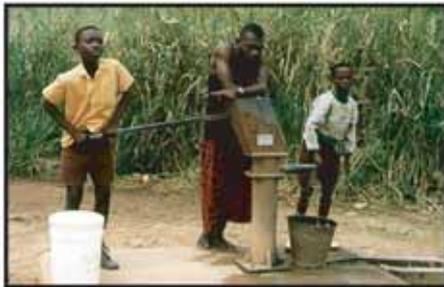


**Centre for Developing Areas Research (CEDAR)
&
Institute for Renewable Natural Resources (IRNR)**

**COMMUNITY HANDBOOK FOR
ENVIRONMENTAL MANAGEMENT**



November 2002



DFID Natural Resources Systems Programme



IRNR



CEDAR

INTRODUCTION

This Handbook is designed for Communities to use in conjunction with the ‘Watershed Management Framework’ produced by a team of Ghanaian and British researchers who have been working on watershed management in the peri-urban area around Kumasi.

The information presented here is designed to be as accessible as possible to all members of the community, including children, and contains some simple and low-cost or no-cost ways in which the community can improve their use of the natural resources around us.

It focuses in particular on the use of water resources, which are so important to people’s health and well-being.

Protecting the community’s water resources from pollution can go a long way towards preventing diseases, and can make life much more pleasant for the people in the community.

Protecting the environment can work in the same way.

This Handbook should be used alongside the Community Water and Sanitation Agency’s ‘**WATSAN HANDBOOK**’ and also **the Development-Environment Directory**, which have been given to the community with this Handbook.

The WATSAN Handbook covers:

- WATSAN setting up and organisation
- Water and hygiene: prevention of water-borne diseases and basic hygiene rules
- Sanitation: basic sanitation rules and procedures
- Technical aspects of water source protection.

The Development-Environment Directory provides a comprehensive listing of any organisations and companies with experience and knowledge in different aspects of environmental and development work likely to be relevant to the needs of your villages.

This document is an output from a project funded by the UK Department for International Development (DFID) for the benefit of developing countries. The views expressed are not necessarily those of DFID.

SECTION 1

**HOW TO KEEP THE WATER RESOURCES
CLEAN
AND PROTECT THE ENVIRONMENT**

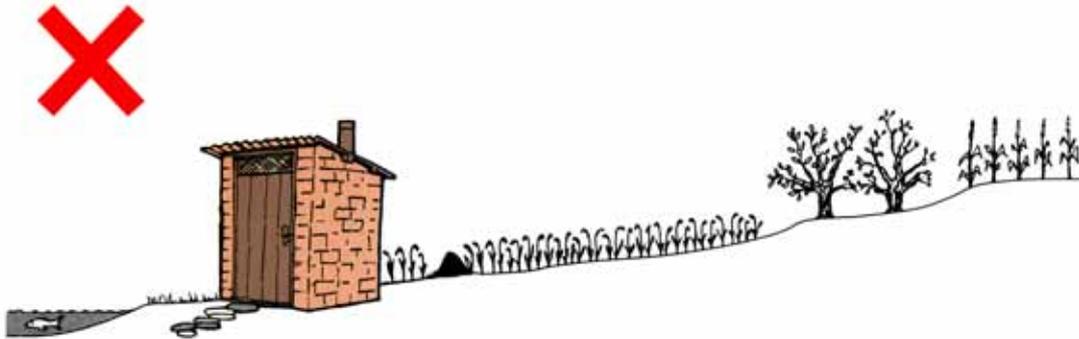
Don't dump your rubbish uphill from a borehole or a well



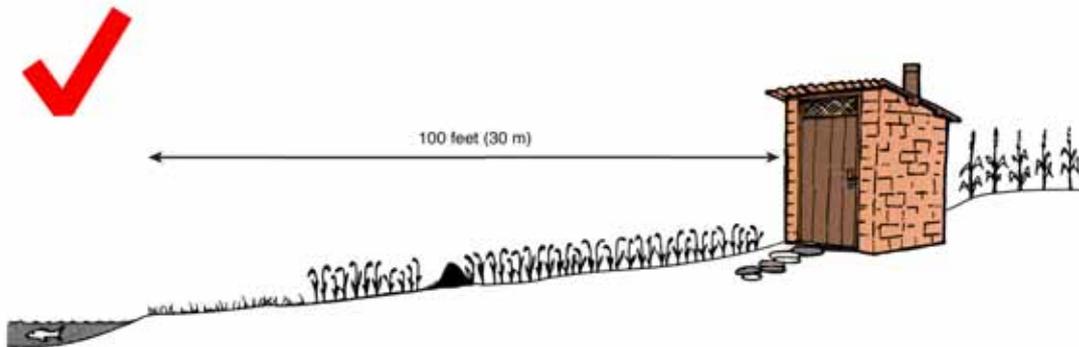
It should be at least 100 feet (30 m) away from any water source



Don't build your KVIP or pit latrine close to any water body



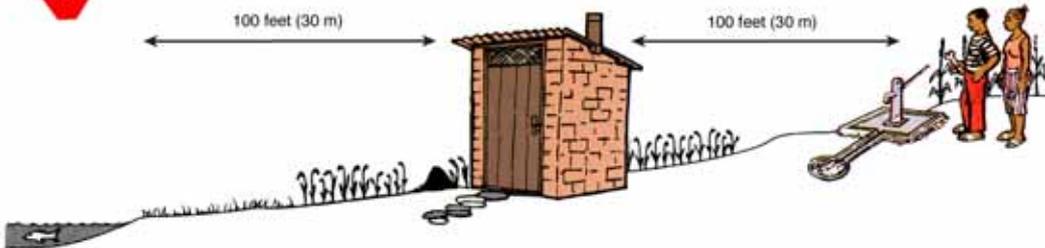
It must be at least 100 feet (30 m) from the water



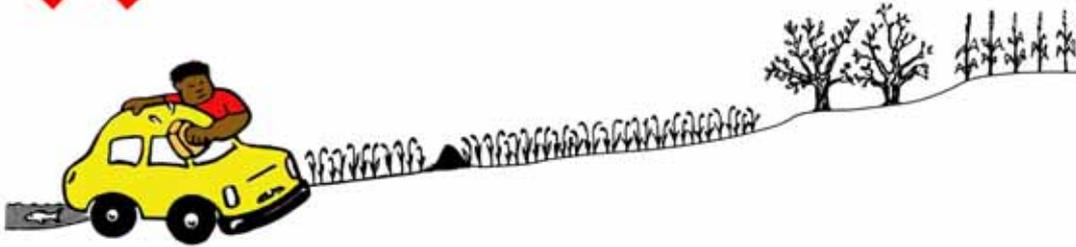
Don't build your KVIP or pit latrine less than 100 feet (30 m) from the borehole or well.



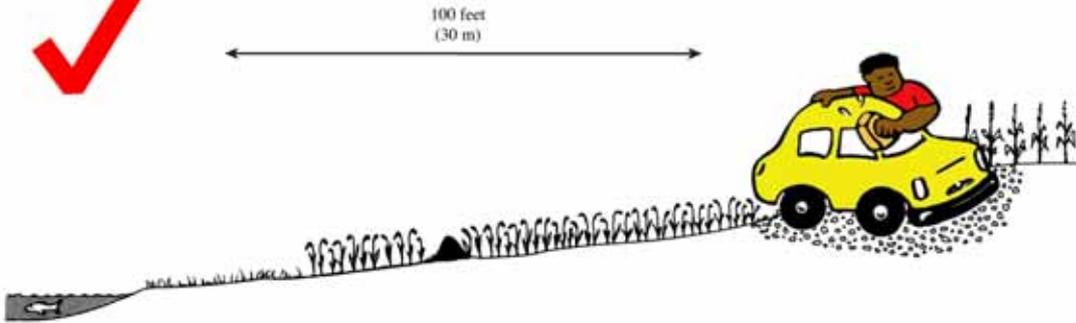
The KVIP or pit latrine **must** be downhill from the borehole or well



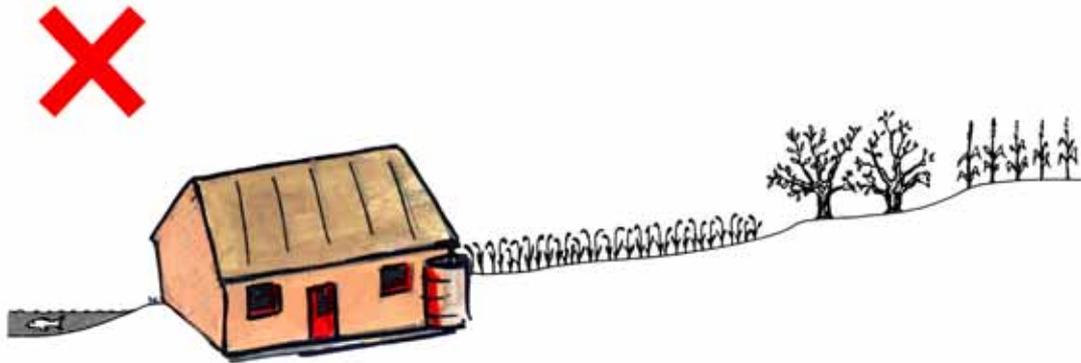
Don't wash your car at the river



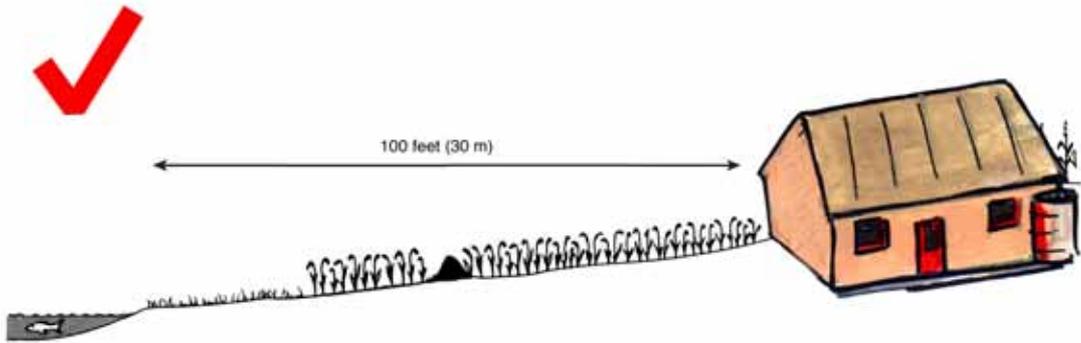
Dig a pit for this away from the river



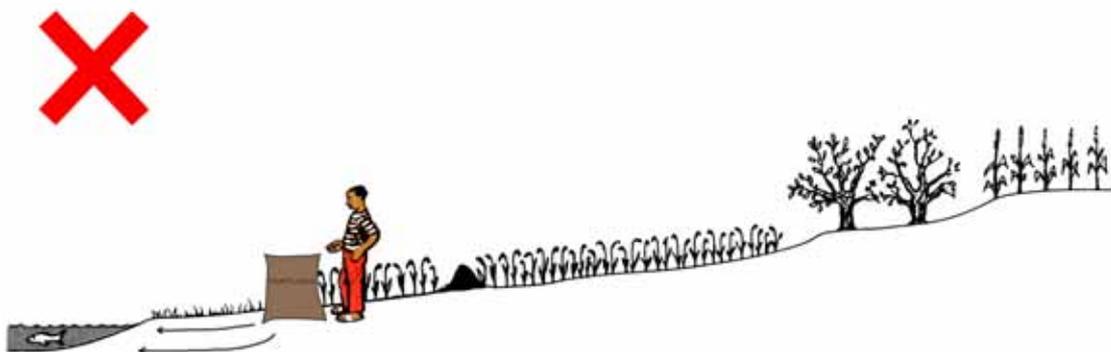
Do not build homes close to the river



Houses should be built away from the river



Don't use fertilizer close to the rivers and water bodies
Some of the chemicals will wash into the water, causing pollution



Don't dump rubbish where animals or children can easily reach it

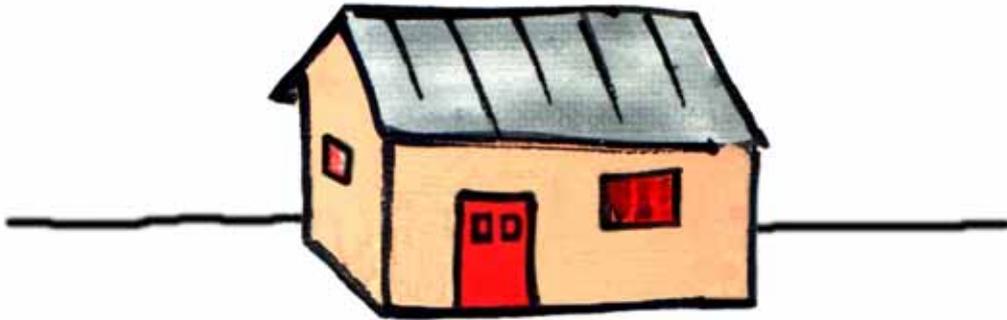


Screening the rubbish pit with trees and bushes keeps out animals and helps to cut down smells





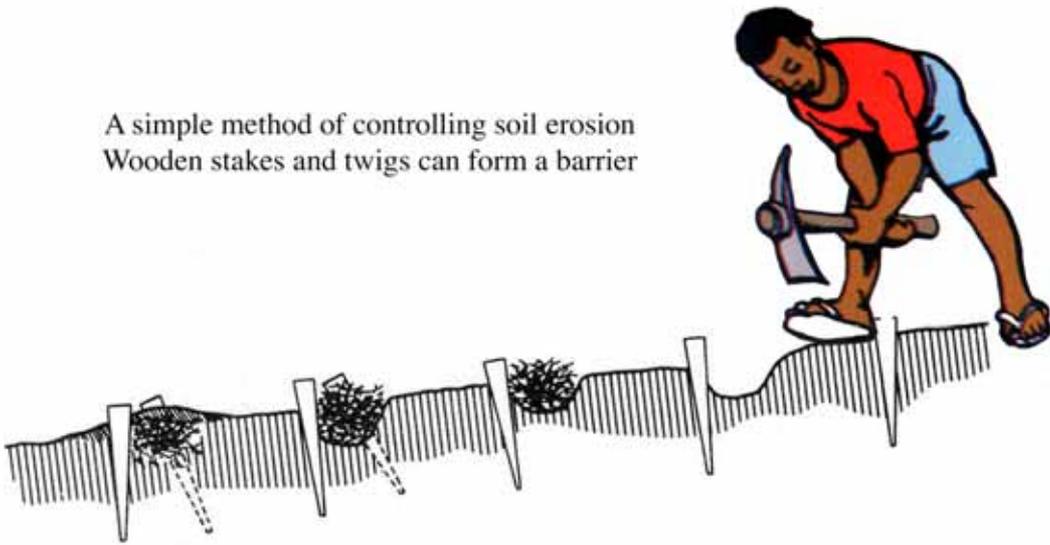
Water is precious
Do not waste it !



Collecting water from your roof can help
preserve the borehole or well water

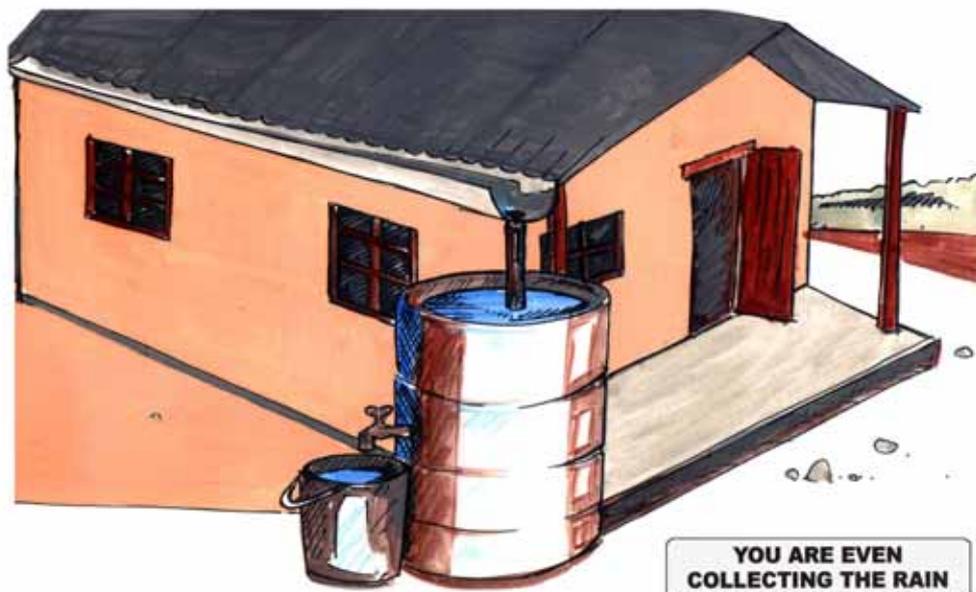


A simple method of controlling soil erosion
Wooden stakes and twigs can form a barrier



SECTION 2

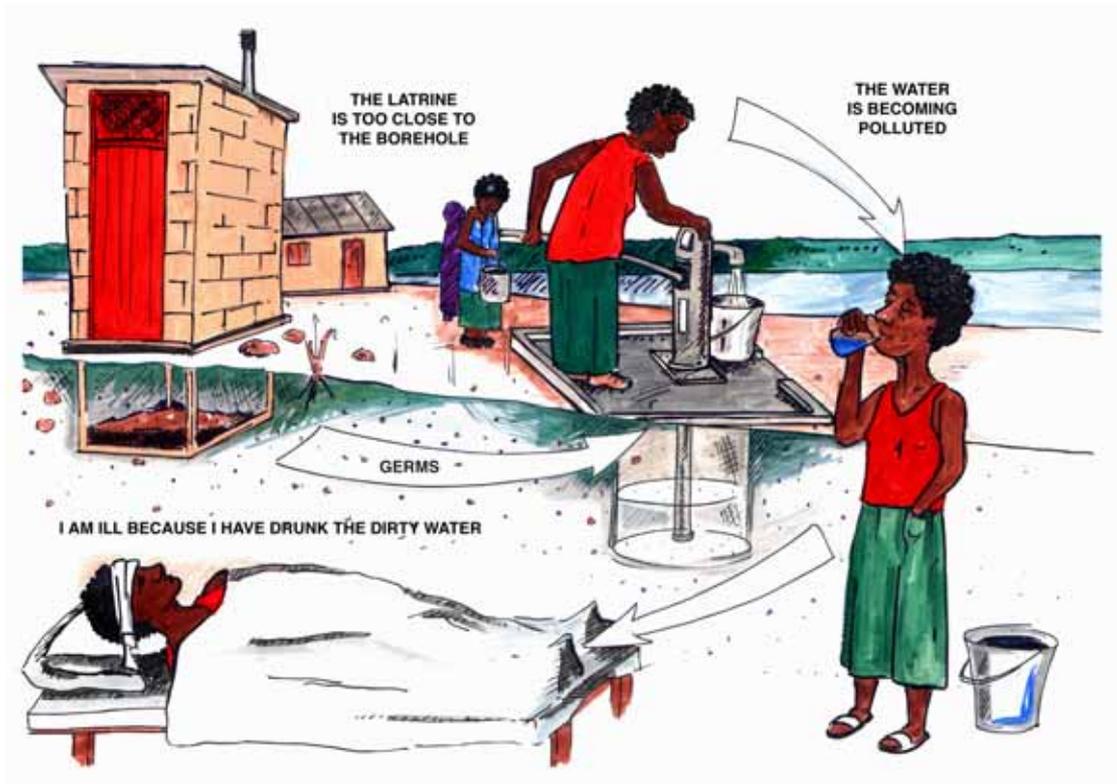
A VISITOR TO THE COMMUNITY

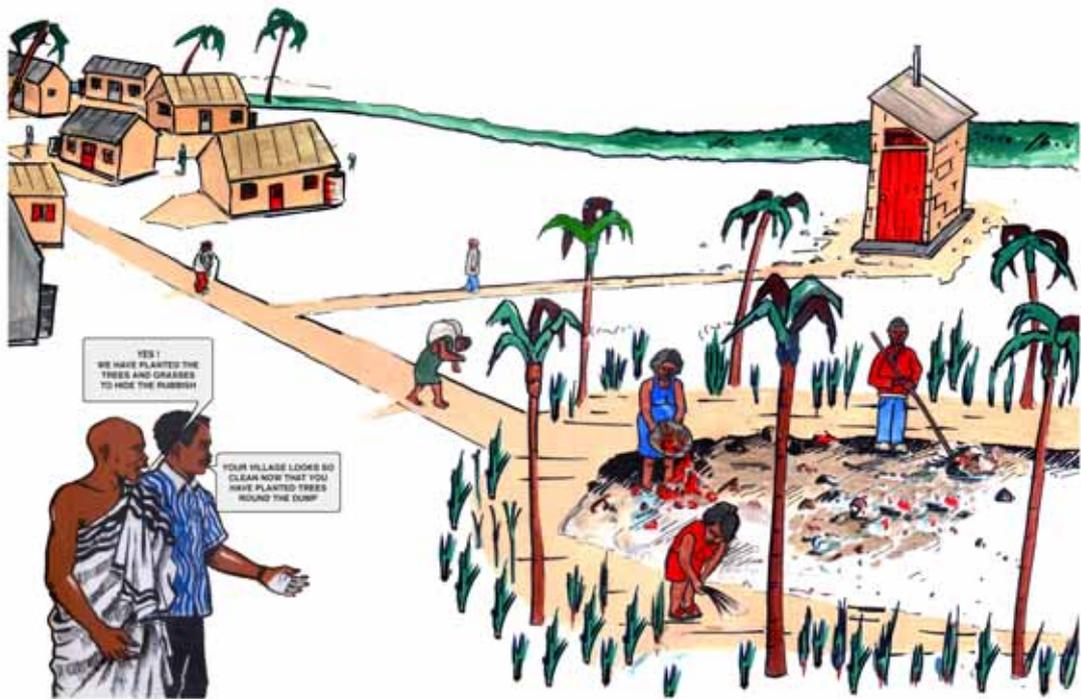


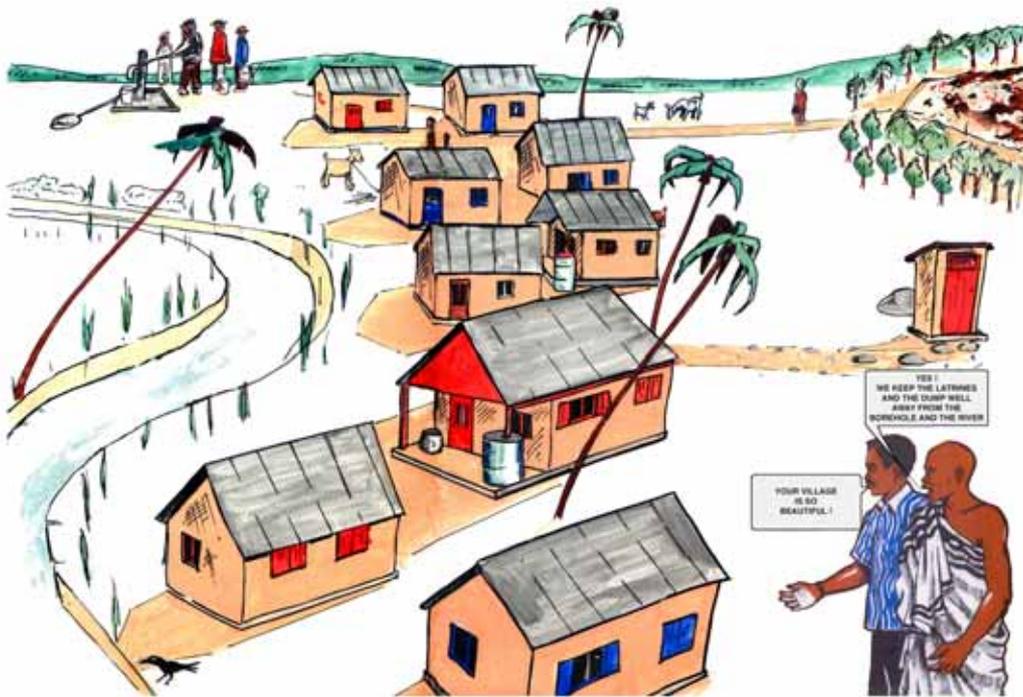
**YOU ARE EVEN
COLLECTING THE RAIN
WATER FROM YOUR ROOF**



**YES! MY WIFE MAKES FEWER TRIPS
TO THE BOREHOLE, AND WE CAN
SAVE THE BOREHOLE WATER
FOR DRINKING**









SECTION 3

WHAT YOU CAN DO TO PROTECT THE ENVIRONMENT AND YOUR WATER

| Action Points | Bathing | Washing utensils | Washing clothes | Washing/repair of cars |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| What bad substances come from this activity? | Germs that give diarrhoea or typhoid | Germs Soap - phosphates | Germs Soap- phosphate | Soap/detergent - phosphate Oil, benzene |
| How can I avoid this bad effect? | 1. Do not bathe in the river or near other water sources. 2. Bathe in an agreed location. 3. Build a soakaway for the dirty bathing water. | 1. Make sure that used washing water runs into a gutter to a soakaway. 2. Do not wash directly in the stream. Use buckets of water. | 1. Make sure that used washing water runs into a gutter to a soakaway. 2. Do not wash directly in the stream. Use containers of water. | 1. Do not carry out this activity next to a river. 2. Build a earth bank or grass border around your work area to prevent oil/detergent being washed into a water-source in wet weather. |
| Are there areas where I should not do this activity? | 1. Where dirty water will run straight into a river. 2. Upslope from a well or borehole. | 1. Where dirty water will run straight into a river. 2. Upslope from a well or borehole. | 1. Where dirty water will run straight into a river. 2. Upslope from a well or borehole. | 1. On a river bank or at a river-road crossing. 2. Where oil can be washed downslope into a river. 3. Upslope or close to a well/borehole |
| Are there other things I can do to avoid dirty water from this activity hurting others? | 1. Plant grass/low vegetation around/downslope from the soakaway or washing area. 2. If you wash your child after he/she has been to the toilet or has diarrhoea do this in the latrine area where there is a soakaway. Wash hands afterwards. 3. Do not allow children to play/wash near latrines. | 1. If your water runs to a soakaway, check that it will not overflow in wet weather. If it does - plant grass downslope/around the soakaway. | 1. If your water runs to a soakaway, check that it will not overflow in wet weather. If it does - plant grass downslope/around the soakaway. | Be aware that polluted water from your activities may flow downslope into rivers from which others drink or in which they wash. |

| Activities | Washing and Toilet | Garbage disposal | Cultivating the land |
|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| What bad substances come from this activity? | Bacteria, viruses and disease. Detergent, soap and phosphates. Nitrates and ammonia. | Detergents, bacteria, phosphates, nitrates, oils, metals. | Clearing the land can cause erosion of the soil during the wet season. Nitrates from fertiliser may enter rivers/water sources. |
| How can I avoid this bad effect? | <ol style="list-style-type: none"> 1. Always use the latrine when you go to the toilet. Do not defecate in rivers or near water sources. Encourage your children to do likewise. 2. Do not wash yourself or your children near water sources. Try to use an agreed washroom/area if there is one in the village. 3. Wash your hands after going to the toilet. 4. Try to have an agreed area for washing clothes – away from water source vicinity. | <ol style="list-style-type: none"> 1. Try to use a communal rubbish tip – do not let garbage accumulate around your house. 2. Try to sort your garbage and compost organics and recycle paper. 3. Do not throw batteries/similar items onto the land surface where dangerous chemicals might leak into local water. 4. Discuss with Unit Committee and Watsan members. | <ol style="list-style-type: none"> 1. Locate your plot in a position to minimise runoff into the river when the land is bare/fallow. 2. Try not to cultivate right up to the river bank. 3. If your plot is near the river – have a vegetated border to reduce the amount of runoff draining from plot to river. 4. Do not cultivate immediately upslope of water sources. 5. Fill in gullies before they grow too big. |
| Are there areas where I should not do this activity? | <ol style="list-style-type: none"> 1. On river banks. 2. Upslope from rivers or other water source. 3. In the vicinity of a borehole/hand dug well. | Do not locate garbage tips near or upslope from rivers, boreholes or wells. They should also be sited as far as possible from all water sources. | Depends whether you use large amount of fertiliser. If you do – see above. |
| Are there other things I can do to avoid polluted water from this activity hurting others? | Encourage other members of the community to follow your example. | <ol style="list-style-type: none"> 1. Try to reduce the amount of material going to the garbage tip by composting organics and recycling paper. 2. Plant grassed strips around garbage tips to slow down runoff from the tip and encourage it to percolate into the soil. | Do not use fertiliser indiscriminately. |

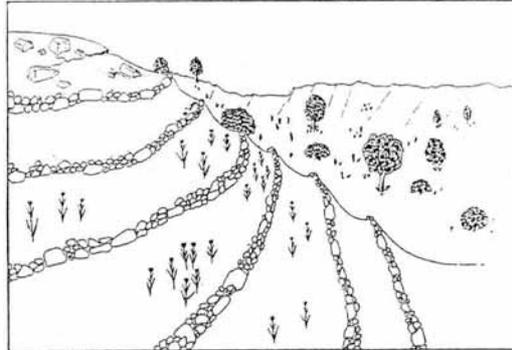
| Activity | Clearing land | The building and its activities |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>What bad effects on water can come from this activity?</p> | <p>1. Clearing vegetation means that more rainfall can run off. 2. Run-off can erode the land. Erosion channels called rills and gullies remove the fertile top soil and send it into rivers. This can make the water turbid. The soil may also carry viruses, fertiliser or other pollutants which make river water dangerous for bathing and drinking.</p> | <p>1. Discuss the use of the building with Unit Committee and Watsan members. 2. Is the building use likely to result in pollution to local water supply? 3. Types of pollution: Latrines: Bacteria, nitrate, ammonia. Car Repair: Oil, benzenes, detergents. Wash room: Orthophosphates, bacteria.</p> |
| <p>Which are the areas where I should not build?</p> | <p>1. What is the building for? 2. Will it produce materials that damage the water (for example a latrine/wash area)? 3. Do not build latrines/washing huts or car repair huts near river banks if the run-off will directly enter the channel. 4. Avoid locations which feed into hollows or streams. 5. Avoid areas immediately upslope of boreholes/wells or rivers.</p> | <p>If the building is near a water source and might produce pollution: 1. Seek measures to prevent the pollution spreading such as a soakaway, vegetated strips to slow down runoff and allow water to percolate into the soil (except near a borehole). 2. Latrines - Ensure that the pits are cleared and do not overflow. If there is a danger of overflow - provide a gutter to route the overflow to soakaway. Likewise for washing areas. 3. If buildings are provided for toilets or washing - encourage all members of the community to make use of them.</p> |
| <p>What other actions should I take to keep the water safe for myself and others?</p> | <p>1. If the building is not a latrine/washroom - think about harvesting water from the roof (but wash the roof regularly and check that roofing materials are safe to use)</p> | <p>Keep gutters, soakaways or vegetated strips in good condition so that they do not fail in rainstorms.</p> |

| Activity | Cropping | Animals |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| What bad effects on water can come from this activity? | <ol style="list-style-type: none"> 1. Fertilisers may be washed into rivers or other water sources during rainy season. 2. Nitrate pollution from fertilisers may make the water poisonous, especially for young babies. 3. Nitrates and phosphates from fertiliser may cause algae to grow in river water – killing fish and other river life. | <p>Germs from animal faeces and animal urine can be a problem if animals are kept too close to wells/borehole surrounds.</p> |
| Which are the areas where I should not farm? | <ol style="list-style-type: none"> 1. Do not plant crops which need fertiliser right up to the river banks. 2. If you hoe your plot – hoe parallel to the river bank. | <ol style="list-style-type: none"> 1. Fence off immediate area of boreholes and wells so that animals cannot defecate or urinate too close. This especially applies to upslope area. 2. Try to prevent animals trampling the soil close to water sources. This makes rainwater wash pollution into water sources more rapidly. |
| What other actions should I take to keep the water safe for myself and others? | <ol style="list-style-type: none"> 1. Do not use too much fertiliser. 2. Add a grassed/vegetated border to you cropped field to reduce the amount of soil and fertiliser washed into the streams. | <ol style="list-style-type: none"> 1. Always be aware of where water from your farmland might flow. 2. Remember that people downslope or downstream may be affected. |

SECTION 4

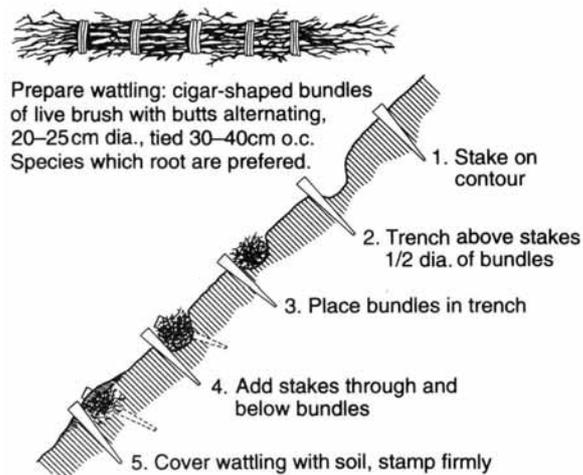
WHAT YOU CAN DO WITH TREES AND BUSHES TO PROTECT YOUR ENVIRONMENT

Some ways in which you can improve your environment by using trees and bushes are shown in the pictures below



Planting bushes on banks across the contour can help to stop erosion

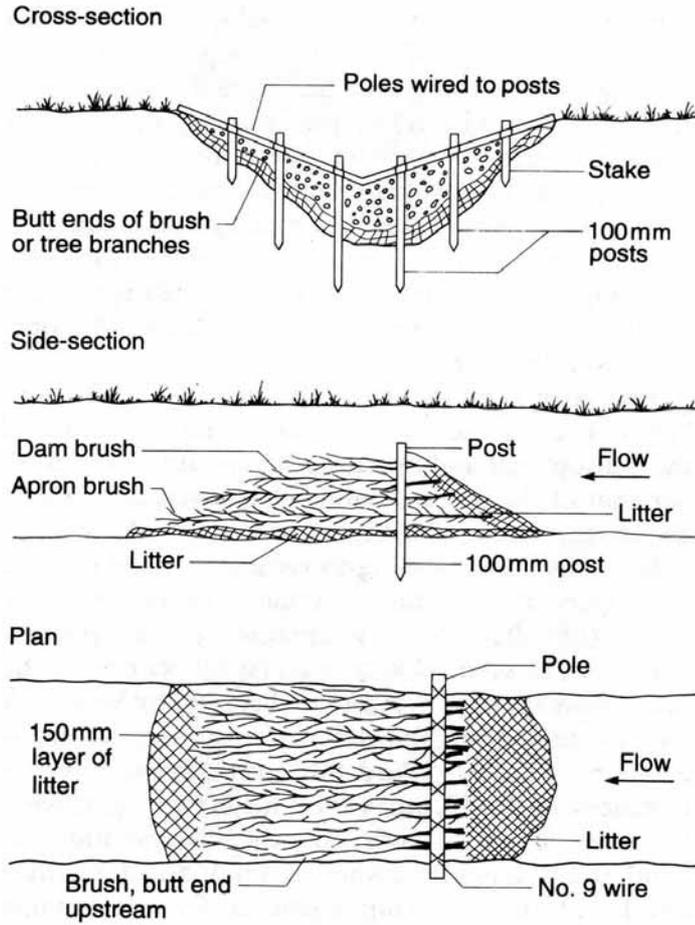
On steeper slopes, you can use bundles of brush and sticks dug into the slope



NOTE: Work starts at bottom of cut or fill and proceeds from step 1 through step 5

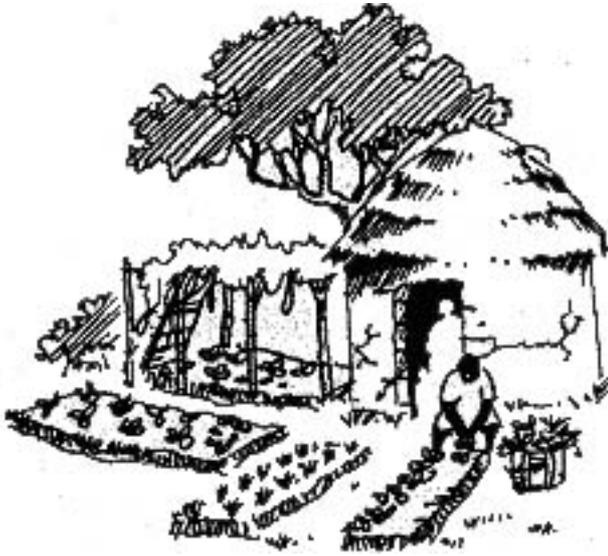
This is another good way of stopping erosion

Damming a big gully takes time and a lot of hard work



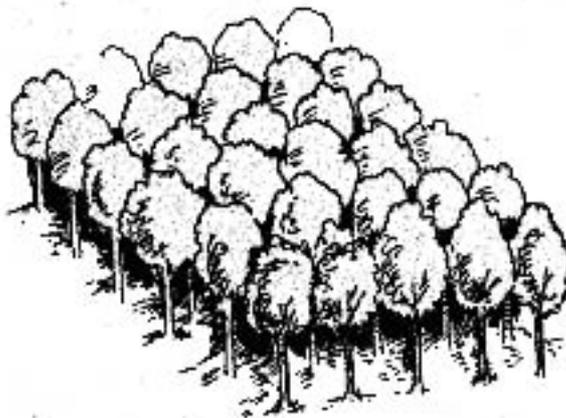
But you can do it!!

You can make your house beautiful and get shade



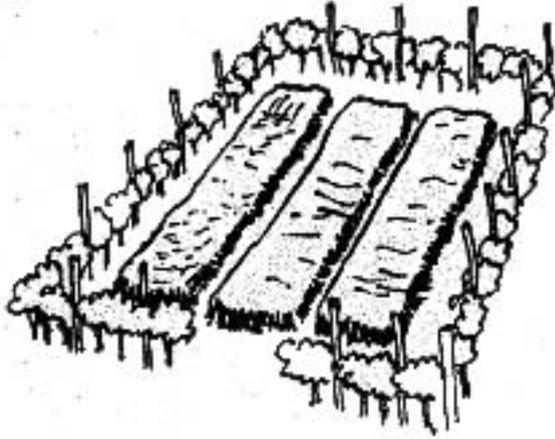
Work will seem less hard with trees to shelter you from the sun!

We cut down the forests to get fuel wood for cooking



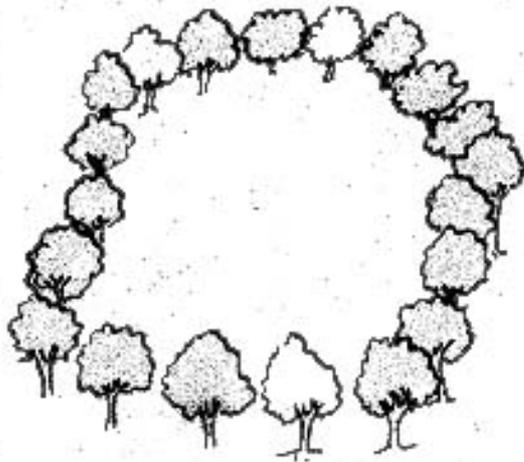
But we can plant trees and use them. This saves our forests

We can use bushes as fencing

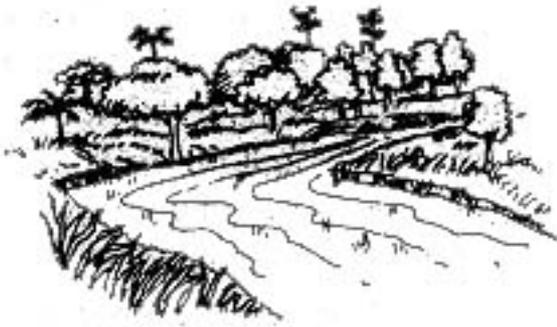


In that way, we can keep animals out of our crops

In the same way, we can plant trees and bushes around our rubbish dumps to keep out animals and keep in smells!!



Planting and protecting trees on the river banks helps to preserve our environment



Trees and bushes are not only good to look at, they also help us to protect our environment!

SECTION 5

SCENES FROM AROUND KUMASI

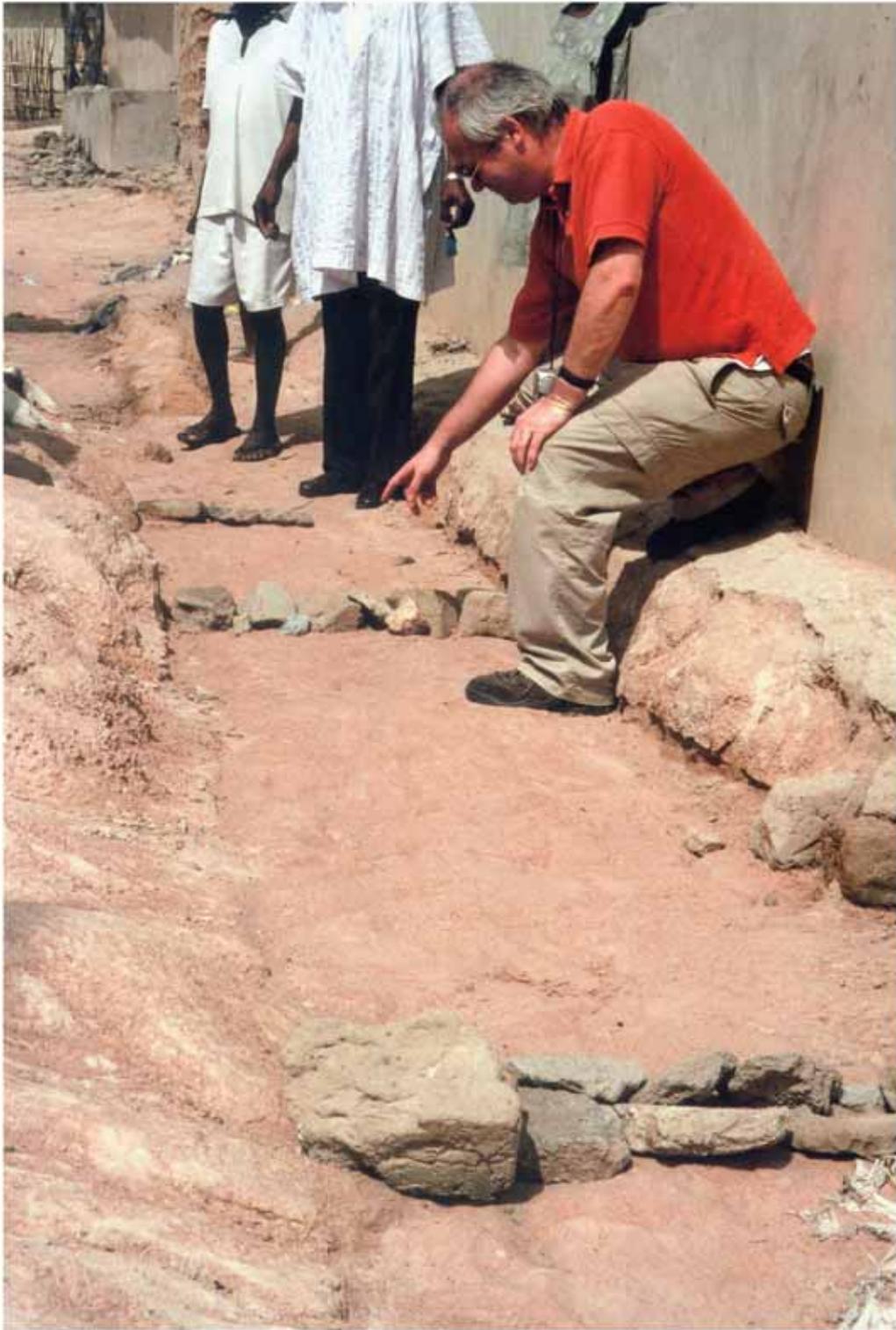
SOME EXAMPLES OF GOOD AND BAD PRACTICE



YOU CAN USE OLD BASKETS TO PROTECT YOUR SEEDLINGS



GULLIES LIKE THIS CAN BE FIXED BY USING STONES



PUTTING STONES IN GULLIES HELPS TO STOP
SOIL EROSION



**DUMPING DYE IN RIVERS POLLUTES
THE WATER BADLY**



BUILDING ON RIVER BANKS CAUSES PROBLEMS



STORING WATER FROM THE ROOF MEANS YOU
HAVE TO MAKE FEWER TRIPS TO THE BOREHOLE



PROTECT YOUR SEEDLINGS FROM ANIMALS



PLANTING TREES AROUND THE DUMP HELPS TO
KEEP ANIMALS OUT AND MAKES IT LOOK BETTER



SAFEGUARD YOUR DRINKING WATER
KEEP THE WELL COVERED WHEN NOT IN USE
USE ONLY THE WELL BUCKET FOR COLLECTING THE WATER