- connections between the people who share the water; and
- connections between people and the technology they use to manage their water supply and sanitation.

It is hoped that the handbook will help communities to strengthen these connections, and create efficient new connections where necessary.

The handbook can be used by field workers when working with communities to install and maintain water and sanitation systems. It can also be used to support health and hygiene programmes. The handbook raises seven Questions to think about. The Questions can be a checklist to identify important connections between people and their water and their land.

These Questions may assist field workers to be sure that all the people who use the water are included in each stage of management, and that they have the skills to take care of their water supply now and into the future.

Some answers are provided to the Questions. These answers have come from field workers involved with water and sanitation in many Pacific island communities. Men, women and children from the communities have also shared their experience. Their help is very much appreciated. However, the answers that you will find, when you discuss these Questions in your community, will be unique to your village, district and island country.



## Tapping the Connections

**This handbook does not explain the actual process of working with communities. There are many methods used in Pacific island countries to engage communities. You and your organisation have probably developed your own approach. This handbook can be used as an extra tool to use with your approach or method.**

**On pages 40-42, there is a list of publications and organisations which can provide suggestions on techniques for community participation in water and sanitation programmes. The list includes reports that provide more information on the activities which are referred to in this handbook. This handbook was designed as a result of research conducted throughout the Pacific Region in 2003 and 2004. Information was provided by government departments, non-government organisations, donor agencies, regional organisations and local communities.**

**The research showed that there are publications and manuals covering the technical aspects of rural water supply and sanitation. These manuals describe types of water supply and toilet systems, and how to look after them. There are also guidelines for working with communities which have been developed by international agencies or local field workers.**

**However, there did not seem to be a manual for the Pacific that linked the technical and social aspects. This handbook attempts to fill that gap, and provide those links and connections.**

**A full report on the research and the outcomes is available from the South Pacific Applied Geoscience Commission (SOPAC). The report is titled “Equitable Management of Water and Sanitation in Pacific Island Countries”.**



# 1. Who is respected ?

Are there community leaders who can help with the water programme?

Who has authority in the village? Their support and understanding can inspire and encourage the community.



- 1.1 In Fiji a High Chief and the local Clan Chiefs are supporting a programme, which aims to protect the rivers, groundwater and reefs.



- 1.2 The High Chief and the Manager of an international resort are celebrating the opening of a constructed wetland which treats waste water from the resort.



## Who is respected ?



- 1.3 The wetland will help to protect the groundwater and reef from pollution from the resort. This system could also be adapted to treat village waste water, using local plants.**



- 1.4 The High Chief understands that survival of the people depends upon wise use of their resources.**

**The Resort Manager understands that if the environment is ugly and damaged the tourists will stop coming.**



## Who is respected ?



- 1.5 In Tonga the Principal supports good water management by agreeing to a groundwater pollution study at her school. She wants all her students to understand how they can protect their water supply.**



- 1.6 The Deputy Principal is also the Science Teacher. He includes the girls and the boys in all stages of the experiment. He knows that one day they will be parents and community leaders.**

**They can make wise decisions about the water based on their own discovery 'seeing is believing'.**



## Who is respected ?



**Who else might help promote the programme?**

- **A respected singer can compose a song about the water cycle and how all living creatures depend on water. A dance competition can be held for the schools.**
- **The women and men who lead religious groups can give their blessing to the project, and preach about the sacred nature of water.**
- **The Chief of the village might demonstrate a water saving system in his home. This would set a good example.**
- **The Town Officer can organise water committees to manage and share the water.**
- **A successful sportsman can talk about good hygiene and encourage healthy living.**

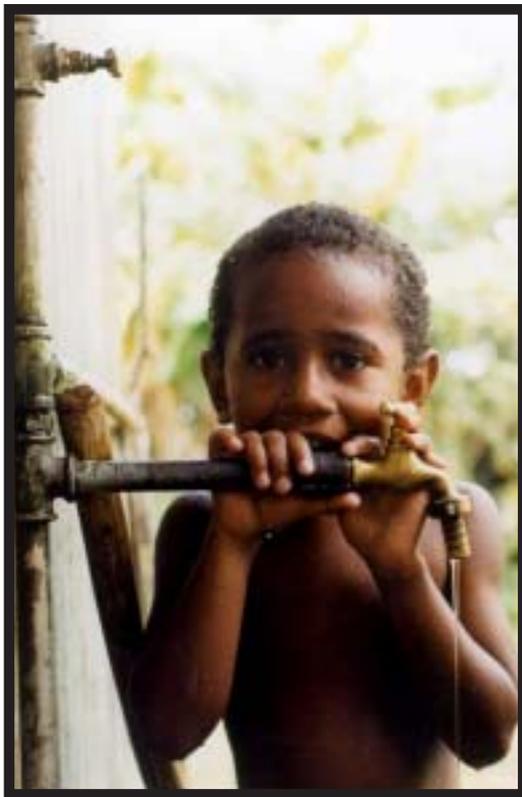


## 2. Who uses the water, and who understands what is needed?

Where does the water come from? A well? Is it salty or sweet? A spring or river? Is it muddy or clear? Is the rain collected in a tank?

Everyone can help decide what water system is needed for the family and the community. The people who use the water know how much is needed and where the best water comes from.

Men and women can discuss their needs and their ideas. Then fair decisions can be made which protect the health of the family, and take care of the water supply.



### 2.1 Who understands what is making the children sick?

Everyone needs clean water for drinking and it should also taste good.

Who knows how to make sure the groundwater is fresh and clean to drink?

Who knows how to fix the leaking tap so water is not wasted?



### 2.2 Many people prefer rainwater for bathing and washing hair.

In a dry season where will they get clean water for bathing?



## Who understands what is needed?

- 2.3 She knows that clothes are easier to wash in rainwater.

Not so much soap is needed. This will save money and protect her skin from bleach and harsh detergents.



- 2.4 She knows that clean water is needed for washing dishes, but it is OK if it's a bit salty.



- 2.5 What kind of water is available for washing food and cooking?

Do the men, women and children understand about keeping hands and food clean?





## Who understands what is needed?



**2.6 How much water is needed for the animals?**

**Who understands about the pigs polluting the groundwater or the river?**



**2.7 Who makes sure there is enough water for the garden in the dry season?**

**Who understands that too much pumping can sometimes turn the groundwater salty?**

**Who understands that the river also needs to keep enough water flowing to stay healthy and strong?**



## Who understands what is needed?



**2.8 Water is also used for earning money such as cleaning, freezing and canning fish.**

**Perhaps a family is bottling water to sell, or using it to make soft drink or beer?**

**Who understands how much water is needed for the business?**

**Is there is a local resort which shares the village water supply, and uses it for their laundry, kitchens, bathrooms, swimming pools and golf course?**

**Are some of the community members working at the resort?**

**What do you think?**

**Is there enough water for the business and the community?**

**Who decides what is most important?**

**Who understands how to balance the needs of the community and the environment?**

### **3. Who is responsible for managing the water and sanitation needs?**

In the home and community each person has jobs they should do. These roles vary from island to island. Who does the work? How much time does it take?

In some Pacific island countries the man must provide his family with a source of water, a good well or rainwater tank, but it is usually the woman's role to manage water and sanitation in the home.

How can the water project make these jobs and roles easier and safer?



**3.1 Who collects the water?  
How far away is the water supply?**

Collecting water from a communal source can take a lot of time.

And the water may not be clean especially if the container is not covered.



**3.2 If the water is not clean, it has to be boiled for drinking. This means more firewood has to be collected.**

Does she have time to also do her schoolwork?

How many girls and boys in the family?

What work do they have to do at home?



## Who is responsible ?



- 3.3 Do the men help with preparing food?  
What kind of food do they cook?**



- 3.4 Who takes care of the toilet?**

**Sweet smelling flowers around the toilet can encourage the family to keep the toilet clean. It also makes it private and attractive.**

**This means the toilet can be close to the house which is convenient for women, girls and old people.**



## Who is responsible ?



**3.5 Who takes care of the community water supply system?**

**How much time does it take?**



**3.6 How does the community make decisions about their water supply and sanitation?**



**3.7 Who builds the new toilet system?**

## 4. Who owns the land and the water?

The people who own the land may also have control of the water. Who will talk with the land-owners to get their support for good water management? Are there are disputes over land which need to be solved before the water programme begins?

Can water bring people together to work for the common good?



**4.1 Some land owners have not allowed water or sewage pipes to cross their land to reach a village unless the community pays a large amount of money.**

**In some cases the water and sanitation programme has been abandoned as the community cannot afford to pay the landowner.**

**How can this be solved so everyone can share the water?**



**4.2 Do landowners let their cattle wander in the river?**

**How does this affect the village who uses the water downstream?**



## Who owns what?



**4.3 Within the family who owns the land?**

**Who owns the house, the water systems and the toilets?**

**What happens if the husband and wife separate?**

**Who decides what kind of system will be built at home?**



**4.4 Efforts are being made across the Pacific to allow women to own land.**

**As an example, women have got together as a group in Tonga to rent land and grow their own crops, to sell at the market.**



**4.5 The women can use this money to help pay for a new rainwater water tank or to meet any other needs.**

**There are programmes across the Pacific which give some assistance for rainwater tanks.**

**The family is usually expected to contribute labour and install the gutters on the roof.**

**When the family also contributes money they usually take more care of the system. They feel they own it because they have helped pay for it.**

## 5. How will the family decide which is the best water and toilet system?

The community or the family have to decide which water system or toilet will be best for them. There are a number of water systems and toilets to choose from. How do they find out which one suits them?

The right choice and the best combination will protect the health of the family and the environment. If everyone can talk together about what is needed then a good decision can be made.

The family also has to think about the cost to build the system, and the long term cost to keep it working properly. The community might get some money from the government or non-government organisation to help pay to build a water supply system or toilets. But once it is built, the community has to maintain it. Who is going to do that work? Will they want to be paid?

Here are some common toilet and water systems to think about.

### Which kind of water system?



5.1 If the water is pumped in pipes or gravity fed from the river to the house, then this woman could do her washing at home instead of carrying it to the river.

The river would also be protected from pollution from soap and dirt.



5.2 If a piped system is installed, the pipes and the pumps have to be maintained and this costs money.

She will have to raise money to pay her water bills. She might have a water meter attached to her house, or have to pay a fixed amount per month to the village water committee.



## Which kind of water system?



5.3 A rainwater tank costs quite a lot of money to build, and gutters have to be put on the house. An iron roof is also needed. But the rain costs nothing and is good for the health of the family. The tank can be located close to the kitchen and bathhouse.

But when it does not rain the tank can empty fast.

Then the children have to collect water from somewhere else.



5.4 In villages where the groundwater is sweet and fresh, a well provides reliable free water.

The well has to be properly built to protect the underground water and the bucket should be kept clean.

If the well is close to the house then she does not have to spend time carrying the water.

But a pit toilet or flush toilet must NOT be built near the well. Animals also should be kept away from the well.



5.5 Is it possible to have water coming from a rainwater tank and some other source? Then there will be enough water for the family all through the year.

If the water is clean and close to the house, it makes life easier and healthier for everyone.

Now these women have extra time to work on their mats to sell.



## Which kind of toilet?

Any kind of toilet will work well if it is properly built, in the right place, and the family takes care of it.



5.6 An **organic toilet** (or composting toilet) costs money to build, but it does not need water to flush so there are no ongoing costs. It does not pollute the groundwater so it can be installed near a well.

This mother chose an organic toilet for her family as she did not want to pay water bills, or worry about fixing the pipes in the flush toilet.

She also uses the compost as a fertiliser in the garden for her flowers.



5.7 With an organic toilet a handful of old dry leaves should be added to the toilet each time it is used.

The children sweep up the leaves each day and place them in a basket by the toilet.

After some years, families in Tonga have discovered that small leaves from the 'ovava' tree make better compost than big leaves.

People need time to get used to the organic toilet and see its benefits.



## Which kind of toilet?



**5.8 The Rural Development Officer shows how to open the back of the toilet to remove the decomposed waste.**

**This compost is safe to be emptied after one year.**

**The organic toilet can be built close to the house as it does not smell. This makes it easy for the family to use at night.**



**5.9 Pit toilets are simple and cheap to build. They are OK if there is no groundwater or nearby river which can be polluted.**

**There has to be enough land to move the toilet every time the pit is full. The men and boys usually dig the pit for the toilet house.**

**The lid should be closed on the toilet to stop flies and bad smells.**



**5.10 Ventilated pit latrines (VIPs) have been improved by adding a vent pipe which helps to reduce flies and smells.**

**They cost more to build but can be healthier and nicer to use.**



## Which kind of toilet?

**5.11 Flush toilets with a septic tank soakage and trench are convenient because they can be close to the house, and can be easily cleaned. They need a constant supply of water so they may cost money to operate.**

**It is necessary to use toilet paper in a flush toilet. Newspaper or other material cannot be put down the toilet.**

**The flush toilet and soakage trench should not be built where it can pollute the groundwater or the reef.**

**The tank should be checked once a year, and emptied regularly.**

**Who empties the septic tank?  
Who pays to empty the septic tank?  
Where does the sludge go?**



**5.12 During heavy rain, polluted water from septic tanks can flood into the street or the yard if the system is not built properly, or if it is not the right design for the environment.**

**This can be dangerous for everyone especially children because they do not understand that the water in the yard or the street is coming from the toilets.**



## How to pay for the water system or the toilet?



### 5.13 How will the family or community pay for the new system?

**Will the money come from each family or will the community work together to raise money to pay for the whole village?**

**Sometimes a group of women get together to cook food for an official function or a workshop? They use the money they earn to pay their share of the cost of the new system.**

**When the system is built there may be costs to maintain the system.**

**Who knows how much the on-going costs will be?**

**Can the community or the family afford to pay these costs ?**

**Where will the money come from?**

**If the water bill is paid, will there be enough money left for the children's school fees, for clothing, for church donations?**

**Which costs are more important?**

**How will the family balance all the needs and bills?**

**When they decide which system to build, does the family understand what it will cost to keep that system working?**

**How important is the water system to the men, the women and the youth?**

## 6. Who will maintain the water and sanitation system?

When the toilet or water system is constructed, the family and community have to keep it working properly.

Do they need training to understand how the system works, and how to fix it? Do they understand about water pollution and how it can affect their health and their income?

Training should be practical and allow all community members to clearly see what happens if proper care is not taken. What skills do they need? The training should provide technical skills to the men and women of the community so they can manage their water and sanitation systems wisely.

What skills and knowledge do they already have?

### Taking care of sanitation



- 6.1 This well has provided plenty of free 'sweet' water for generations. In recent years a flush toilet was built next to the well.

The members of the family did not understand how the flush toilet could pollute their well.

The Health Officer had told them that the septic tank was too close but they didn't really believe it was a problem. The groundwater still looks clean, smells OK and tastes OK, so what is the problem?



## Who will maintain the system?



- 6.2** It is decided to do a study in the school grounds to see what is happening to the groundwater.

As the water is 3 meters below the ground, the boys dig holes down to reach the water, so pipes can be installed.

Their school fees are paid for one term for digging the holes. So now their mothers and fathers also hear about the study and watch what happens.



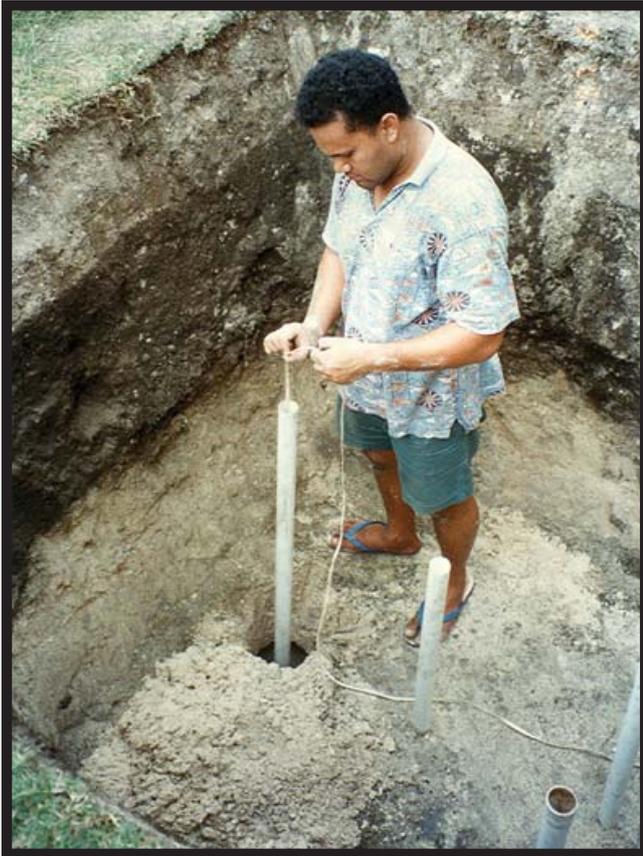
- 6.3** Red dye is poured into the flush toilet to show how the waste can travel from a toilet to a nearby well.

The staff from the Ministry of Health, the Water Board and the Ministry of Lands and Survey helped with the study.

**This demonstration can help the community decide where to install their toilets, and what kind of toilet is safe to use.**



## Who will maintain the system?



- 6.4** The girls and boys are shown how to collect a water sample. A tiny glass container on a string is dropped into the pipe.

For 3 months the students collect samples from the pipes and from around the septic tank to see which way the underground water is flowing and how fast.

They discover that the water moves very slowly in all directions, but more toward the sea.



- 6.5** The water has turned pink. The red dye has travelled from the septic tank slowly through the water and the soil.

Now the children, the teachers and the parents understand how flush toilets and pits can pollute well water, if the well and the toilet are too close.

Wells should be at least 30 meters from a pit toilet or a septic tank.



## Who will maintain the system?



**6.6** If the the pit or flush toilet is close to the sea, the pollution can flow onto the reef and kill the coral and sea grasses.

**Pig pens can also pollute the groundwater, the river and the reef if they are built too close to the waterways.**



**6.7** The pollution can move through the groundwater, and from dirty rivers that flow into the sea.



**6.8** Then there is much less seafood for women to catch on the reef.



## Who will maintain the system?



**6.9** This organic toilet is built near the beach to replace a septic tank and a pit toilet.

Now there will be no pollution of the reef from these toilets.



**6.10** Young men and women are working together to restore the damage to the reef.

They are re-planting coral which was killed by polluted groundwater and river water.



**6.11** Youth from the coastal village are re-planting mangroves at the mouth of the river.

Hopefully the sea food will return.



## Who will maintain the system?

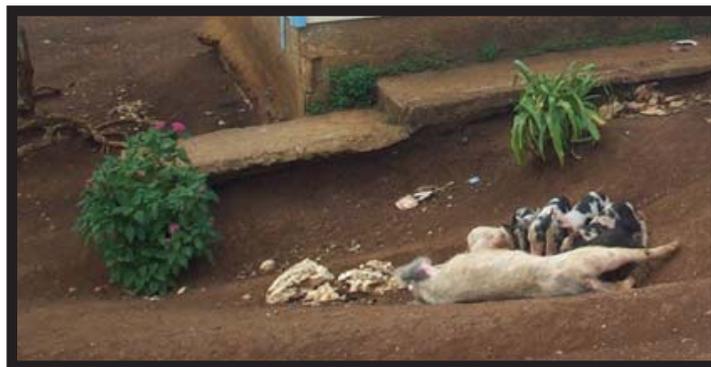
### Taking care of the water supply

Maintenance is about protecting the resource, such as the river the spring or the groundwater. It also means taking care of the technical systems, such as the rainwater tanks, the wells and the pumps.



- 6.12 Even a simple rainwater tank needs to be maintained. This includes the gutters which connect the roof to the tank.

Who will fix the gutters and keep them clean?



- 6.13 Pigs might dig around the base of the tank and disturb the ground. Then the tank can crack and start to leak.

Does the family understand that a fence should be built around the tank to keep the pigs out.

Who will build the fence, and keep it strong?



## Who will maintain the system?



**6.14 This family is growing vegetables to sell at the market. They water the garden by hand from their well.**

**Their neighbour has a pump and a generator. Who will control how much groundwater they pump?**

**Who will make sure the water does not become salty from too much pumping, then the water will be useless for all the families and their gardens?**

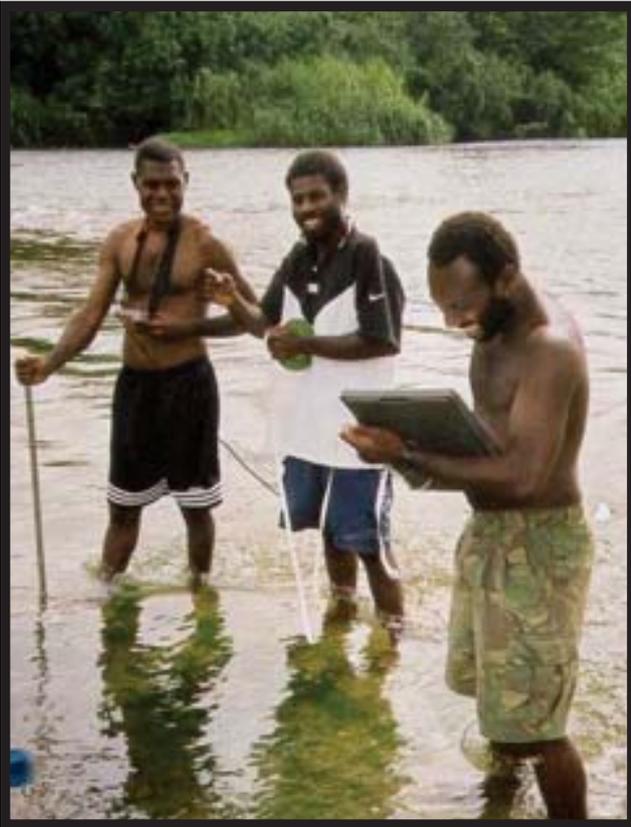


**6.15 The river has to be cared for so that everyone can have clean water. If all the trees on the banks of the river are cut down, how can the river stay healthy and strong?**

**What happens when the soil is washed downstream?**



## Who will maintain the system?



**6.16** In Vanuatu, communities are learning new ways to watch the changes in their river, so they can make decisions on what are the best ways to protect it.



**6.17** There is a simple cheap way of testing water quality which every one can learn.

The family can test their well water or the water from their rain tank, or the pipe water to make sure it is clean and safe.

If the test shows that there are germs in the water they know they have to clean up the system.



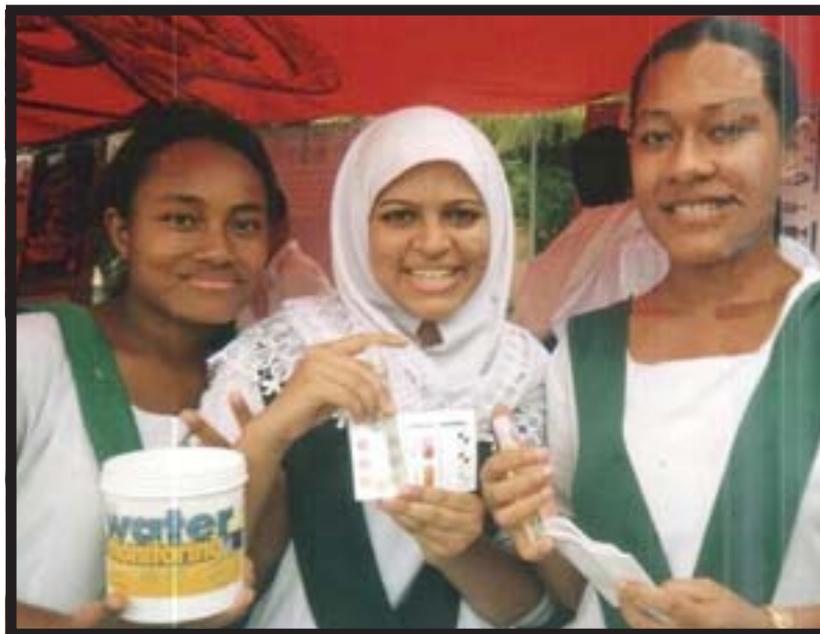
## Who will maintain the system?



### 6.18 Who is going to protect the water from rubbish and poisons?

In Tonga, the Womens' Committee set up a rubbish collection system to keep their village beautiful and to protect the groundwater and the lagoon. Men, women and children all help to collect rubbish. The rubbish then needs to be disposed of safely.

In small island countries where will the rubbish go?  
How can the rubbish and chemicals be reduced?



### 6.19 Girls and boys across the region are being taught how to monitor the health of their springs and rivers.

They collect rubbish from the rivers and then watch how the quality of the water improves.



## Who will maintain the system?



- 6.20** The women and men in the village have knowledge they can share about the special features of the island and the water.



- 6.21** The old men and women know the history of the springs and the rivers and the groundwater. They can tell stories of sacred places and how they took care of the water and the land in times gone by.

**They can talk about changes in rainfall and the weather. They have seen the springs dry up and the rivers flood. They know which fish have disappeared and which plants have stopped growing.**

**All this knowledge can help with the wise management of the resources now and into the future.**

## 7. What is community and has anyone been excluded?



**7.1 Have all the men and women in the family had an opportunity to talk about their needs?**

**Have all the stakeholders decided what is the best way to share the water fairly within the community?**

**Have the youth had a chance to talk about the long term care of their land and their water?**

**Has anyone who needs training been left out of the programme?**

**Maybe because of their religion?**

**Maybe because they come from another clan, a distant village or country?**

**Maybe because they are sick or disabled?**

**Maybe because they have never been to school?**

**Or perhaps they are excluded just because they are different?**



## What is community?



**7.2 Perhaps they have not come to community meetings?**

**Perhaps they don't know that there is fund raising opportunities available to help them build a rainwater tank or a toilet?**

**Perhaps nobody has explained to them about the water and sanitation programme?**



**7.3 Drama can be used in the village to make sure everyone knows about the programme.**

**Stories can be told about how the community can take care of their water and land and their people.**



## What is community?



### 7.4 Who will be in the community in 5-10 years?

**Children grow up and some move to another village to marry. Or they might move to the main island to work.**

**Teachers are transferred to another school, community leaders pass away.**

**Relatives move back to the village to retire after many years living on another island, or in a different country.**

**Who will pass on the message to the new community members?**

**Who will explain why decisions were made to protect the water the animals, the birds and the land?**

**Who will make sure that new development does not ruin the careful work that has already been done by the community?**



## What is community?



**7.5 Does the government or the NGO keep records of previous programmes in the village?**

**Who can make links between the water programmes and other activities such as farming and forestry?**

**Who knows about the toilet projects that were done in the past?**

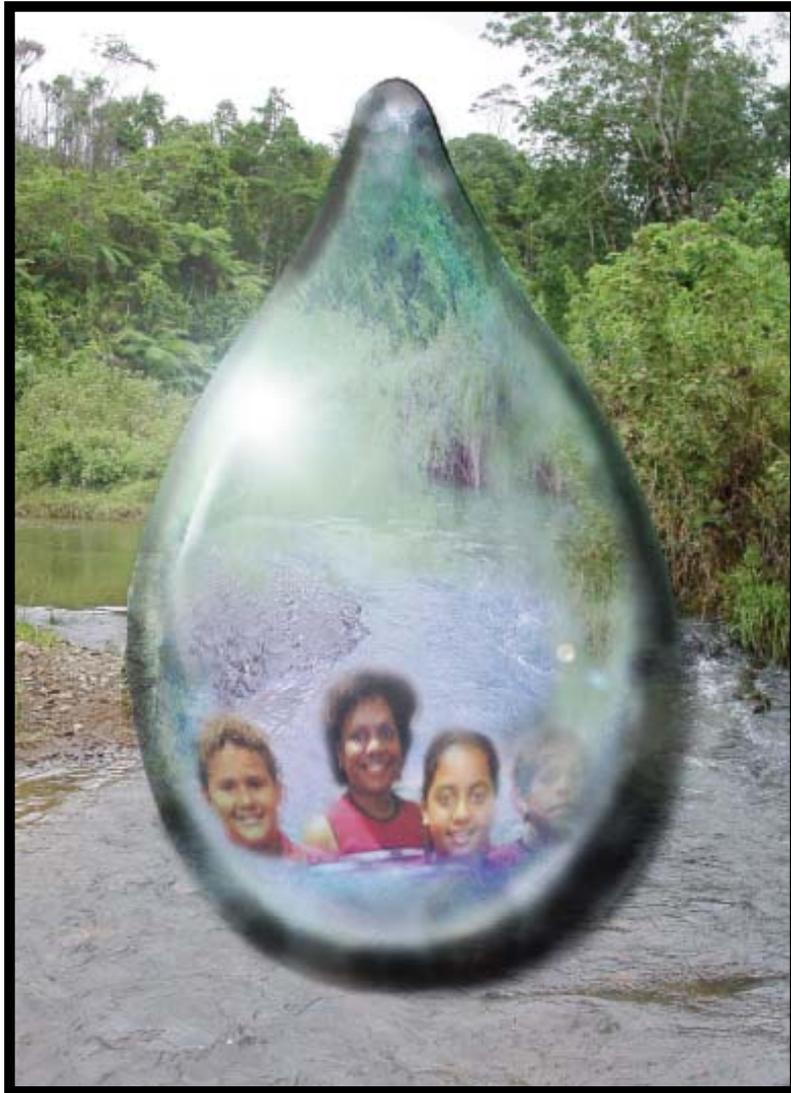
**Who knows why a hygiene programme was stopped?**

**Who knows why pumps are broken?**

**Who knows why some of the trees have died?**

**How can connection be made between the community now and lessons from the past?**

**How can understanding be shared now to protect the water and land for the next generation?**



**Water is a gift of Life for everyone to share and manage wisely, now and into the future.**

## 8. Information and Contacts

The reference numbers for seven Questions/Sections of this handbook are listed here. Beside each Questions/Section number, are the publications and contacts that can provide further information about these activities and technical systems.

QUESTION	TITLE	AUTHOR/ ORGANISATION	YEAR	LOCATIONS OF REPORT	CONTACTS
1 and 6	Process Timetable , Workshop Contents: Community-based Management of Coral Reefs	Hugh Govan	1999	Wai Bulabula and Coral Gardens Initiatives Partners in Community Development (PCDF)	wsivoi@pcdf.org.fj Ph. + 679 3300392 Fax: + 679 3304315
	Promoting a Healthy Environment: Coral Gardens and Wai Bulabula Initiative	Floyd Robinson	2001	P.O. Box 14447, Suva, FIJI ISLANDS	robinson_floyd@hotmail.com
1 and 6	Rate & Direction Groundwater Flow: Groundwater Pollution Study	Tevita Fatai	1999	Ministry of Lands Survey and Natural Resources, P.O. Box 5 Nuku'alofa, Tonga	fataim@tongatapu.net.to Tel:+676 23 210 Fax:+676 23 216
	Community Involvement* in Groundwater Protection	*Lokuvalu Leha	2003	*Central Planning Dept, P.O. Box 827, Nuku'alofa, Tonga	cp-dept@kalianet.to Tel:+676 23900 Fax:676 24260
1 to 7	Gender Guidelines: Water Supply and Sanitation: Supplement to the Guide to Gender and Development	Australian Agency for International Development (AUSAID)	2000	Australian Agency for International Development Mailing and Marketing P.O. Box 7077, Canberra, A.C.T. 2610, AUSTRALIA	books@ausaid.gov.au Ph: +612 6269 1050 Fax: +612 6260 2770
1,5 and 6	Composting Toilet Trial. Final Report. Ha'apai, Tonga	Leonie Crennan	1999	and Tonga Water Board P.O. Box 82,Nuku'alofa, Tonga	twbhelu@kalianet.to Ph: +676 23299 Fax: +676 23518
1 to 7	Gender Checklist on Water Supply and Sanitation Projects	Asian Development Bank (ADB)	2000	Asian Development Bank P.O. Box 789 0980 Manila, PHILLIPINES	adbpub@adb.org Ph: +632 6768 Fax: + 632 636 2648
1 and 6	Green School's Guide	Live and Learn Environmental & Development Education	2000	Live and Learn Environmental and Development Education Private Mail Bag Suva, FIJI ISLANDS	rivercare@livelearn.org.fj Ph: +679 3315 868 Fax: +679 3305 868
1 and 3	Environmental Management Guide For Small Hotels & Resorts	South Pacific Tourism Organisation (SPTO)	2001	South Pacific Tourism Organisation P.O. Box 13119 Suva, FIJI ISLANDS	info@spto.org Ph: +679 330 4177 Fax: +679 330 1995
1 and 6	Participatory Planning for Integrated Rural Water Supply and Sanitation Programs: Manual	Jeremy Ockleford Bob Reed WEDC	2002	Institute Of Development Engineering,Loughborough University, Leicestershire WE11 3TU, UK	r.a.reed@lboro.ac.uk Ph:+44 (0)1509 222885 Fax:+44 (0) 1509 211079
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3 and 4	Resource Manual for Gender Advocacy Training	(UNESCO) Pacific Foundation for Advancement of Women (PACFAW)	2003	Pacific Foundation for the Advancement of Women (PACFAW) P.O. Box 3940, Suva, FIJI ISLANDS	PACFAW Ph: +679 3304 961 Fax: +679 3301 222
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6	Village Leaders Handbook: Improving Life in your Community	Department of Health, PNG	1998	Department of Health P.O. Box 3991, Boroko National Capital District, PAPUA NEW GUINEA	SarahEkali33@hotmail.com Ph: +675 324 8606 Fax: +675 325 0826
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	Community Environment Workshop Handbook for Women		2000	PCDF, Box 14447, Suva, FIJI ISLANDS	wsivoi@pcdf.org.fj Ph: +679 3300 392 Fax: +679 3304 315



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6	Catchment and Communities Project in Vanuatu	Richard McEwan  Erickson Sammy	2003	Department of Geology, Mines, Water Resources, Private Mail Bag 001, Port Vila, VANUATU  UNESCO, Apia, SAMOA	rws@vanuatu.gov.vu cioan@vanuatu.gov.vu/  apia@unesco.org.ws
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# Tapping Connections between People & Water



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