

# **Water, Sanitation and Hygiene Promotion Manual**



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# Water, Sanitation and Hygiene Promotion Manual

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# **Water, Sanitation and Hygiene Promotion Manual**

A training package for field officers and  
community volunteer leaders

## **Module 3**

### **Sustainability in WASH**

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# Module 3: Sustainability in WASH

## UNIT 1: OPERATION AND MAINTAINANCE

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### 1.0 Introduction

The aim of operation and maintenance is to ensure efficiency, effectiveness and sustainability of water supply and sanitation facilities. Operation and maintenance encompasses training on technical, management, financial and institutional aspects. The training on O&M is aimed at accomplishing specific project targets, capacity building purposes for project management and long-term sustainability of the project.

Technical skills of the community in O&M of the water and sanitation facilities should be improved through training of water and sanitation committees, delivering phased or staggered training packages where possible in collaboration with line ministries and other partners where appropriate.

Sustainability is the management processes that starts from planning stage of a project and depends to a large extent on the proper project identification.

Sustainability of a system/project depends to a large extent on effective and efficient operation and maintenance. Many factors and processes that contribute to sustainability of a system/project have a direct influence on operation and maintenance. The success or failure of a project largely depend more on the organizational structure (community) than on technical option or technology used.

### **Community participation /partnership in operations and maintenance**

Ownership and responsibility are the key prerequisites for sustainable operation and maintenance and therefore, participation of communities throughout the whole project cycle is essential. Participation is a way to motivate, make responsible and build the capacities of communities in their tasks and functions towards operation and maintenance.

### **The community factors which are likely to influence operation and maintenance as well as sustainability as a whole are:**

- Availability of technical skills to operate and maintain a service, and implement preventive maintenance activities and small and big repairs.
- Capacity and willingness to pay.
- Participation of all social groups in the community.
- Financial and administrative management carried out by a legitimate and organized community structure.
- The felt need for an improved service.
- Socio-cultural aspects related to water.
- Individual, domestic and collective behaviour regarding hygiene and sanitation.

**Note:** Public /private partnership can have an important role in the operation and maintenance of improved water supply and sanitation services. The private sector can operate, maintain, and manage the service under contractual agreements.

A system is said to have achieved sustainability when:

- It is functioning and being used.
- It is able to deliver an appropriate level of benefits (quality, quantity, convenience, comfort, continuity, affordability, efficiency, equity, reliability, health).
- It continues over a prolonged period of time (which goes beyond the life cycle of the equipment).
- Its management is institutionalized (community management, gender perspective, partnership with local authorities, and involvement of formal /informal private sector).
- Its operation, maintenance, administrative and replacement costs are covered at local level (through user fees, or alternative financial mechanisms).
- It can be operated and maintained at local level with limited but feasible external support (technical assistance, training, monitoring).
- It does not affect the environment negatively.

## **1.1 Requirements for O&M**

### **1.1.1 Institutional capability**

Both the agency responsible for water supply and the community receiving the water, need to be actively involved for the water project to succeed. The questions pertaining to this element focus on determining the commitment of the agency and community to operations and maintenance of the systems.

### **1.1.2 System operations and maintenance**

The key to ensuring effective equipment maintenance is to ensure that responsibilities are clearly defined and that maintenance personnel have the tools and skills to do their job correctly. It is also essential to schedule preventive maintenance and undertake other forms of maintenance when required.

### **1.1.3 Spare parts and supplies**

Many water systems fail because spare parts are not readily available to service equipment. Even the simplest water supply system requires a reliable source of supply for spare parts and other material needed to keep equipment in reliable operating condition. Numerous donors and diverse types of equipment have compounded the problem of spare parts and created the need for larger and diverse spare parts inventories. The necessity for a reliable inventory is more urgent in developing countries since some parts may need to be imported.

It is important that water groups understand that sustainable provision of spare parts is crucial for sustainable maintenance of water facilities and depends on demand and supply. The demand for spare parts depends on needs, costs and accessibility. It is therefore essential to promote private sectors and local dealers to ensure availability of spare parts. The supply of spare parts by spare parts dealers is mainly driven by:

- Marketing and sales points.
- Perspective on profits on the side of suppliers.
- Strategic issues relating to spare parts supply include:
  - Quality of spare parts available in the market.



- Approaches to reduction of spare parts needs, which can be achieved by a strong emphasis on preventive maintenance.

#### **1.1.4 Why logistics**

The questions concerning this element consider the need for transport and maintenance sheds dedicated to the maintenance function such as bicycle, motor bike to patrol the lines especially in cases where the maintenance role falls under a unit separate from that responsible for construction. A standard maintenance kit should be available and which may include basic items such as gloves, overalls, tables, wrenches, vices, shovels and wheelbarrows.

#### **1.1.5 Why finance**

Before a water project is funded, the planner should address two issues relating to the recurring cost of the system as follows:

How much will it cost to operate and maintain the system? And can the managing group afford this cost? If the answer to this question is negative, the project should be either redesigned (including the use of alternative financing) or abandoned.

#### **1.1.6 Why records**

Up-to-date and accurate records need to be maintained for all water supply Systems. The type of system determines the type and number of records and reports needed. For piped systems with a large number of electrically powered units, an automated information system may be appropriate. Records and reports provide:

- System control enabling responsible officials to know the operation status of the systems.
- O&M information for maintenance personnel.
- Equipment operating history.
- Information on parts and or supplies inventory.
- Minutes of meetings.
- Financial status reports/ bank statements.

#### **1.1.7 Human resources training**

On-the-job training of personnel for O&M should begin as soon as the project implementation starts. The CBO should facilitate and coordinate selection and recruitment of the personnel to be trained (balance gender and as much as possible women should be the majority). The contractor should train the local artisans to acquire basic skills necessary to carry out O&M. Ideally, every water point should be manned by a caretaker, who should have skills to undertake basic preventive/routine maintenance. A water point mechanic may be in charge of several water points, and should be more skilled to undertake major repairs, including overhauls where necessary. The necessary tools required for each of these artisans will be determined by the task and technology used.

However, if there occurs a breakdown in the service that the local artisans cannot rectify, the problem should be referred to the water utility (water service provider or water authority). Training should be a continuous process. Ultimately, the success or failure of a water supply will depend on the people who have the responsibility for operating and maintaining it.

## 1.2 Technical aspects

**Maintenance levels: - routine maintenance, preventive maintenance, corrective maintenance, overhaul on water points general and specific to one example e.g. hand pump specific to trouble shooting, steps in identifying faults and remedies.**

Maintenance deals with the activities that keep the system in proper working condition, including management, cost recovery, repairs and preventive maintenance.

- **Routine maintenance - to be undertaken by caretaker:**  
Maintenance work that is planned and done on a routine basis to maintain and preserve the condition of a system and restore it to an adequate level of service e.g. fastening of loose bolts, bearings and unclogging of drains.
- **Corrective maintenance - to be undertaken by mechanic:**  
Replacing/repairing something that has failed (such as replacing pump rods, replacing damaged valves, bearings etc).
- **Crisis/emergency maintenance to be undertaken by mechanic:**  
Maintenance undertaken only in response to breakdowns and/or public complaints, leading to poor service level, high O&M costs, faster wear and tear of equipment, and user's dissatisfaction.
- **Preventive maintenance to be undertaken by mechanic:**  
Maintenance, including tests, measurements, adjustments, and parts replacement, performed specifically to prevent faults from occurring. The care and servicing by personnel for the purpose of maintaining equipment.

For example the typical preventive maintenance repairs of a hand pump are:

1. Replace packing in hand pumps
2. Replace worn-out bolts and cotter pins
3. Replace worn or broken handles
4. Replace worn washers in the pump compression
5. Replace worn sucker rods
6. Replace pump cylinders (worn leathers)
7. Replace defective valves at watering points
8. Replace necessary fittings
9. Replace manhole covers
10. Tightening loose bushes, bolts, centralisers, handles and nuts
11. Checking tension on chain, pump rods

## 1.3 Community sources of funds

In financial management, the first concern is to identify the sources of funds, then how the funds should be managed to realize profit and invested wisely to generate more funds. The need to raise funds arises because in spite of the community's contribution in the project, the resources within the community are sometimes insufficient to finance the project. Resource constraint should never be a deterrent factor in the communities' pursuit of projects. This is because there are organizations, which are keen on providing funds for such projects provided that:

- The projects are within their field of activity.

- There is proof that the project is community driven and that it will help resolve a need that is highly ranked by the community.
- The community is committed to implementation of the project as evidenced by their contribution toward the cost of the project.

#### **What are the possible ways of raising project funds?**

1. Members' contribution (membership fee)
2. Water sales
3. Organizing fund raising campaigns
4. Well wishers and friends
5. Development agencies (donors)
6. Religious organizations
7. Charity organizations such as Lions Clubs, national charities and foundations
8. Secure loans from banking and financial institutions
9. From government related ministries such as; Constituency Development Fund, Local Authority Trust Fund and Water Services Board/Water Services Trust.

#### **1.4 Frequency of payment and mode**

Variable tariffs are denominated in monetary units per volume of water e.g., fixed tariffs are denominated in monetary units per unit time e.g., month. Since large parts of the costs of the community systems are composed of fixed costs, it makes economic and business sense to recover these costs through use of a fixed tariff and to recover operating costs that vary with the amount of water used with the variable tariff (sometimes called a commodity charge). Fixed fees are also attractive because they can stabilize revenue streams.

Fixed tariffs are not standard but they are becoming more common in the water systems of both developing and developed countries. Where they are used, their design is carefully considered to prevent excess financial burdens on smaller users.

Water supply tariff structures are important as they determine what consumers pay for their water and how the amount they pay changes with the amount of water they consume. In a metered water supply, the agency/ authority could charge three groups of consumers having different levels of service:

- |         |   |
|---------|---|
| Group 1 | Non-poor household with metered multiple-tap in-house supplies, |
| Group 2 | Poor households with unlettered yard taps, and,                 |
| Group 3 | Poor households in unlettered standpipe cooperatives.           |

Households in Group 2 would pay a minimum tariff based on a fixed percentage of the local monthly minimum wage and every household in Group3 would pay a nominal tariff based on a lower percentage of the minimum wage (e.g.12 percent). Social supplies to very poor households served by public standpipes would be free. The authority would know its income from Groups 2 and 3 and, knowing its total costs, could calculate how much it would need to collect each month from Group1 (and on what basis i.e., on an increasing or linear block tariff).

Connection fees would not be levied as these deter the poor and very poor from connecting; the fees would be included in the total costs and so effectively paid for by Group 1.

Determine the local feasibility of Group 2 households forming condominiums (Condominiums are buildings in which individuals separately own the air space inside the interior walls, floors and ceilings of their unit, but they jointly own an interest in the common areas that they share such as the land, lobby, hallways, swimming pool, and parking lot) which agree to pay for the installation of the condominial network, so that the authorities costs for the public network are reduced. Operational costs could be reduced if the condominium agree to be charged as a single entity, rather than the authority having to bill individual condominium members thus giving the condominium the responsibility of collecting payments from its members. The condominium could also do this

- weekly,
- fortnightly,
- or monthly, as it wished.

Arrangements should then be made by the authority to receive payments at the chosen interval even though it would only formally bill the condominium monthly.

Once the authority knows its costs (e.g., monthly loan repayment, monthly O&M costs, less any subsidies received), it can then determine how to recoup these costs equitably from its customers i.e., how much households in Groups 2 and 3 (and in Group 1 if these exist) should be charged (and this charge should then be expressed as a percentage of the local minimum wage). The authority would also have to agree with its customers how it should treat those who do not pay their bills (e.g., cut off the supply immediately or after 2 or 3 payment defaults). It may be sensible for the authority to collect payments only 10 times per year, rather than 12 (each payment then being 20 percent more than the actual monthly charge) in recognition of local needs (such as expenditures for the principal local holiday or festival and at the start of the school year).

## **1.5 Production costs, maintenance costs and future expansion costs of a water supply project**

### **Methods for calculating water supply tariffs**

The setting of tariffs for water supply should, as far as possible, reflect the actual cost of providing the service, including equipment replacement. By following this approach, the project will reinforce the idea that service comes at a cost, and put the management of the service on a more sound financial footing. Methods for calculating water user charges vary in complexity, depending on the level of sophistication of the system.

The following points should be kept in mind:

- Decide on the unit for charging: either per unit of consumption (e.g. per bucket or litre); or per unit of time or per consumption unit (e.g. per household per month). If the latter is chosen, upper limits to consumption may be established, beyond which a surcharge is applied (for example, more than 10,000 litres per household, then \$0.xx per 250 litres).

- Calculate O&M expenses. These expenses should be based on the most current information and updated regularly based on actual costs. They may be divided into “fixed” costs and “variable” costs, but should in any case include a provision for contingencies and equipment replacement.

**A checklist to estimate the expenses:-**

1. Wages for operator a month,
2. Cleaning of tanks and wells when necessary,
3. Pipeline maintenance,
4. Preventive maintenance and repair of pump set,
5. Procurement of chemicals,
6. Contingencies,
7. Replacement fund,
8. Operations and maintenance.

**Establishment of unit charges and policy:** Expense per household per month, should be established and probably translated to a daily charge under the following rules:

- O&M expenses.
- Households charges per day/per month.
- Increasing block tariff water charging. Every additional slab of water consumption will be charged more.
- Water tariff is to be paid throughout the year and is to be reviewed annually. To be revised as and when needed.

**Allow for flexible user charges over time:** Long-term sustainability depends on the capacity to adjust tariffs to reflect real costs. Also, by focusing attention on this issue, communities are forced to confront issues of cost effectiveness to achieve a desired level of service.

**For household connection systems, move towards applying life cycle costing formula:**

This involves a somewhat more sophisticated method than the above for estimating O&M cost as a basis for tariffs. While it estimates average annual costs of O&M and spare parts replacement, it also includes applying simple discount factors to depreciation, and if applicable, debt repayment.

**1.5.1 Basic guidelines for computing cost of water**

**Basic data to be considered**

1. Approximate population of households or communities to be served over a period of say one month.
2. The average consumption rate per household in the community.
3. The cost for operation and maintenance which should cover the following:
  - Salary for the caretaker.
  - Transport cost for banking.
  - Administrative costs which include purchase of stationery.
  - Other community support services e.g. exchange visits for water committee, assuming this has to be planned for well in advance.
  - Purchase of spare parts and hire of artisan to do replacements.

4. Cost of water from the service provider (say National Water Corporation).

The guiding principles should be putting a cost to water that caters for all the local needs by the water committee while ensuring that water bills on monthly basis are paid for promptly. It's important that the cost of water is at a price which the most disadvantaged can afford.

In circumstances where the price of water limits access to the disadvantaged members of society, it is essential to review other costs that bring about the high cost per litre of water. In our case one may want to revise downwards the salary of the caretaker, administrative costs, etc.

### **1.5.2 How to finance major repairs**

A major issue is that funds for major repairs and replacements have to be available on a given moment. Although the fees collected meet all expenditures for the operation, maintenance and small and medium repairs, it is not possible to predict when major repairs will occur.

There are two main options to overcome the problem:

- To collect money for this aim and keep it separately from money for the foreseen operations.
- To have access to credit for necessary investments.

The advantage of option one is that, funds are readily available since they are in the hands of the beneficiaries. An inherent risk is that these funds may be used for other purposes especially in environments of short term planning with no culture for planning for long term expenditures. In some cases, the danger of embezzling these funds can not be excluded. The availability of funds at a given moment is therefore coupled with the likely difficulties of foreseeing the exact time that these funds would be needed.

The advantage of option two is that, it would guarantee the availability of funds at any moment at the quantity needed. It is however questionable, whether banks or other credit organizations would give credit to small and mainly poor communities for investment in installations seen widely to be more of a social than a productive character.

The challenge for the future is to establish systems which could guarantee a real self-financing of WATSAN schemes and thus achieve long-term sustainability.

## **Working out of unit cost**

### **Example 1**

**Assuming a month of 30 days.**

- 1) Total water consumed per month = 100 households x 5 persons x 30 litres per day x 30 days = 450,000 litres.
- 2) Other costs for the month are:

- Salary for caretaker	30,000
- Administration costs	20,000
- Office rent	45,000
- Maintenance and spare parts	15,000
- Banking costs for treasurer	08,000
<b>Total cost UG Shs</b>	<b>118,000</b>

### Cost of water

Total monthly consumption is 450,000 litres which is equivalent to 450 Cubic Metres (1,000 litres is equal to 1 Cubic Metre).

Therefore,

0-10 Cub M (10 CubM x200)	=	2000
11-30 Cub M (20CubMx 300)	=	6000
31-50 Cub M (20 CubMx 500)	=	10,000
51-100 Cub M (50 CubMx700)	=	35,000
Balance is therefore (450-10-20-20-50)	=	350 CubM
Hence price is 350 CubMx900	=	315,000
<b>TOTAL bill due</b>	=	<b>368,000</b>

Total expenses = UG Shs. 368,000 + 118,000  
= UG Shs. 486,000.

The argument now is that we can sell 450,000 litres to our clients and also have expenses totaling UG Shs. 486,000.

In order to recover the expenses from the sale of water, The unit cost per litre of water is therefore UG 486,000 divided by 450,000 litres = 1.08 Uganda Shillings per litre.

Then, if the standard sale container is a 20 litre jerrican, then the correct price per jerrican is (1.08x 20 litres) which is equal to 21.6 shillings per jerrican.

In practice though, a fully filled jerrican, is actually 22 litres and not 20 litres. This means that you need to factor this error margin by further multiplying the cost per jerrican by a factor of 22/20 =1.1.

It is also advisable to allow for wastage during sale which may occur through spills and leak-ages by a further 10%. Hence, realistic cost per jerrican = 21.6 x 1.1 x 110/100 for waste.

**Price for 1 jerrican = 21.6x1.1x1.1 = Uganda Shs. 26.136 Or approximately Uganda Shillings 30.0**

#### Issues to consider:-

- Is this price affordable to the most poor?
- Is it realistic and comparable to other neighbouring kiosks to avoid being a source of conflict?
- If yes to all these, then go ahead and fix it as a price.

If not, particularly to the first question regarding affordability to the poor, then reconsider your expenses and reduce them downwards!

**NB:** To make the illustration simple, some considerations in tariff setting like annual inflation rate, salary increases etc over time have not been used in this example.

## Example 2

The system serves 1140 families, and each family has an estimated population of 5 people. The system is a simple treatment plant with filtration and chlorination.

The tariff to be set is intended to recover all costs, and also constitute a fund that will help to cover for both major and minor replacements costs. The system costs are as follows.

Equipment	Life span in years (estimated)	Yearly O&M costs, as % of the initial investment cost	Investment cost in Kshs
I	II	III	IV
Drilled well	20	1	2,000,000.00
Distribution pipes (PVC)	15	2	500,000.00
Reservoir	25	1	1,100,000.00
Supply pipes (PVC)	15	1	600,000.00
Distribution network	15	1	500,000.00
Chlorinator	10	1	100,000.00
Filtration unit	15	2	900,000.00
Electro-mechanical plant	15	5	1,600,000.00
Others	15	1	150,000.00
		<b>Total</b>	<b>7,450,000.00</b>

### Facts

Engine: 45 HP, running 8 hours per day  
 Discharge from outlet: 10 litres per second  
 Lubricants: 2 litres/Month, price Ksh 150 per litre Sodium Hypochlorite/Chlorine 0.5mg/litre, price Ksh 120 per Kg

### Price of energy

From 1 to 6000 KW Ksh 15/KW  
 From 6001 to 15,000KW Ksh 20/KW  
 From 15001 to 35,000KW Ksh 25/KW

### Salaries

Daily salary operator Ksh 500  
 Daily salary of assistant Ksh 300  
 Daily salary security guard Ksh 250

1 HP = 0.745KW

1 person consumes 50 litres per day



	<b>Tarrif setting</b>		
	<b>Tariff setting for 30 day working period</b>		
<b>Cost of Item</b>	<b>Formular</b>	<b>Calculations</b>	<b>Result in Kenya shillings</b>
<b>Amortization/investment cost recovery per month</b>			
Drilled well	(IV/II)/12	8333.333333	8,333.33
Distribution pipes (PVC)	Distribution pipes (PVC)	2777.777778	2,777.78
Reservoir	Reservoir	3666.666667	3,666.67
Supply pipes (PVC)	Supply pipes (PVC)	3333.333333	3,333.33
Distribution network	Distribution network	2777.777778	2,777.78
Chlorinator	Chlorinator	833.3333333	833.33
Filtration unit	Filtration unit	5000	5,000.00
Electro-mechanical plant	Electro-mechanical plant	8888.888889	8,888.89
Others	Others/sundries	833.3333333	833.33
Energy costs per month	(HP * 0.745* hours per day * 30 days * price per KW	8046	-
	1- 6000 KW	6000 x 15	90,000.00
	6001-15000KW	2046 x 20	40,920.00
Lubricants costs per month	2 litres/month * price per litre	2 x 150	300.00
Treatment costs per month	discharge * 3600 * hours per day * 30 days *mg/litre / 1000000 * cost per Kg	10 x 3600x 8 x 30 x 0.5 /1000000 x 120	518.40
Personnel costs	Salary/day x 30 days for each of the personnel	(500+300+250) x 30	31,500.00
Maintenance costs			
Drilled well	Sum of (maintenance % * investment cost) / 12		1,666.67
Distribution pipes (PVC)			833.33
Reservoir			916.67
Supply pipes (PVC)			500.00
Distribution network			416.67

Chlorinator			83.33
Filtration unit			1,500.00
Electro-mechanical plant			6,666.67
Others			125.00
<b>Total O&amp;M costs/ month</b>			<b>212,391.18</b>
Contingency fund (10%)			21,239.12
Total cost per month	Total O&M + contingency fund		233,630.30
Tariff / family / month	Total cost per month/no of families		204.94
Tariff / person / month	Total cost per month/no of people		40.99
Price per 20 litres	Tariff /person /month divided by number of jerricans in a month=75		0.55

**Its important to note the following:**

1. That in a calendar year consumption varies by season.
2. The number of people able to pay and willing to pay must be established.
3. Inflation rates over time.
4. The population figures are not constant over life span of project.
5. Cost of consumables, personnel vary on annual basis.
6. Annual adjustments need to be made based on 2, 3 , 4 and 5.

**Have you noted the following:**

1. System produces 288, 000 litres but that only 285,000 litres are sold.
2. In practice >than 20 litres is sold for each jerrican (rinsing, overflow).
3. To cater for these losses, make adjustment, (110% of 0,55)= 0,6

Not much difference?

## 1.6 Sanitation

Requirements for hygienic sanitation facilities

- **Purpose of sanitation:**

To contain and process human solid and liquid waste to a level where they are safe enough to be released into the environment.

A toilet facility should be able to control odour and prevent the ingress or egress of disease vectors. It should prevent the release of faeces and wastewater into the environment before it is safe to do so.

Sanitation facilities should be affordable to build and maintain and should provide privacy to users. They should also provide convenience and confer status to users and in some cases, allow safe recovery of the resources contained in the waste such as soil fertility, animal feed and energy.

- **Guideline on cleaning frequency for domestic and public latrines**

Cleaning domestic latrines: cleaning materials; soap, water, gloves, ashes, brooms and a scrubbing material. The latrines should be cleaned at least once a day.

Materials for cleaning public latrines: Soap, water, gloves, gumboots, facemask, brooms and a scrubbing material. These facilities should be cleaned at least once in three hours though it should depend on the number of users.

Routine maintenance schedule should also be put in place to check on the blockages, leaks and removal of foreign bodies (e.g. pieces of blocks, high density paper, etc) from the drop pits or the wash pans.

- **User fees for communal latrines**

In order to set fees for communal latrines, the community should have records of costs of maintenance and of consumables (e.g. amount of water, soap, sanitary towels etc) as well as the salaries paid to the caretakers of the latrine. Costs are then divided against the anticipated number of users to arrive at a unit rate per use as illustrated in the tariff computing section on water.

## 1.7 Cost recovery

In order to recover water project costs, groups should have records of costs, such as investment and recurrent costs. It should be clear how much the community is to contribute and the amount from other supporting organizations e.g. support from Non-Governmental Organization(s). Cost recovery is important as it acts as a benchmark of estimating whether the group is making profit.

### 1.7.1 Costs in water project

Water is an economic and social good, and this service has to be paid for, since it has costs. In addition, certain financial issues have to be addressed early in the project design, such as: should all costs be covered? Who is financially responsible? How to organize financial arrangements. The major costs in a water project include;

**a) Investment costs (capital) – which involve costs for:**

- Pre-feasibility study, project design, social work.
- Equipment, materials, parts and tools.
- Construction costs.
- Human resource development (training).
- Institutional capacity building.
- Sometimes capital costs include the metering and connection costs.

**b) Recurrent costs (operation and maintenance)**

- Materials (consumable chemicals, fuel, tools, spare parts and equipment).
- Works personnel, (operation, maintenance, routine preventive maintenance, routine repairs, unanticipated repairs, construction for minor rehabilitation).
- Management personnel (planning, supervision, financial management, administration, monitoring).
- Follow-up (training support, technical assistance, institutional strengthening, monitoring and evaluation)
- Financial costs (interest, depreciation, exchange rate variations, inflation).
- Environmental costs (water source protection and conservation, wastewater treatment)
- Other costs (transport, unaccounted for water due to leakage in the system, bad administration and vandalism if not prevented become a cost to the community).

**c) Factors that affect cost recovery**

• **Technology selection**

Appropriate technology selection is a key factor in sustainable cost recovery. In deciding on water and sanitation technologies, communities should consider; technology that will not incur high operation and maintenance costs and is accepted by all users (gender sensitive). Communities should be aware of the financial implications of choosing a particular technology.

• **Community aspects**

The demand by and the participation of the community are key elements that influence the community's willingness to assume financial responsibility for the system. However, the issue of paying charges should also be examined. Other matters for consideration include the availability of materials and spare parts within the community and availability of skillful artisans and the price of their interventions. It is also important to consider how the community is organized and how responsibilities are distributed between men, women and youth.

• **Management options**

The management system chosen for operation and maintenance can directly influence the way cost recovery will be organized. For instance, the water supply system can be managed by a village water committee, an inter-village association, a private person or firm operating under a contractual arrangement, or by a private organization. Each of these bodies will have different interests and capacities, and will determine the rules for managing the finances accordingly.

- **Government policy**

Governments should plan through water authorities/bodies to introduce subsidy policy. The subsidies could be in two types: to subsidize access to water and sanitation services and to subsidize consumption of water. Access subsidies deal with capital (investment) costs, while consumption subsidies are on going and cover recurrent (operation and maintenance) costs. Community groups should liaise with water authorities /bodies and inquire which subsidy they can get.

## **1.8 Factors to consider when setting tariffs**

Water availability and quality may both be highly seasonal. During the dry season, the urban poor face higher water prices, while the rural poor face longer treks for lower quality water.

### **a) General guidelines on tariff setting should**

- be simple and easy for customers to understand;
- produce a revenue stream sufficient to cover the cost of providing service;
- provide a steady revenue stream that can be relied upon to pay long term debts and obligations;
- discourage inefficient use of resources, including water resources;
- support investments and operations that provide high quality service to customers;
- support investments and operations that protect the environment;
- provide "affordable" service to customers; and
- reflect the different costs of providing service to different customers.

The purpose of water systems is to efficiently provide safe and reliable drinking water and wastewater services on a sustainable basis. Tariffs policy, then, must give highest priority to providing a revenue stream that meets these minimal requirements. In the context of developing economies, tariff policies that provide a sustainable level of the most basic services are a pre-requisite of tariff practices that support improving environmental protection more generally.

### **b) Mitigating the social effects of cost-recovery**

- The most commonly used mechanisms to support the poorest customers include introduction of block tariffs or/and assistance programmes.
- Block tariffs: services up to a certain threshold are provided at a low cost or no cost. Consumption above this point is charged at full cost. It enables all consumers to have access to the service, and it stimulates savings of service usage. Nevertheless, this system requires a well developed metering system, which is not always the case in the SEE countries. Moreover, the experience has often been that any preferential block, like many local preferences of different types, soon becomes extended to more and more customers and the revenue stream of the system is eroded. Block tariffs cannot generally be regarded as a "best practice" without substantial qualification.

### **c) Tariff setting considerations**

#### **Social**

- Tariffs should be equitable and affordable. The amount individual users pay for services should generally be in proportion to their use of that service.
- Tariffs must provide access to basic services for everyone including poor households. They must ensure the extension of services to all.
- Tariffs must provide for cross-subsidization of the poor where necessary and feasible.
- Poor households must have access to at least the minimum basic services.
- The tariff structure and process should be simple and easy to implement.

#### **Economic**

- Tariffs should compare relatively well to other tariffs in the same industry, i.e. they must be relatively cheaper than, or at the same level with, tariffs in other municipalities.
- Tariff setting should be seen as a tool that positively influences microeconomic input costs facing businesses.
- Tariff setting should support the macroeconomic policies of the country; and
- Tariffs should incorporate the visions, strategies and economic policies of the country.

#### **Financial**

- Whenever feasible, the tariffs should be cost effective and cost reflective.
- Tariffs must reasonably reflect the cost associated with rendering the service, including, operating, maintenance, administration and replacement.
- Tariffs must be linked to unit costing and efficiency improvements.
- All subsidization and cross-functional subsidization should be transparent. The extent of subsidization and cross-functional subsidization of tariffs for poor households and other categories should be fully disclosed.
- Tariffs should promote sustainability of service provision.
- Tariffs should ensure the ability to extend new services; and where practical, the costs of extending new services should be recovered in the tariffs.

### **d) Addressing willingness to contribute/ pay**

Through the understanding of water as an economic good, it is evident that the poor are not different from anyone else in their "willingness to pay" for reliable water supply and sanitation services. In most countries, people are already paying for water and sanitation services, either in time, labor or money. Experience is also showing that, if asked, households are often willing to pay more for water and sanitation than the established rate. However, it is quite another matter to assess and quantify this willingness to pay/ contribute at the sub project level. Several methods are currently in use:

- Determine what people are currently paying under similar and existing schemes (Revealed Preference Surveys - copying from existing effective scheme tariffs)
- Carry out household surveys, using such methods as Contingent Valuation Method (CVM)
- Carry out focus group discussions on various services and payment options.

- Carry out awareness campaigns on the benefits of an improved water supply and sanitation system. Highlight the economic or human costs of not having the improved system.

## **1.9 Awareness about water quality to promote tariff acceptance**

Water related diseases and challenges are exacerbated by pollution from human activities that negatively affect water quality and can further lower water quantities available. These challenges will get worse in the future, as populations increase, over exploitation of current water resources and pollution continues, and the corresponding demands for more freshwater continue to be on the rise.

Definition of Contingent Valuation Method: It is a method of estimating the value that a person places on a good. The approach asks people to directly report their willingness to pay (WTP) to obtain a specified good, or willingness to accept (WTA) to give up a good, rather than inferring them from observed behaviours in regular market places.

The Contingent Valuation Method involves directly asking people, in a survey, how much they would be willing to pay for specific environmental services. In some cases, people are asked for the amount of compensation they would be willing to accept to give up specific environmental services. It is called "contingent" valuation, because people are asked to state their willingness to pay, contingent on a specific hypothetical scenario and description of the environmental service.

Pricing for agricultural water should be based on the quality of water released from such agricultural practices. A significant price cut should be introduced to encourage the reuse of treated wastewater and sanitation charges to industries and should vary according to the degree of pollution in the effluents. This pricing structure provides industry with a financial incentive to invest in pre-treatment of effluents.

To enhance use in relation to water quality to the community the polluter pays principle should be applied.

The polluter pays principle means that the person who uses water, and thereby pollutes it, must pay the cost of purifying the water before it is released into the environment.

Governments should make efforts to promote the reuse of treated wastewater by setting standards, adopting legislation for their enforcement, introducing controls and providing subsidies.

## **1.10 Institutional capacity for O&M**

### **1.10.1 Composition of a community water and sanitation committee**

A community water and sanitation committee can be defined as a committee that formulates by-laws, reviews information and develops recommendations for consideration by the water and sanitation user community. The committee also investigates, explores, discusses and reviews all available alternatives for the effective implementation and sustainability of a water and sanitation project.

A water and sanitation committee will, in the Red Cross/Crescent context comprise of the following Members chosen among various community sub groups based on age, gender and position in the community.

Chairman, Vice Chairman, Secretary, assistant Secretary, Treasurer, Committee Members, 2 Ex-officio members one from the Red Cross/Crescent and another from the Local Administration. The number of Committee members with voting rights, can vary from either nine (9), eleven (11) to thirteen (13). The percentage of women in the committee should be a minimum of thirty (30) percent.

### **1.10.2 Management roles of the stake holders in community water and sanitation projects**

#### **a) Roles of the user community**

- Selection and removal where necessary of water and sanitation committee including the caretaker.
- Provide funds for the purchase of tools, equipment and materials for the caretakers.
- Fencing the water source and drainage works.
- General cleanliness at the water source.
- Payment of funds for operations and maintenance of the hand pump/water source.
- Attend meetings related to operations and maintenance.
- Make by-laws to govern use of the water source.

#### **b) Roles and responsibilities of a water and sanitation committee**

Water and sanitation committees are expected to:

- Provide a regular and effective forum for the exchange of ideas and information concerning regulatory issues in water and sanitation. The Committee formulates by-laws, reviews information and develops recommendations for consideration by the water and sanitation users.
- Serve as an integral working part of the water and sanitation operations.
- Serve as an excellent way to thoroughly investigate, explore, discuss and review all available alternatives.
- Demonstrate proper use of the water and sanitation facilities.
- Promote hygienic practices through teaching villagers to understand and appreciate advantages of safe water supply and sanitation systems.
- Maintain system functioning, proper book keeping and ensure proper documentation.
- Establish flat or metered rates for water supply and sanitation services.
- Collect and retain fees.
- Pay for operation and maintenance with the collected fees.
- Order and purchase of needed equipment at agreed prices from the appointed agencies.
- Request the services of the appointed agency including the purchase and provision of major materials/spare parts.
- Handle conflicts in a reasonable manner to serve the differing parties.



**c) Roles of the caretaker**

The role of the water source caretakers (who are members of the water and sanitation committee) will be to:

- Mobilize people to improve on sanitation and hygiene and promote the safe water chain.
- Prevent children from playing at the water source and keep away animals from it.
- Ensure that the water source environment including the drainage and the soak way is kept clean. Ensure that the water source is fenced, preferably using a live fence.
- Carry out preventive maintenance on the hand pump / source mainly by greasing the chain and tightening the bolts.
- Keep a diary/ occurrence book.

**d) Roles of the extension/field officer**

The extension/field officer will be responsible for the coordination of the communities by:

- Giving advice on water sources especially on environment hygiene.
- Facilitating users committees to implement hygiene education, which will enhance hygienic use and appropriate operation and maintenance of water sources.
- Facilitating the selection of water and sanitation committees.
- Mobilizing the community to raise maintenance funds (for purchase of spares, remuneration of hand pump mechanics, purchase of grease, fencing, purchase of spanners etc).
- Accelerating the process of selecting and sponsoring Hand Pump Mechanics (HPM) for training and follow up on carrying out of preventive maintenance.
- Carrying out water quality monitoring and giving advice on water sources when required.
- Carrying out quality control of repairs/rehabilitation of water sources by HPM and contractors.
- Advising communities on tariffs.

**1.10.3 Community training requirements for water and sanitation projects**

**a) Care takers training requirements**

The training should include:

- General community awareness on water and sanitation, and related issues, including providing information packs and teaching aids.
- Operations and maintenance specialized training of water source care (technicians, plant operators etc.)

**b) Hand pumps /volunteers operators (system management)**

- Training of community support personnel. Creative solutions are required to produce a cadre of development support workers who are equipped with a balanced set of both community organization skills and appropriate technical skills.

- Training of Local Water Committees (LWC) in the principles of democratic governance and public office, a basic understanding of water and public health, administrative skills, conflict resolution skills and necessary technical skills.

#### **1.10.4 Examples on possible by laws for a WatSan project.<sup>1</sup>**

Water and sanitation facilities in these by laws are referred to as:

- 1.1 Water sources, i.e. hand pumps.
- 1.2 Latrines, these include community latrines, emergency latrines, and bathing stations.
- 1.3 Compost fences.
- 1.4 Dish racks.
- 1.5 Clothe lines.
- 1.6 Hand washing facilities.
- 1.7 Laundry stations.
- 1.8 Water storage facilities, e.g. water tanks.
- 1.9 Drainage and general environment.

#### **1.1 Water By-laws sources**

- No person is allowed to enter into the well fence with shoes.
- No person is allowed to enter into the well fence with uncovered hair.
- Only one person is allowed within the well fence at a time.
- Children under the age of six (6) are not allowed to fetch water from the pump.
- No person shall deposit any unwanted materials in the fence or shall hang any form of clothing on the fence.
- No animal is allowed within the well fence.
- No person shall launder, wash utensils or bathe within the fence.
- No person shall cause any damage to the pump or the fence.
- The fence shall be closed after use.

#### **1.2 Latrines**

- No person is allowed to dump or defecate in any other place other than in the latrines provided.
- No person shall urinate indiscriminately in the environment.
- All latrines must be covered when not in use or after use, except for VIPs with vent pipes.
- No animal is allowed in or close to the latrines.
- No person is allowed to use the latrine without appropriate cleansing materials such as paper, a piece of clothing or water.

#### **1.3 Compost fences**

- No person shall defecate in or around the compost fence.
- No person shall deposit any garbage close to or in the compost fence.
- No person shall cause any damage to the fence.
- Any compost fence that is filled shall be covered with soil and a new one shall be provided.

<sup>1</sup>. Cadmus Group, et. al. A Study of Best Practices in the water and wastewater sector for the Ontario Super Build Corporation April, 2002.

#### **1.4 Dish racks**

- Shall be used for keeping dishes and utensils only.
- No person shall spread clothing or anything else on the plate rack.
- No person is allowed to use any plate rack to display and sell items.
- Plate racks must be constructed close to the cooking places.
- No person is allowed to sit on the plate racks.

#### **1.5 Cloth lines**

- No person shall spread/dry clothing on the bare floor, grass, rooftop or any other place except on the clothes line.
- No person shall damage or cause damage to any clothes line.
- No cloth line shall be used for any other purpose than hanging cloth.

#### **1.6 Hand washing facilities /stations**

- Only hands shall be washed at those stations.
- No person shall wash his/her feet, clothing etc at these stations.

#### **1.7 Laundry stations**

- All persons shall launder their clothes only at the laundry stations.
- No person shall urinate or defecate around the laundry station.

#### **1.8 Drainage and general environment**

- No person shall deposit any garbage in the drainages.
- No person shall obstruct or cause blockage to the drainage systems.
- Every household is responsible for its own environment, adjacent street and the drainage gutter.

#### **1.9 Water storage facilities fines and penalties**

Any person violating these by-laws shall be subjected to the water and sanitation Committee and the community leaders who shall deliberate on the violation committed and will take the responsibility to levy fines and determine, in collaboration with the community management agency, the type of community work assigned to violators of these laws.

### ***1.10.5 Minimum training requirements***

#### **Caretakers training**

The caretakers should be trained in:

- Operation of the equipments.
- Preventive maintenance; making basic repairs and cleaning the system, checking pipe coverings and basic book keeping.
- Identification of major problems of the system.

Extension/Field maintenance worker:

- Design and operation of the equipment.
- Preventive, routine and corrective maintenance; repairs and cleaning of the system, checking pipe coverings.
- Identification and repair of major problems of the system.

- Book keeping and ordering of spare parts.
- Monitoring and evaluation.
- Reporting and documentation.

**Note:** It is important to select a person who was involved in the project during the construction as the caretaker, since such a person already knows how it works. Women should be given equal chances since they are less likely to move from the community and they have a direct influence on the water and sanitation habits of their children.

#### **Community water and sanitation committee training needs**

- Importance and needs of systems operation and maintenance.
- Importance of book keeping/ financial management.
- Reporting and documentation.
- Monitoring and evaluation.

### **1.10.6 Financial management**

Financial management involves taking decisions concerning the acquisition, financing and management of group finance (monetary as well as fixed and current assets). Financial management functions like a vehicle, which if not well maintained and serviced regularly leads to non-operation. Likewise, if there is no strict financial control a community group will crumble. Financial management utilizes a number of tools, such as:

- Planning that must precede any action. Planning uses the tools of budgets and cash flows.
- Organizing (e.g. financial records) which involves coordination. Activities and responsibilities to be undertaken are clarified.
- Controlling (e.g. ordering, auditing,) to ensure checks and balances. Controlling is essential for proper resource utilization and maintenance.
- Monitoring, that is ongoing and systematic to compare actual performance with plan. Budget reports and financial statements are used as tools in monitoring.

One of the responsibilities of group leaders is to solicit / source for funds and manage the funds in an efficient manner for the benefit of all group members. It is therefore important for the leaders to have basic knowledge and skills in financial management. Community group leaders should know more about financial management because:

- Group activities involve money. This includes money generated from members' subscription fees and income generating activities, money that the group may borrow and funds given by development agencies. Because of this, the leaders must know how to keep records of the money given.
- Group members need to know what is happening to the money they contribute and the profits of the group's projects. They may also want to know the amount of loan that the group obtained and the balance outstanding. Leaders can only respond promptly to such questions and avoid speculations if they have the records ready. For this reason, the leaders must have accurate group's financial records.

- To assess the group's performance and to plan ahead for the group activities, financial records are needed. It is the leader's responsibility to prepare such records: hence they must know how to do this.
- Development partners and lending institutions, which may wish to work with groups, will require financial records to be kept. Leaders must therefore be in a position to produce such records whenever they are called upon to do so.

### **Simple book keeping**

Bookkeeping is defined as the keeping of financial records for a group or any kind of organization. It is an art that the group leaders must learn for the following reasons:

- It enables the treasurer to keep an updated list of money collected and paid.
- It facilitates group leaders to plan for group activities;
- It instills financial discipline on leaders and group members:
- It makes it easy to extract financial reports for submission to donors or banks whenever the group needs to raise money from these sources.

Below are examples and these may vary from one community to another based on needs.

#### **a) Receipts**

A receipt may be defined as a document to evidence that money has been received. Receipt books – from where a receipt (one leaf) is issued are numbered (serialized) systematically in an ascending order. Similarly, issuance of receipts must follow these numbers systematically without skipping some receipts. Printed receipt books can be purchased from a bookshop, to differentiate a group receipts from others. Each receipt must have the groups stamp on it.

Possible sources of cash receipts in a group include:

- Sale of goods (water).
- Members contribution (monthly or annual subscription).
- Groups contribution in case of a community project.
- Loan from lending financial institutions.
- Grants from development organizations (NGOs) for a specific activity.
- Sale of a fixed asset.
- Debtors paying what they owe the group.

For money received from any of the above sources, whether by cheque or cash, a receipt must be issued from the group's receipt book and its duplicate retained in the book. Similarly, a receipt must be received and filed for all payments by the group to other parties.

Payment may be made in respect of:

- Purchase of goods (office stationery).
- Purchase of a fixed asset (piece of land to erect water kiosk).
- Payment of loan interest to a lending institution.
- Payment of dividend (shared profit to members).
- Payment of loan to a bank.

All payments must be sufficiently supported by documents to show that the goods or services being paid for were requested by the group and that they have been received, are of the requested quality and quantity, and the price is right.

#### **Control measures**

- In each receipt, the name of the group must be pre-printed on the receipt or a rubber stamp used where the name is not pre-printed.
- Receipts must be serially numbered.
- There should be only one receipt book used in a given time.
- There should be proper confirmation for material and the amount in figures should be the same as the amount in words.
- Receipt should be issued immediately money is paid.
- Money received should be banked as soon as is practical.

#### **b) Cheque book**

This is a special booklet printed and issued by a bank to anyone who has money / account with them, so as to authorize payment from their account. The cheque book is serially numbered and each leaf has space for; date, amount, name of person / group to be paid, amount to be paid in words and Signature.

A cheque leaf consists of two parts:

- Counterfoil – remains with the owner in cheque book.
- Actual cheque is removed and presented to a bank for payment.

#### **Control measures**

- Apply for new cheque book on time so that payments are not delayed.
- Have one cheque book from the bank at a time.
- Make sure amounts in words agree with amounts in figures.
- Avoid making alteration on the cheque.
- Use cheque number as document reference and not date or amounts.

#### **c) Order form**

Order form is a document which is used to order for goods which a group has decided to buy. The order form is normally filled in duplicate; the original copy is sent to the supplier while the duplicate is retained in the group file. A printed order book can be bought from a bookshop.

#### **d) Delivery note**

Delivery note is a document to certify that goods have been delivered. Once goods are received, the representative of the group, usually the person in charge of the store signs the delivery note in duplicate as a sign that goods have been received as per the groups order (requested quality and quantity). The original note is left with the store person while the person delivering the goods goes with the duplicate.

**e) Invoice**

An invoice is a document used to demand payment for goods or services delivered. In the case of goods, it usually accompanies the delivery note. The supplier should quote both the order and delivery note numbers in the invoice as a reference point.

**f) Payment voucher**

After the treasurer ascertains the genuineness of the payment about to be made, he/she raises a payment voucher attaching the necessary supportive documents. The voucher is taken to the chairperson and secretary for signature and authority to pay.

**g) Petty cash**

Petty cash is the amount of money the treasurer is allowed to keep for meeting emergency and minor group expenses. Each time payment is made from the petty cash, a petty cash voucher must be drawn. The person taking the money must sign to indicate that he has received it.

**h) Cash book**

Cashbook is a record book in which cash received or cash paid out is recorded. Transaction may be in form of cash or cheque.

Guidelines for posting a cash book.

Date:	Date when the receipt or payment was done.
Details/Particulars:	The name of person or firm from whom the money is received or to whom the money is paid.
Receipt No:	The number of receipt (in case of all receipts) and the payment voucher number (in case of all payment).
Cash in	The amount of money received in cash.
Cash out	The amount of money paid out in cash.
Balance:	The difference between cash in and cash out.
Bank in:	The amount of money deposited in a bank (whether in cash or cheque form).
Bank out:	The amount of money withdrawn from a bank account.
Balance	The difference between bank in and bank out.

**Caution:** All cash received must be banked intact and as soon as practicable. Once the cash in hand is banked, it should be recorded in the cash out column of the cash book and the same figure is recorded in the bank-in column of cash book.

**1.10.7 Guidelines for posting other incomes and expenses register**

Date:	The date the income is received or the expense is made.
Details:	The type of income to be indicated, e.g. interest income, or the type of expenses to be indicated, e.g. wages.
Receipt No:	The receipt number for the receipt issued when the income is received.
Amount:	The amount of income received.
Voucher No:	The number of payment voucher.
Amount:	The amount of expense made.

**Caution:** Record all incomes received, first in the cash book (in the cash-in column if the income received is in cash or in the bank-in column if income is in form of bank advice e.g. in case of interest on deposit), and then in the income column of the register for other income and expenses. Similarly, in case of expenses, record all expenses first in the cash book (in the cash-out column if expenses are made by cash or in the bank-out column if payment is made by cheque) and then in the expenses column of the register for other income and expenses.

### Register of meter reading and daily water sales record

These are essential if the group's major source of income is selling of water through water kiosks. To ensure all water sells are accounted for each water kiosk should have a meter reading register, which has the following format:

**Table 15: Water kiosk meter reading form**

Date	Opening reading (m <sup>3</sup> )	Closing reading (m <sup>3</sup> )	Daily total water consumption (m <sup>3</sup> )	Amount (Ksh)	Remarks

To calculate the daily total amount, the following formula should be used; calculate the difference between the opening and closing meter reading. Translate the cubic meters to litres by multiplying with 1,000 then dividing by 22 litres (because the standard water container used is the 20-litre Jerrican, the two litres surplus is the assumed wastage) then multiply by the cost of 20-litre Jerrican.

### Reconciliation of banking with sales form/ balance sheet

The community should also do a reconciliation to confirm that the treasurer banks all water sales at the end of every month.

Monthly Water Sales.

Name of CBO:

Month:

Table 16: Example of community monthly water sales	
Item	Amount (Kshs)
Total collections as per sales book	30,000
Total banking as per banking slip	30,000
Difference	Nil



**N/B. Any difference must be explained**

Prepared by ----- Date----- Sign-----

Checked by ----- Date----- Sign-----

**1.11 Accounting and budgeting**

**Accounting**

Accounting systems have been said to be the eyes of a business as they show its money and financial conditions clearly. Absence of such a system is one of the leading causes of group failure. Keeping regular records and accounts helps group members to;

- Know where money is spent and how much;
- Know the sales, turnover and how much money need to be collected;
- Know the actual cash position in business in a day, week, month and year;
- Plan and budget for future activities

**1.11.1 Budget preparation**

Budgeting is the process of preparing a statement, which shows anticipated income and proposed expenditure for a specified future period. Budgeting is considered important in group activities because:

- Through budgeting, a group devices strategies for achieving its goals by considering the cost of undertaking its activities and planning for funds to finance them.
- Budgets once approved act as a guideline for use of a group’s funds as planned.
- Budgeting reveals the shortfall in money required to finance group activities. This informs the group of the need to look for alternative funding in good time and therefore ensures that projects do not fail for lack of foresight.
- A budget is a financial plan of a project which estimates the project expected costs and stipulates the possible source of funds.

**Why budget?**

Budgeting helps group leaders and its members to;

- State group expectations (goals) in clear and formal terms to avoid confusion and to facilitate their attainability.
- Communicate expectations to all group members so that they are understood, supported and implemented.
- Provide a detailed plan of action for reducing uncertainty and for the proper direction of individual and group efforts to achieve goals.
- Co-ordinate the activities and efforts in such a way that the use of resources is economical and maximum.

A successful and sound budgeting system is based upon the following prerequisites

- Support from all members.
- Clear and realistic goals.
- Formulating realistic cost estimates.
- Appropriate and realistic strategies for raising funds.
- Clear plan of action stipulating what is to be done and what time.

### **Who prepares a budget?**

A budget should be prepared by a committee constituted of three people selected from the group members. Once the budget is prepared, it is submitted to the group members for scrutiny and approval.

### **1.11.2 Ledgers**

A ledger is a book containing a group of related accounts.

### **1.11.3 Registers**

There are different types of registers.

#### **a) Sales register**

Sales refer to the commercial disposal of goods or services in which a group deals with and were bought or produced with the intention of resale or sale. A sales register is a book where all sales, whether cash or credit are recorded.

Guidelines for posting a sale register

<b>Date:</b>	The date when the sale was made.
<b>Details:</b>	The name of organization to whom the sale was made.
<b>Receipt/invoice No:</b>	The receipt number (in case of cash sale) or invoice number (in case of credit sales) receipt or invoice issued.
<b>Amount:</b>	The amount of cash sale or credit sale.

**Caution** - A record of all cash sales should be made first in the cash book (in the cash-in column if the receipt is in form of cash or in the bank-in column if the money received is in form of a cheque) and then in the sales register. Credit sales should be recorded first in the debtors registers and then in the sales register.

#### **b) Debtors register**

A debtors register is a book where all credit sales are recorded.

Guidelines for posting the debtors register

<b>Date:</b>	The date of the credit sale.
<b>Name of debtor:</b>	The name of person or organization to whom the goods were sold on credit.
<b>Invoice No:</b>	The number of invoice, which the debtor was given.
<b>Due Date:</b>	The date when the debtor is supposed to pay.
<b>Amount:</b>	The amount of credit sales as recorded in the invoice.
<b>Remarks:</b>	The date, receipt number and amount, when the credit is finally paid.

### c) Purchase register

Purchase refers to all goods bought either by cash or credit other than the purchase of fixed assets which are posted in a different register (assets register). A purchase register is a book where all purchases, whether cash or credit is recorded.

Guideline for posting a purchase register

<b>Date:</b>	The date of purchase.
<b>Details:</b>	The name of person or organization from whom the goods were purchased on credit or cash.
<b>Invoice/voucher No:</b>	Voucher number (in case of cash purchases) or invoice number (in case of credit purchase).
<b>Amount:</b>	The amount of the purchase.

**Caution** - Cash purchases should be recorded first in the cash book (in cash-out column if the payment is by cash or in the bank-out column if the payment is made by cheque) and then in the purchases register. Credit purchases should be recorded first in the creditors register and then in the purchase register.

### d) Creditors register

This is a book where all credit purchases are recorded.

Guidelines for posting a creditor's register

<b>Date:</b>	The date of the credit purchases.
<b>Name of creditor:</b>	The name of person or organization to whom the goods were bought on credit.
<b>Invoice no:</b>	The number of the invoice, which was given when the goods were bought on credit.
<b>Due date:</b>	The date when the credit is due for payment.
<b>Amount:</b>	The amount of credit purchase.
<b>Remarks:</b>	The date, receipt number and the amount, when the credit is finally paid.

### e) Loans' register

This is a book where all loans are posted.

Guidelines for posting a loans' register

<b>Date:</b>	The date when the loan was obtained.
<b>Name of organization:</b>	The name of the organization, which gave the loan.
<b>Receipt number:</b>	The number of the receipt issued on receipt of the loan.
<b>Loan amount</b>	The amount of loan granted.

**Caution:** Record the amount of loan first in the cash book (in the cash-in column if the loan is in cash form or in the bank-in column if the amount is in cheque form) and then in the loans register.

**f) Loan repayment register**

A loan repayment register is a record of memorandum on the status of the loan.

Guidelines for posting a loan repayment register

<b>Loan from:</b>	The name of organization from which the loan was obtained
<b>Loan amount:</b>	The amount of loan.
<b>Interest:</b>	The amount of interest on the loan during the loan's life span.
<b>Total:</b>	The total of loan and interest.
<b>Repayment/installment:</b>	The periodic repayment amount.
<b>Date:</b>	The date that the loan is paid.
<b>Last month balance:</b>	The remaining loan balance at the end of last month.
<b>Remaining loan balance:</b>	The last months remaining balance less the loan repayment installment.
<b>Remarks:</b>	Could be either the date, receipt number and installment amount, wherever the loan installment is paid.

**Caution:** Record all loan repayment installment, when a repayment is made, first in the cash book and then in the loan repayment register.

**f) Members' contributions and savings register**

Member's contribution register is the book where member's annual subscription and their savings are recorded.

Details for posting a members contribution register

<b>Date:</b>	The date when the contributions are received from the members
<b>Details:</b>	The number of members whose contribution was received. Details on the names of the members from whom the contributions are received is recorded in a members contribution memorandum.
<b>Receipt number:</b>	The receipt numbers e.g. 1 – 30 if there were 30 members who made contribution on this day.
<b>Amount:</b>	The amount received from the members.

**Caution:** Record all members' contributions first in the cash book (in the cash-in column if the contribution is by cash or in the bank-in column if the contribution is by (cheque) and then in the members contribution register.

**g) Register of income (Other than income from sales and expenses)**

The income that a group receives from interest on money put in a bank or the penalty that members have to pay for not attending meetings, or coming for meetings late is recorded in this register. In addition, expenses incurred such as wages for hired labour will be recorded in this register.