



Association suisse pour le développement et la coopération

Swiss Association for Development and Cooperation

St. Moritzstrasse 15
Postfach CH-8042 Zurich (Suisse)

City Chemist Building
P O Box 114,

BAMENDA
Republic of Cameroon

Tel . 36-17-30
Fax . 36-22-30

**LIBRARY
INTERNATIONAL REFERENCE CENTRE
FOR COMMUNITY WATER SUPPLY AND
SANITATION (IRC)**

WATER MAINTENANCE COMMITTEE GUIDE



BAMENDA, January 1994

TABLE OF CONTENTS

	PAGE
INTRODUCTION	1
1 VILLAGE AUTHORITIES.....	2
2 ORGANIZATION OF THE WATER MAINTENANCE COMMITTEE.....	3
2.1 DUTIES AND RESPONSIBILITIES OF EACH WATER MAINTENANCE COMMITTEE MEMBER.....	3
2.2 DUTIES AND RESPONSIBILITIES OF THE TECHNICAL GROUP...	5
2.3 DUTIES AND RESPONSIBILITIES OF THE FINANCE GROUP.....	6
3 HOW A WATER MAINTENANCE COMMITTEE WORKS.....	7
3.1 ELABORATION OF ACTION PLAN.....	7
3.2 WATER MAINTENANCE COMMITTEE MEETINGS.....	8
3.3 SUPPORT AND COLLABORATION WITH CARETAKER.....	8
3.4 ANNUAL EVALUATION OF WATER SCHEME.....	9
4 FINANCING OPERATION AND MAINTENANCE ACTIVITIES.....	9
4.1 FINANCIAL REPORT.....	11
5 REGULATIONS OF OPERATION AND MAINTENANCE.....	11
6 CATCHMENT PROTECTION.....	12
ANNEX 1. PLAN OF ACTION.	
ANNEX 2. ANNUAL EVALUATION OF O+M ACTIVITIES.	
ANNEX 3. EXAMPLE OF A YEARLY RATE FOR MAINTENANCE	
ANNEX 4. EXAMPLE OF A FINANCIAL RECORD, INCOME / EXPENDITURE.	
ANNEX 5. WORK REPORT BY CARETAKER.	
ANNEX 6. LIST OF MATERIALS USED.	
ANNEX 7. SUITABLE TREES FOR CATCHMENT PROTECTION.	

INTRODUCTION

Operation and Maintenance of a water scheme can only be carried out successfully and over time, when a well functioning Water Maintenance Committee is established. At least one well trained and experienced Caretaker must be employed, supervised, and regularly compensated for all his services.

The Water Maintenance Committee (WMC) is a group of men and women representing the community as a whole. It must be capable to organize the on going Operation and Maintenance activities of the water scheme. The WMC is elected in a meeting by the village population and not appointed by the chief or any other village authority. Elections should be organized every 3-5 years. Its members must be devoted to work and be respected by all.

DUTIES AND RESPONSIBILITIES OF THE WATER MAINTENANCE COMMITTEES ARE:

- Handle all matters related to the village water scheme.
- Identify all water problems in the village and keep control on extension and new connections.
- Encourage and mobilize community participation in O+M.
- Establish and enforce maintenance regulations for the water scheme.
- Elaborate an annual work plan in collaboration with the Caretaker.
- Elaborate annual plan of action, budget and organize an annual meeting with the population.
- Raise and manage carefully funds for O+M annual programme and repair work.
- Employ, supervise and remunerate the CT.
- Ensure catchment area protection and other environmental aspects.
- Make reports to Village Development Committee and to other services.
- Establish and maintain contact with CD and NGO services.

LIBRARY, INTERNATIONAL REFERENCE
CENTRE FOR COMMUNITY WATER SUPPLY
AND SANITATION (IRC)
P.O. Box 93190, 2509 AD The Hague
Tel. (070) 814911 ext. 141/142

RWJ 12590
LO: 205.1 94WA

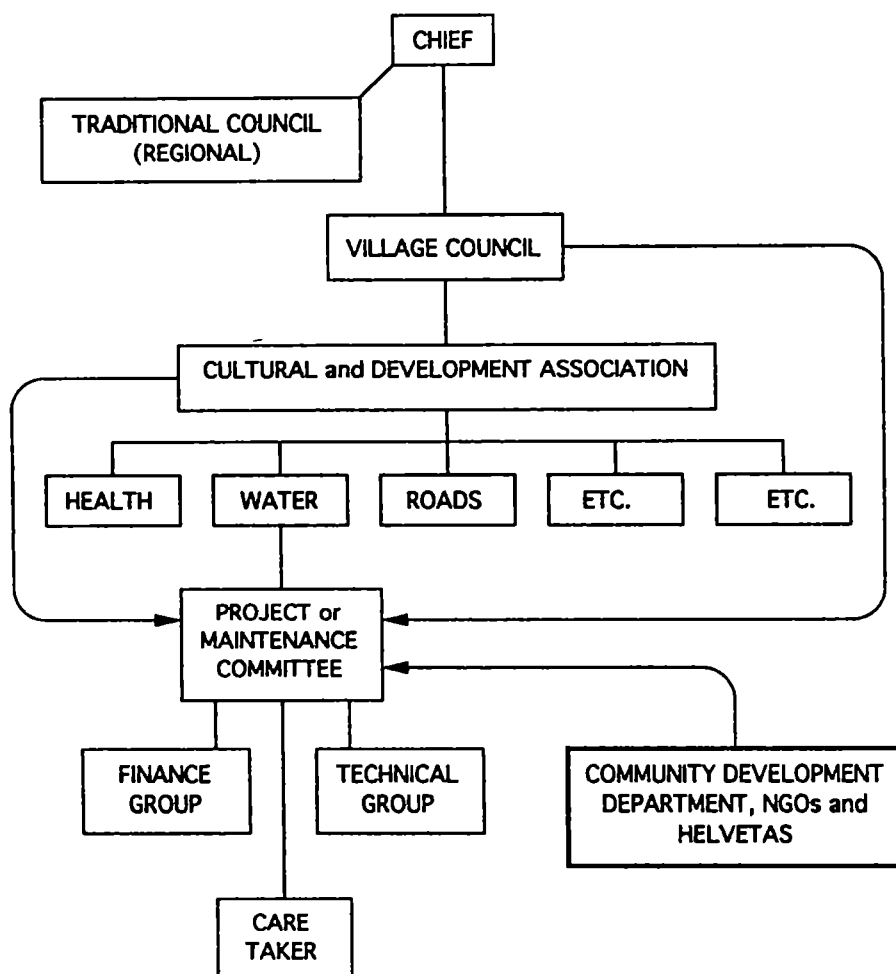
1. VILLAGE AUTHORITIES

The development of a village depends on the availability and the management of its natural and human resources and on the relationship and collaboration between the different village authorities. In all societies in Cameroon the Chiefs or Fons plays a key role. They have to supervise the proper functioning of the different development bodies which are active in their villages. A village organigramme or village chart helps to visualize the situation and functions of the various authorities and clarifies their role, duties and responsibilities.

VILLAGE CHART AND RELATIONS OF WATER MAINTENANCE COMMITTEE

The Water Maintenance Committee, the Village Council, the Development Association or Committee, the Project Committee, the Rural or Traditional Council and Community Development Department, NGOs and HELVETAS work in close collaboration in planning, execution, monitoring, operation and maintenance.

VILLAGE ORGANIZATION IN CAMEROON



2. ORGANIZATION OF THE WATER MAINTENANCE COMMITTEE

Executive:

1. Chairperson
2. Vice Chairperson
3. Secretary
4. Vice Secretary
5. Treasurer
6. Two Auditors
7. Caretakers
8. Advisers, Fon or Chief.

A member of the Executive is in charge of water catchment protection.

Fig. 1:

The Maintenance Committee



A WMC made up of more than ten people can be divided into two groups to form a Technical and a Financial Group, in order to simplify the routine work and to distribute the responsibilities.

2.1 DUTIES AND RESPONSIBILITIES OF EACH WATER MAINTENANCE COMMITTEE MEMBER

Various posts of the Maintenance Committee can be held either by a man or a woman depending on his or her ability.

Chairperson:

He or she shall perform the following duties for the Committee:

- Call and preside over meetings and ensure information and dialogue with the population.
- Confirm and sign decisions of the meetings
- Follow up decisions and plan of action.
- Report to the development committee.
- Represent the Maintenance Committee in other meetings.
- Coordinate all Maintenance Committee's activities.
- Contact other bodies, committees and technical services for the Maintenance Committee.
- Authorize expenses according to the Maintenance Committee's decisions and regulations.
- Shall lead the finance group to the collection of Maintenance money every where.

Vice Chairperson:

- Shall act in the absence of the Chairman.
- Can be given permanent responsibilities or duties, for example, follow up decisions of the Maintenance Committee, chairs the sub technical group, that is, he shall be in charge of all practical and manual work of the water project in the village.

Secretary:

- He or she shall take minutes during meetings;
- Sends out circular for meetings and work;
- Writes down attendance lists for practical works;
- Takes care of correspondences and documentation;
- Keeps financial reports;
- Prepares meetings: place;
- Assists the Vice Chairman to plan for all practical manual work.

Vice Secretary:

- He or she shall act in the absence of the secretary;
- Shall be given permanent specific duties or responsibilities:
for example, distribution of circular from secretary and preparation of meeting places;
- Shall be the secretary of finance group during collections with the finance group;
- Shares responsibility with treasurer in financial matters.

Treasurer:

- He or she:
- Shall be a very honest person who shall take care of maintenance money and records, showing savings and withdrawals from the Bank, Post Office or Credit Union;
- Shall receive all monetary contribution;
- Shall pay out money on authority;

- Shall keep all receipts;
- Keep ledgers with names of contributors.

Auditors (2):

- They shall be very honest people who shall audit the accounts of the Maintenance Committee, quarterly and give reports of it in general meetings;
- They shall check all money in and out;
- See if the expenditures were approved;
- See all justificative documents;
- Check the Caretaker (materials);
- Report to the Maintenance Committee;

Caretaker (and Assistant Caretaker)

- The Caretaker who is selected by the village is a member of the Water Maintenance Committee. Check frequently the whole water process from the catchment to the taps;
- Detect problems in the water system;
- Informs the Maintenance Committee on the problem;
- Make repairs on the system;
- Make a list of requirements for repairs to be done;
- Keep record of observation, breakdowns of all activities or work done.

Advisers:

The advisers are those people who guide the decisions of the members of the committee especially urgent matters brought by the Chairman concerning maintenance.

- They help the committee to take sanctions to defaulters;
- They help the committee to bring the community together;
- They help the committee with personal resources like transportation, tools etc..

2.2 **DUTIES AND RESPONSIBILITIES OF THE TECHNICAL GROUP**

The Technical Group is a sub group that take care of all technical duties of the Maintenance Committee. It shall carry out the following duties:

- Organize community work where and when necessary;
- Organize repairs of taps, leakages and all practical work in the whole water system;
- Organize the protection of catchment etc.. and supervise it also.

The Members of the Technical Group Are:

1. Vice Chairman of the Maintenance Committee.
2. Secretary of the Maintenance Committee.

3. Caretaker and his assistant.
4. One Auditor.
5. The person responsible for water catchment protection.

Fig.2:

The community preparing materials to repair a stand pipe.



2.3 DUTIES AND RESPONSIBILITIES OF THE FINANCE GROUP:

The Finance Group shall take care of all financial matters of the Maintenance Committee. It shall guarantee that there is money available for the Maintenance Committee by:

- Collecting levies
- Collecting yearly rates from private connections
- Following up fines levied to defaulters etc..

The group guarantees that money is safely placed, well spent, records well kept and statements of account presented to the population.

The Members of the Financial Group Are:

1. Chairman of the Maintenance Committee
2. Treasurer of the Maintenance Committee.
3. Vice secretary of the Maintenance Committee.
4. One Auditor
5. 2-3 Advisers

(See Fig.3)

Fig.3:

The Finance Group



3. HOW A WATER MAINTENANCE COMMITTEE WORKS:

The WMC must be able to plan and manage its activities in an autonomous way. As explained in the introduction **Helvetas** and the **Execution Bodies** are assisting the communities who operate and maintain water schemes by monitoring their activities. However the task of being functional lies almost completely with the WMC.

The most important functions are:

3.1 ELABORATION OF ACTION PLAN

The WMC basic instrument is the Annual Plan of Action, which is worked out at the beginning of the year. The Committee discusses and decides **WHAT** to do, **WHEN** and **WHO** is responsible for a specific action.

See also Annex 1: Annual Plan of Action.

3.2 WATER MAINTENANCE COMMITTEE MEETINGS

The WMC shall meet as often as the need arises, but at least every 3 to 6 months. An agenda is drafted at the beginning of the meeting and the committee members shall be well prepared for full participation and openly give their suggestions and opinion on positive and negative aspects of the O+M activities of their water scheme. Doubts and conflicts are treated and solved in a discussion, and meetings are held in an atmosphere of confidence. Every meeting should be well prepared:

- Choice of main topics of discussion;
- Choose a convenient place of sitting;
- Choose a suitable date for the meeting;
- know the type of participants;
- Think of resource persons and technicians;
- Send out circular and agenda on time;

AGENDA:

The agenda of a meeting may have the following topics:

1. Chairman's Speech: Agreement on the agenda, explanation of topics and objective.
2. Reading of the last minutes (discussion, amendments and agreement)
3. Report on various activities (decided in the last meeting, comparison with work already done).
4. Main topic of the day (discussion) with resolutions and plan of action.
5. Other matters

The meeting should be conducted by the chairperson, discussions followed the agenda and written minutes recorded.

3.3 SUPPORT AND COLLABORATION WITH CARETAKER:

The is the most important person executing the maintenance programme. However, the well functioning of a water supply system does not only depend on him. It is the WMC that plans the annual programme, decides on private connections, collects money, etc.. Besides, the WMC has to supervise the Caretaker and check periodically whether he is fulfilling his duties and doing his job as required.

The CT is also responsible for handling a stock of spare parts, fitting some spare pipes and common tools, used for maintenance and repairs. He keeps stock records, orders and gives account of what is purchased. He keeps stock cards and informs the WMC periodically about the use of spare parts, fitting etc.. in a log book where he reports his work and observations weekly. The WMC discusses it periodically and informs the CT for approval or modifications of the programme.

(See Fig. 4)

Fig.4:

The Caretaker
in Action



See also Annex 5: Work Report by Caretaker, and Annex 6 : Check list of Material used.

3.4 ANNUAL EVALUATION OF WATER SCHEME:

The performance of the water supply should be evaluated annually by the WMC, using the SOFT method, with Success, Failures, Opportunities, Threats.

- Success is described in a positive form like "good participation".
- Failures or problems are negative like "lack of cash".
- Opportunities result in recommendations like "should train caretakers".
- Threats are problems which can never be completely eliminated. That means we have to take them into account, despite all efforts done to bypass them. They are described as risks like "seasonal drought", etc.

See example "Annual Evaluation of village Water Scheme" Annex 2.

4. FINANCING OPERATION AND MAINTENANCE ACTIVITIES:

O+M can only be carried out successfully and continuously when there is enough money to compensate the Caretaker(s), buy pipes, parts, materials and pay for external assistance. The WMC therefore, has to calculate its annual budget and assure regular

income. In doing this, the WMC has to inform the population about the need of O+M, repairs and overhaul, that means it has to explain why and when money is needed, and how it has been used. The fees from family households, private connections, schools, health centres, church yards, hotels, small enterprises etc. are the most important source of income (beneficiaries). Tap holders should pay fees proportional to the quantity consumed. Fees are calculated by the WMC - the tariffs must be approved by the community (general meeting).

Village Development Associations, consisting of "elites" from within and from outside the village are potential donors. Financial contributions out of tax accounts from the local administration should be requested. A supplementary way lies in organizing special fund raising activities such as competitions, annual water day etc.

Fig. 5:

**Collecting a
Maintenance
Levy.**



The Secretary and the Treasurer of the WMC handle all money and keep proper records of all transactions like income from fees, contributions and expenses for purchase of material, payment of compensation to the CTs, etc.. A cash book is maintained with all receipts of transactions recorded and attached together. Good monetary control and reporting boost confidence of the WMC. Money collected shall be deposited in the nearest save bank, post office or credit union immediately. Arrangement for withdrawal shall be made internally by the WMC. Usually it is the Treasurer and the Secretary who withdraw and deposit money. Records are kept of all bank transactions which shall be countersigned monthly by the Chairperson.

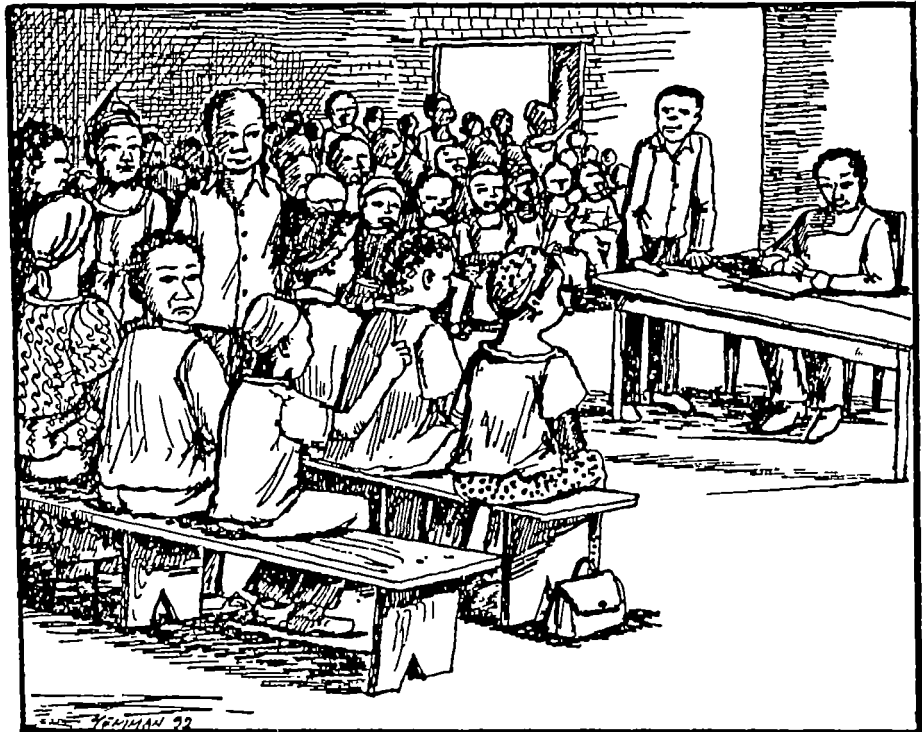
**For the Calculation of Annual Budget of O+M: See Annex 3.
For the Example of Recording Financial Transactions: See Annex 4.**

4.1 FINANCIAL REPORT

The population, development associations and other bodies who contribute financially to the O+M Programme shall be informed annually about income and expenditure with a brief report of activities and a statement of account. The Treasurer and the Secretary of the WMC are responsible for the elaboration of the document and the Chairman has to check and sign it.

Fig. 6:

The Water Maintenance Committee informing the Community about O+M financing in an Annual Meeting.



5. REGULATIONS OF OPERATION AND MAINTENANCE

WMC needs a legal base to function, so as to be able to: introduce regulations, enforce laws, allow private connections and extension work, employ CTs, manage water scheme, collect and handle money.

The WMC in the first step of its activities, drafts a set of regulations for operation and maintenance of the water scheme. These regulations have to be approved by the population of the village in a meeting.

The O+M Regulations shall contain the following articles:

1. Aim of the regulation
2. Bodies
3. Finances
4. Private Connections
5. Catchment Protection
6. Top management
7. Sanctions
- etc..

6. CATCHMENT PROTECTION

Rapid population growth and the search for land to produce food, fuel, and fodder have led to invasion and destruction of upland forest and watersheds where normally the most potential water sources are found. Deforestation, annual burning of agricultural and grazing land, intensive agriculture and application of chemical fertilizer, pesticides, etc.. are causing wide spread soil erosion, high rain water run off and subsequently reduce spring flow and danger of water contamination.

Effective catchment protection involves sensitization and animation, so that the whole community, including the land owners of the particular areas are convinced and should participate in the protection of their catchment, not only in the execution of work but also in planning and decision making.

DEFINITION OF TERMS

A **CATCHMENT AREA** is a topographically defined area that is drained by an underground spring system to one point where the spring emerges.

For our immediate purpose, let us define the following area for **spring catchment protection**:

- 50 m protection zone in all directions (Radius) above each catchment protection. No farming or grazing is allowed in this area which is also fenced.
- 100 to 300 m radius as extended protective area. No seasonal farming with land preparation or grazing is allowed, but permanent crops like fruit trees and production of fodder grass for feeding outside the catchment area is permitted.
- **Catchment areas for river intakes** are defined as 500 m above the dam and 200 m from the river-bed to each side.

CATCHMENT PROTECTION ACTIVITIES:

-Fencing of the catchment area or maintaining the fence if necessary.

-Producing and planting of trees and shrubs: Trees and shrubs provide shade, keep humidity and stabilize the soil, therefore help to prevent erosion. However, trees like Eucalyptus, Cypress and Gmelina should not be planted near a water source because they take a lot of moisture and might cause water shortage. Eucalyptus has to be removed to a distance of at least 50 metres from the spring.

-Sowing grass: Grass grows faster than trees and have a very dense root system which stabilizes the soil very well and helps to increase infiltration.

Catchment protection also include soil-conservation like making contour bunds, infiltration ditches, etc. **For suitable trees, grasses and legumes for Catchment Protection, see Annex 7.**

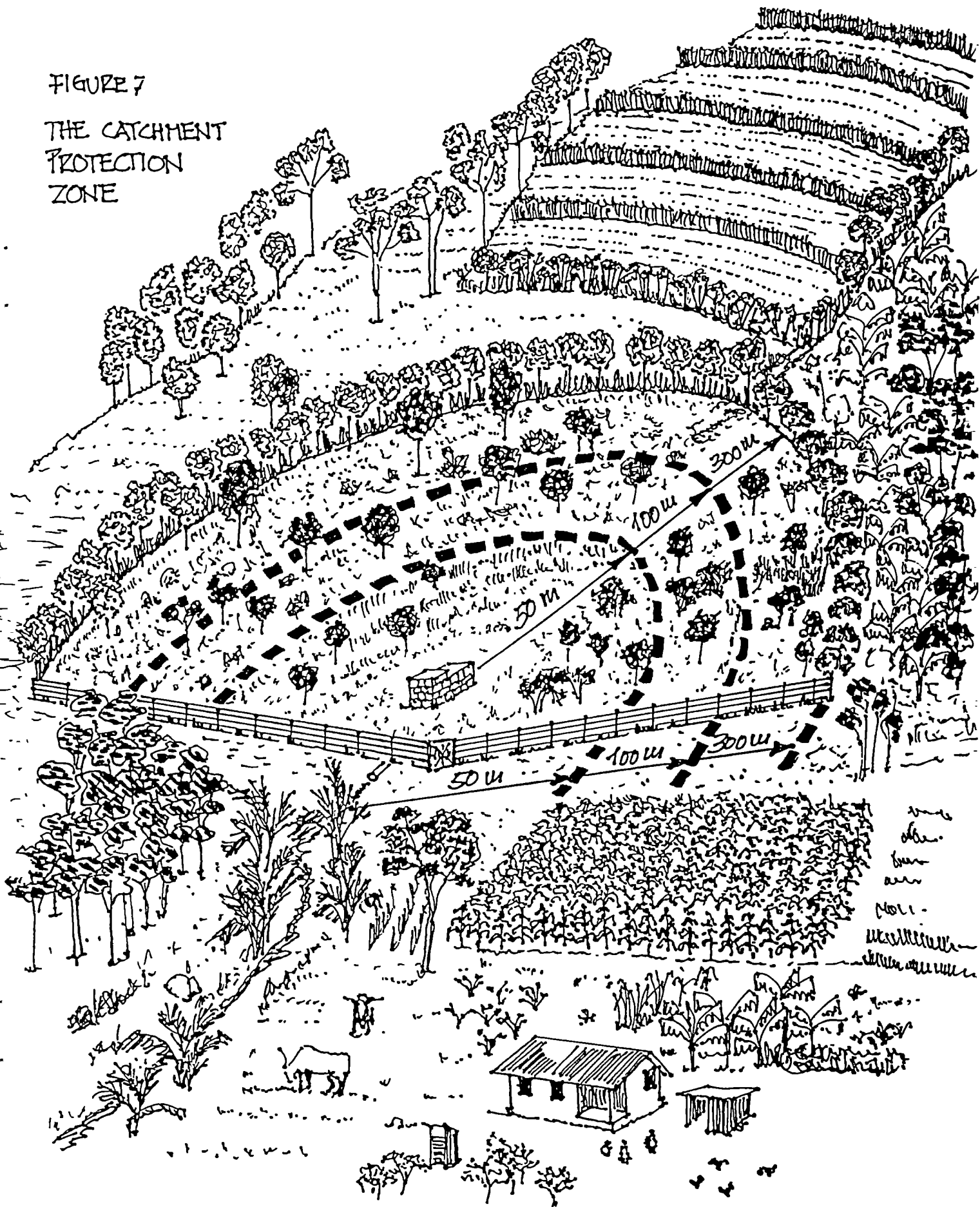
Fig. 7:

THE CATCHMENT PROTECTION ZONE:

(See next Page)

FIGURE 7

THE CATCHMENT
PROTECTION
ZONE



Annex 1, Plan of Action

The WMC elaborates an annual Plan of Action in which it plans what to be done, who does it and how ?

Routine Control and Maintenance 1993

NO	STEP	TASK	WHO	DATE
1.	Catchment	Checking of farming, Burning, Erosion Fencing, Leakages, Cracks.	Caretaker MC	April & Nov.
2.	Control Chambers	Cleaning Checking Cracks, doors etc.	Caretaker MC	Jan. July
3.	Storage Tanks	Clearing, Cleaning Washing.	Community Caretaker	Nov. June
4.	Pipeline	Check Indicat. Pillars leakages, Erosion, Farming etc..	Caretaker MC	Feb. & Oct.
5.	Standpipes Washplaces Soakaways	Cleaning-Draining " " " "	Community Caretaker Caretaker	Weekly " Jan.
6.	Sed. Tanks	Cleaning & Checking	Caretaker	Monthly
7.	Filters	Cleaning of sand Inspection of sand	Caretaker Community	Jan. Apr. July. Oct
8.	Quarterly Meetings	Plan for year act., collect. of fees etc..	Chairman/ Secretary	4 times a year
9.	Annual Report	Writing & Distrib. to the different quarters.	Chairman Secretary Treasurer	Nov.
10.	Maintenance fees/levies	Collection of maintenance fees from villagers/ private connection fee etc..	Finance Group	April Oct. Nov.

ANNEX 3

Example of an Annual Rate for Maintenance

1. Taxable population of village is 600 inhabitants. The annual rate to be paid to Development Associations per person is 2,000 FCFA.
The percentage given for maintenance is 20% per year.
20% of 2,000 FCFA is 400 FCFA per person for a year.
Therefore the yearly amount for Maintenance Committee given by the Development Association is 400 FCFA x 600 persons is 240,000 FCFA.
The 240,000 FCFA is now the maintenance budget for the year. This amount is paid to the Maintenance Committee.
2. For a water supply that needs major repairs the WMC can organize activities within the year to raise fund, such as dances, donations, levies etc..
Example: A levy of 500 FCFA per year is collected from every man in the village as a maintenance fee. With 300 men in the village, the maintenance fee will be, 300 men x 500 FCFA which is 150,000 FCFA.
This money is collected by the finance group of the committee at fixed periods, say twice a year.
3. **WATER DAY:** A village can organize a special day of the year only to collect money for the water in the village, calling it WATER DAY. All villagers shall be educated to know the importance of this day.
4. **PRIVATE CONNECTIONS:** Every individual, households, institutions ect. using water privately shall pay a token fee every year to be used in maintaining the whole water system.

EXAMPLE:

Schools with one stand pipe	= 5,000 CFA/year
Schools with WCs etc..	= 10,000 CFA/year
Health Centers with appliances	= 10,000 CFA/year
Hotels with 5 to 10 rooms	= 15,000 CFA/year
Farms with using water	= 10,000 CFA/year
Individual houses with appliances	= 5,000 CFA/year
Mission yards	= 5,000 CFA/year

The Finance Group of the committee calculates the rates and asks the consumers to pay the various amounts at a given time of the year. The maintenance fee shall be fixed according to the maintenance regulations which may recommend to install a water-meter for private connections in order to charge for the consumption.

ANNEX 4

Example of a Financial Record Income/Expenditure

DATE	DESCRIPTION	NO.	INCOME	EXPENDI- TURE	BALANCE
05/1/92	Rec. from Dev. Ass.		200,000		
25/1/92	Rec. from private conn.		25,000		
06/2/92	Bought GI pipes dia.1/2	20		100,000	
06/2/92	Paid Caretaker			25,000	
15/2/92	Bought taps dia.1/2	6		18,000	
17/2/92	Rec. from PTA Gov't Sch		10,000		
25/2/92	Rec. from Mbah yrly rate		5,000		
27/2/92	Paid trees catch.prot.			12,000	
29/2/92	Paid for cement			15,000	
29/2/92	Donation from women Gp.		18,000		
29/2/92	Transport, Caretaker			5,000	
TOTAL			258,000	175,000	83,000

Calculated by (Treasurer & Vice Secretary)

Approved by: _____

ANNEX 5

Work Report By Caretaker:

Period: From _____ To _____

DATE	WORK DONE	APPROVED BY & REMARKS
05/2/92	Changing of taps in Kango Olu, Manchong, Quarters. Inspection of Storage tank	Used materials from store. Bought 2 taps. Chairman.
09/2/92	Clearing of catchment with villagers. Inspection of control chamber.	Vice Chairman 9/2/92
11/2/92	Gave private connection to Mr. Achu Thomas	Work not finished need glue from Bamenda. Vice chairman 11/2/92
13/2/92	Private connection of Mr. Achu Thomas completed	Technical group to inspect work 15/2/92. Vice Chairman 13/2/92

ANNEX 6

List of Materials Used

DATE	JOB DESCRIPTION	MATERIAL USED	APPROVED BY & REMARKS
05/2/92	Changing of taps in Kango, Olu Manchong quarters	3 taps 2 taps 2 taps	Chairman 05/2/92
18/2/92	Repair of leakage in R.C.M. School	2 GI union dia.3" 4m dia.3" GI pipe 1 socked dia.3"	Chairman 25/2/92
25/2/92	Repairs of broken slabs in Olu quarter and at the palace.	2 bags of cement 1 dia.6mm rod	Chairman 25/2/92

ANNEX 7, Trees catchment prot. NW/W Cameroon

Trees, Shrubs, Grasses and Legumes for Catchment Protection NW/W Province Cameroon				
Altitude 1000 - 2000 m.a.s.l. Rainfall 1500-2500mm/an. No. dry month: 4-5				
Scient. Name	Common Name	Establish.	Cop.	Use and properties
TREES				
Albizia species	Albizia	seedling	yes	for grazing land, fire resistant
Aleurites monta.	Tung tree	seedling		
Caesalpina	Caesalpina	seedling	yes	thorny live fence
Calliandra	Calliandra	seedling	yes	AF specie, good in firewood prod.
Canarium schwei.	Black bushplum	seedling		local fruit tree
Cassia spectabilis	Cassia	seedling	yes	good for honey production
Cordia milleni	Cordia	seedling	yes	
Croton macrost.	Croton	seedling	yes	
Entada abyssinica	Entada	seedling	yes	for grazing land, fire resistant
Entandrophragma	White mahogany	seedling	no	
Erithrina species	Erithrina	cutting	yes	for live fence, fire resistant
Ficus	Ficus	seed/cutting	no	for live fence, fodder, fire res.
Gmelina arborea	Gmelina	seedling		Invader but good for live fence
Grevillea robusta	Grevillea	seedling	no	Shade tree, difficult to get seeds
Hurungana		seedling	yes	
Leucaena diversif.	Leucena	seed/seedl.	yes	soil stab., gr. manure, acid soils
Maesopsis eminii	Maesopsis	seedling		
Markhamia spec.		seedling		
Newbutonia		seedling	yes	rapid growth
Prunus africanus	Pigeum	seedling	no	preferred for bark (medic. use)
Raphia vinefera	Raphia	seedling	no	wine, baskets, furnitures, mats
Sorindeia species		seedling		
Spatodea campan.		seedling		
Trema orientalis	Trema	cutting		
Vitex species	Vitex	seedling		
GRASSES				
Bracharia ruzizie	Congo grass	seed/stol.		good fodder grass, dense cover
Cynodon dactylon	Giant star grass,	stolons		invader; dense cover, good stab.
Cymbopogon citr.	Lemon grass	stolons		planted on contour for soil stab.
Hyparrhenia	Hiperenia	seed		fodder, roof thatching, easy man.
Imperata cylindrica	Spear grass	seed		invader, indicates poor soil
Panicum max.	Guinea grass	seed/stol.		good fodder, grows on var. soils
Pennisetum cland.	Kikuyu	seed		good fodder grass, dense cover
	Elefant grass	seed		fodder grass, indicates good soil
	Sporo bolos	seed/stol.		fodder grass, suit. for hay
Tripsacum laxum	Guatemala grass	seed/stol.		good fodder, good on cont. bunds
Vetiveria	Vetiver	stolons		planted on contour for soil stab.
LEGUMES				
Crotalaria anagyr	Crotalaria	seed		rapid growth, dense cover
Desmodium	Desmidium	seed		dense cover, good fodder
Pueraria phaseol.	Kudzu	seed		dense cover, good green manure
Sesbania sesban	Sesbania	seed		soil stabil., fodder, on acid soils
Stylosanthes guia.	Stylo	seed		grows on poor, acid soils
Tephrosia vogelii	Tephrosia	seed		high green manure production

2/2, 14:01.94

