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COMMUNITY PARTICIPATION IN LOW-COST SANITATION

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COMMUNITY PARTICIPATION

IN

LOW-COST SANITATION

TRAINING MODULE

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INTRODUCTION

GUIDELINES FOR THE INSTRUCTOR

The guidelines (blue), for the instructor only, explain the use of the course module in the training session. They list the material required, outline the timing and organization of the session, and explain how the instructor has to prepare the training. Other pages (blue) are also for instructors only. They give technical details not necessary for the participants and should be removed before distribution to trainees.

COURSE PAPER

The course paper (white), for distribution to the trainees, describes the various aspects of community participation in the execution of low-cost sanitation programmes. It cites examples from various parts of the world and it raises issues which have to be resolved for successful community participation in the execution of such programmes.

The training module starts with an overview of six viable low-cost sanitation systems. Then, it analyses opinions and attitudes of the low-income groups who are to use such systems and discusses how community participation can be generated.

A glossary at the end of the paper explains the technical terms used in the overview.

The next four chapters describe actual participation in planning, financing, construction and use/maintenance of a sanitation system.

The last chapter presents six case studies of successful sanitation programmes in various parts of the world. Each case study is followed by a list of questions that can be used to test the student's comprehension of the case. A comparative table follows comparing the main features of each case.

BIBLIOGRAPHY

For reasons of copyright, it is not possible to add case studies in the form of articles or chapters from books to this module. Therefore, a bibliography listing titles of articles and books on low-cost sanitation has been added to the course paper.

Finally, a role play and an exercise for planning a sanitation programme are included.

Students should be familiar with the training modules 'Project Support Communication' and 'Community Participation, Cost Recovery and Affordability'.

GUIDELINES FOR THE INSTRUCTOR

This course module has been prepared as a general module for a training course on community participation in the execution of low-cost sanitation programmes. The module gives a framework for the course, but it is the responsibility of the instructor to provide additional and detailed information and to adjust the course to local conditions.

Target group	Project staff (project managers and staff involved in community participation).
Number of participants	10 - 20 persons.
Duration	Two or three days.
Location	Easy access to a squatter settlement or a squatter-settlement upgrading project is desirable.
Equipment	Blackboard or newsprint and, if possible, a film projector or video equipment.
Relevant films	"Problems and Solutions" (The instructor should note that part of this refers to water supply and should accordingly preview the film)
Preparation	<p>In order to link the training to the situation in which the trainees are or will be working, the instructor has to prepare a background paper before the start of the training session. The paper should provide data on planned and ongoing sanitation programmes and list the principles for their execution. It should document local experiences with community participation and sanitation programmes, if any.</p> <p>A day before the session starts, the instructor distributes the course paper and the background paper and any other relevant material to the trainees, so that they have the opportunity to read them.</p>
Training session (half a day)	The instructor and the trainees read together through the course paper and discuss the opportunities and limitations of community participation in the execution of low-cost sanitation. At the end of each case study, questions related to the issues raised in the case study have been listed. These questions

can be used during the session for discussion of the material.

Fieldwork
(one or two days)

A squatter settlement which is in the process of receiving improved sanitation is visited by the trainees. For this purpose, the trainees are divided into groups of three to five persons. Each group is assigned the task of preparing answers to issues raised in the course paper, using local sanitation projects as their reference.

Depending on the number of participants, groups can be formed around such topics as:

Characteristics of the target group

Where and how do the target groups of the scheme live? What are they able and willing to pay?

Community organization

Are there any associations, clubs or other organizations among the target groups which can serve as channels for community participation? How have the target groups been involved in the planning of the scheme? How can the users be organized at neighbourhood level? Can the collection of charges be organized by the community?

Communication with users

When and how have the users been briefed about the scheme? What did the users have to know in each phase of project execution? What documents were prepared for the users? What tools were used to explain the design of the sanitation system to the users?

Procedures for community participation

Which procedures exist for the involvement of the users in project implementation? Are these procedures suitable for the involvement of low-income groups? If not, what kind of procedures would be useful?

Review session
(max. one day)

Each group has to present the results of its fieldwork at a plenary session, so that the work can be examined by all participants, the instructor and, if possible, some government officials.

Evaluation

The trainees and the instructor evaluate the training session.

COURSE PAPER

I. BACKGROUND

The problem

Over a billion people in the developing countries lack adequate sanitary facilities and the method they use to dispose of human waste poses a threat to public health. In dense slums and squatter settlements of large cities in particular, the lack of basic sanitation extracts a tremendous toll on human lives. Without special concerted efforts, the number of people lacking adequate sanitary facilities will rise to two billion in 1990.

In some slums and squatter areas, people do not have any sanitary facility. They defecate on open land or within the compound on newspaper which is thrown in the street. In other areas, people use bucket latrines, boxes under their toilets which have to be emptied and cleaned regularly by sweepers. Sometimes, families have constructed their own latrine, but, due to poor construction, failures occur frequently such as cave-ins, ground water pollution and fly breeding.

Lack of adequate sanitation does not kill directly. The majority of the diseases which are caused or transmitted by inadequate sanitation are not fatal. Low-income groups even consider them normal and minor ailments. The lack of sanitation drains a person's strength over a long period of time so that eventually a minor disease can become fatal.

Together with poor nutrition and the lack of clean water, poor sanitation cuts the average life expectancy at birth (i.e. the average number of years newborn babies can be expected to live) by ten to twenty years. The impact of inadequate sanitation is difficult to see and to measure, and few people are aware of the consequences of poor sanitation on their health.

Addressing
the problem

While better nutrition and clean water for all are accepted priorities for governments, sanitation remains a difficult area that authorities only reluctantly are prepared to address.

Three reasons can be mentioned for the reluctance to address the problem:

- a) the novelty of the low-cost sanitation technology. The conventional solution (the waterborne underground sewerage system) is not only too expensive; it also requires quantities of water which are usually not available to low-income communities in cities of developing countries. Therefore, an entirely new technology had to be developed which is adapted to the circumstances of low-income communities. The experience gained with this technology is still rather limited.
- b) the difficulty of explaining to people how poor sanitation affects their health and of making them conscious of the dangers of poor sanitation with which they have lived their whole lives. The information that latrines are good for their health is as such not sufficient to motivate people to participate in the improvement of the sanitary conditions in their area. In the rural areas, where most urban poor come from, generations have lived without any basic sanitation.
- c) the taboo surrounding sanitation in most cultures, which makes the subject difficult to discuss. Sanitation is linked with very private behaviour and it is often associated with secrets and dangers. People avoid the subject because of fear or shame. This makes mobilization of people for a sanitation programme a difficult task.

Feasible
systems

In recent years, a consensus has been reached among sanitation experts about the feasibility of half a dozen low-cost sanitation systems which can improve the living conditions of the urban and rural poor in developing countries. Thus, technically sound solutions are now available. Yet methods of making new sanitation systems accepted and implemented are not yet well established.

The provision of the system is not the aim, but only a means to improve conditions. The essential element of the project is a change in habits which can only come from within, based on the wish of the user to change his or her lifestyle. This means that the project not only has to deliver the system, but also sell its concept and use. Acceptability of sanitation and not merely the construction of a latrine is therefore the issue; the success

of a sanitation programme cannot be measured by the number of latrines built.

Community participation

There is still considerable ignorance among sanitation experts about people's motivations to accept or reject a new sanitation system and to change their sanitation habits. Without knowledge about people's motivation, it is rather difficult to achieve the acceptance of a new sanitation system. Community participation in sanitation programmes is, therefore, an essential means to introduce a new sanitation system and to ensure a positive impact on the health conditions of the population concerned.

This training module discusses the relationship between community participation and low-cost sanitation in urban areas of developing countries.

Community participation will be reviewed in the light of the four stages of the sanitation project cycle:

- community participation in planning;
- community participation in financing;
- community participation in construction;
- community participation in use and maintenance.

Community participation in **planning** is crucial to the success of a sanitation programme, since it determines to a large extent the satisfaction of the user with the facility. Therefore, the future users should be involved as early as possible in the execution of the programme. They should have the opportunity to express their opinions about the system which will be introduced.

Community participation in **financing** is equally important if the new sanitation system is to be introduced successfully. Project staff will have to determine what part of the system's cost will be borne by the user, in cash or in kind, and what procedures will be used for loan disbursement and repayment. Sound and realistic assessment of capacity and willingness to pay can only be achieved through consultations with the future users.

Community participation in **construction** is not only meant to keep construction costs low, but also to make the users familiar with the system. However, it also poses a number of

problems which do not occur if a contractor carries out the work. Construction of a sanitation system (or parts of it) by unskilled people requires careful supervision and intensive quality control.

Community participation in **use and maintenance** is equally important. For conventional sewerage systems, the principle is 'flush and forget'. The low-cost sanitation systems which are now being introduced in low-income urban areas usually require some form of maintenance by the users. This means that maintenance procedures have to be developed, tested and accepted as normal practice by the users. The users will have to adopt a 'latrine routine'.

The most important and most difficult part of any sanitation project is to ensure that the beneficiaries use the new system properly. This requires a change in the attitude and life-style of the user.

II. VIABLE LOW-COST SANITATION SYSTEMS

A variety of sanitation systems is necessary to suit the differences in climate, culture, economic development and soil conditions in various locations. A few low-cost systems have proved to be viable. Their common characteristics are that they require little or no water and that treatment of the waste takes place on-site. These systems, listed below, are all low-cost and small-scale solutions.

They all require on-site treatment, meaning that the user has to look personally after the maintenance of the system. Sludge has to be pumped out, vaults and tanks have to be emptied, and often other maintenance tasks have to be carried out as well.

The following systems which have been successfully applied in urban areas require very little water (2 - 5 litres each time the toilet is used):

- aqua privy;
- cesspool;
- pour-flush latrine.

Waterless systems which have been applied successfully are:

- ventilated improved pit latrine;
- Vietnamese toilet.

These systems can in principle all be upgraded by connecting them to septic tanks, shallow sewers and stabilization ponds. This way, on-site treatment can be combined with (or taken over by) off-site treatment. The various upgrading systems will not be discussed in this paper.

Note: See the glossary (page 69) for an explanation of the technical words used in this chapter.

Aqua privy

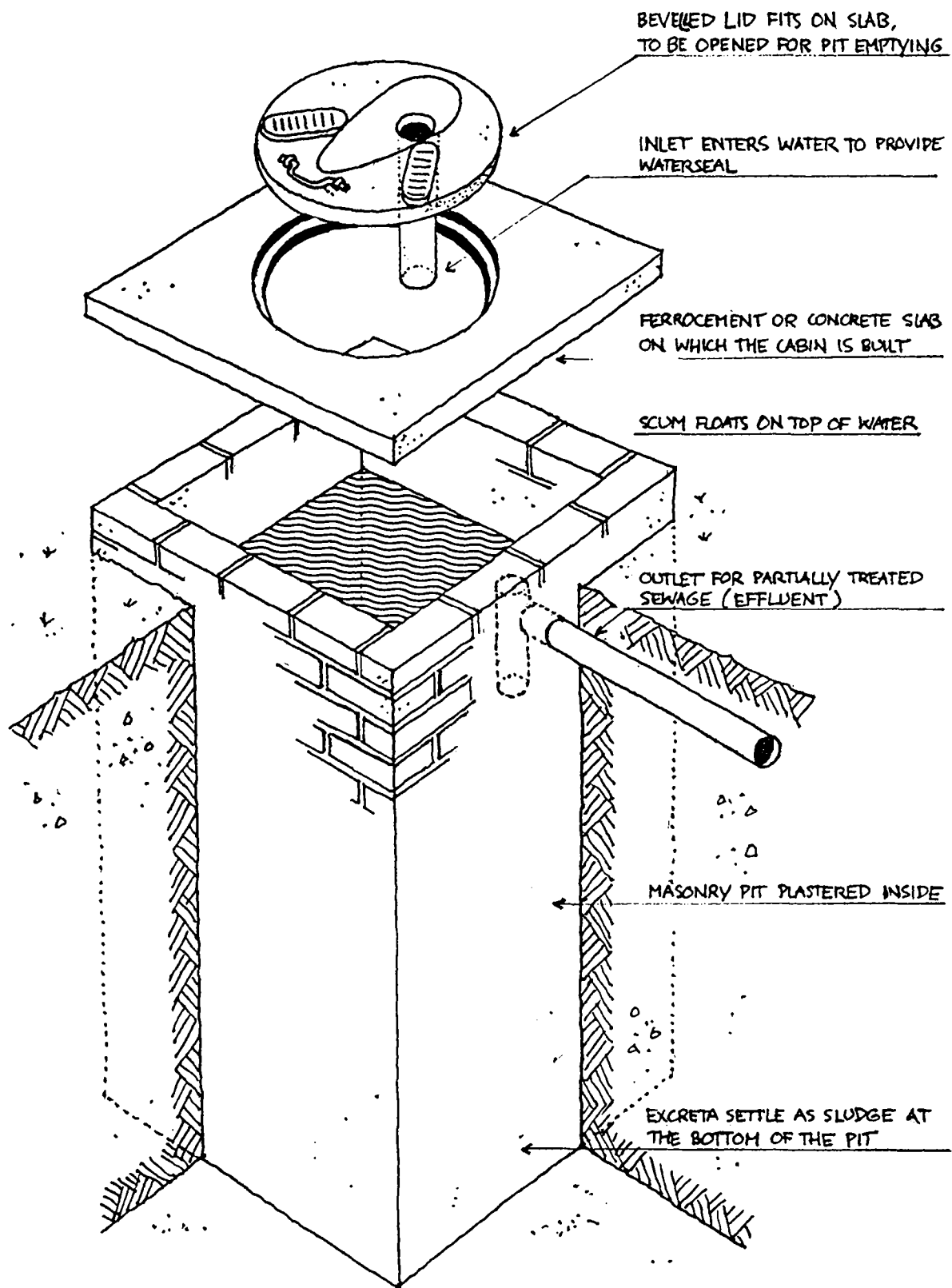
The aqua privy consists of a single water-filled tank where the excreta decompose under anaerobic conditions. The result is gasses which are vented out of the tank, and sludge which settles in the tank. The tank can be built for a household as well as for large public facilities.

The aqua privy can be built with or without a flushing arrangement. The waste water comes into the tank through the drop-pipe and the same amount of liquid leaves the tank through an overflow pipe into a soakage or a sewer line. The effluent is not absolutely harmless; it still contains some solid material and disease-causing germs. However, it can be soaked into the ground if no wells are nearby.

The sludge has to be removed periodically from the tank and can, if properly stored for one year, be used as fertilizer.

(Illustration on following page)

AQUA PRIVY (CABIN NOT SHOWN)



Cesspool

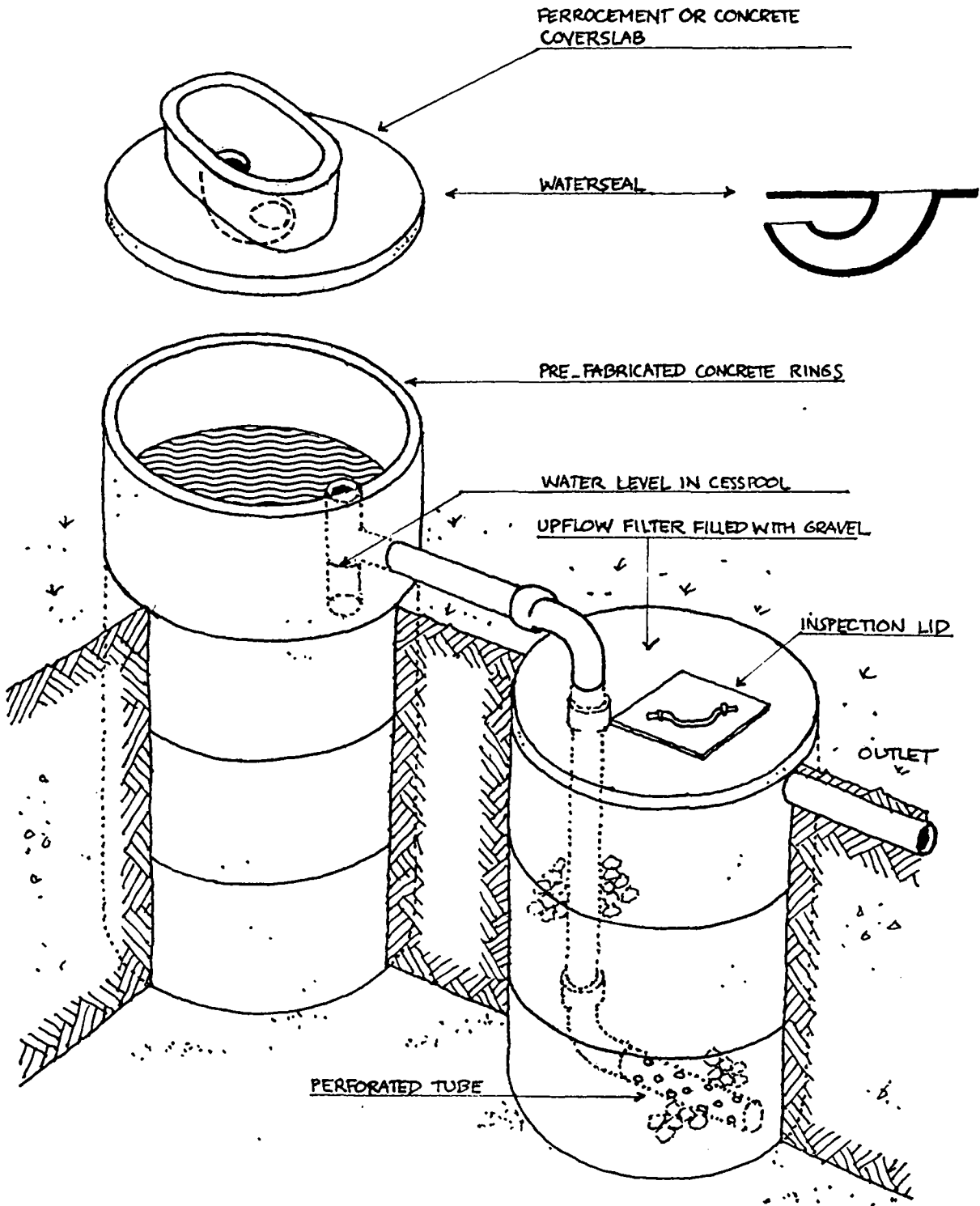
The cesspool consists of two inter-connected tanks. The first tank is for settling the solid material, while the partly purified liquid flows into the second tank for soakage. Both tanks are made of concrete rings; the first one has a watertight bottom, the second one has no bottom.

The liquid which leaves the second tank still contains some solid material and dangerous germs; it may therefore pollute the ground water. An improvement in recent years is the addition of a upflow filter before the liquid soaks into the ground.

Little maintenance is required for the cesspool. It is only necessary to remove the sludge regularly from the first tank.

(Illustration on following page)

CESSPOOL WITH UPFLOW FILTER (CABIN NOT SHOWN)



Pour-flush
latrine

The (double) pour-flush latrine consists of two tanks and a squatting plate with a water seal connected to one of the tanks. While the tank gradually fills up, the liquid seeps out through the perforated bottom, leaving the solid material in the vault.

When the tank is full, the connector is switched to the second tank and the dry material in the first tank is left undisturbed until it has become harmless after about a year.

By then, the second tank is full and the first tank can be emptied. The connector is now switched again to the (empty) first tank.

The dry material can be used as fertilizer.

The slope of the drain has to be sufficient to ensure proper flushing into the pit, for which about two litres of water are needed.

The pits have no bottom; thus water leaks out, provided the soil has a certain minimum level of permeability or porosity. In porous soils, the pits should be at least ten metres from a well.

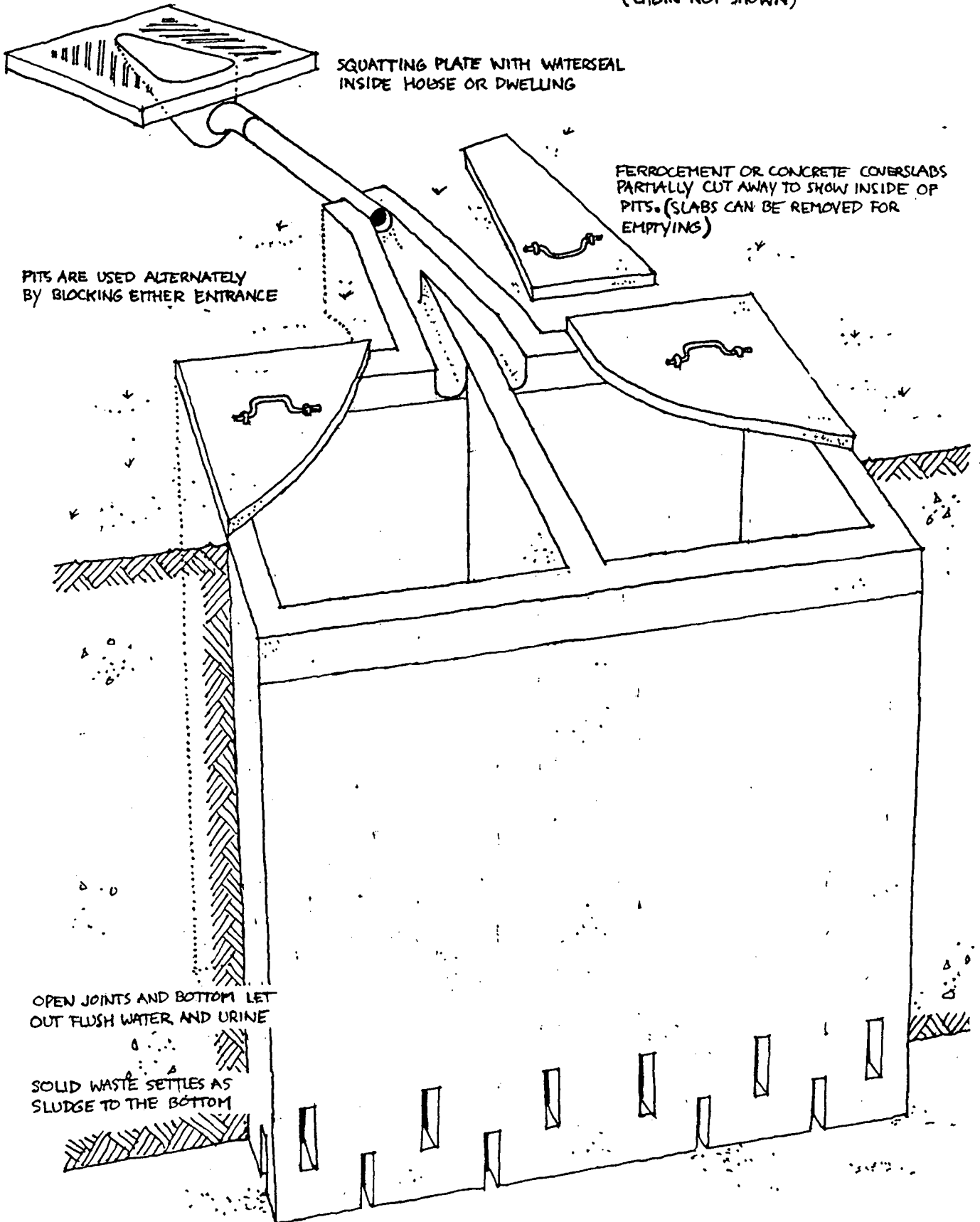
The water seal should always be well above groundwater level.

The pits are often full-brick masoned instead of honeycombed, as the openings tend to attract rodents.

(Illustration on following page)

POUR-FLUSH LATRINE

OPEN JOINTED, MASONRY OPTIONAL
(CABIN NOT SHOWN)



SQUATTING PLATE WITH WATERSEAL
INSIDE HOUSE OR DWELLING

FERROCEMENT OR CONCRETE COVERSLABS
PARTIALLY CUT AWAY TO SHOW INSIDE OF
PITS. (SLABS CAN BE REMOVED FOR
EMPTYING)

PITS ARE USED ALTERNATELY
BY BLOCKING EITHER ENTRANCE

OPEN JOINTS AND BOTTOM LET
OUT FLUSH WATER AND URINE

SOLID WASTE SETTLES AS
SLUDGE TO THE BOTTOM

Improved pit
latrine

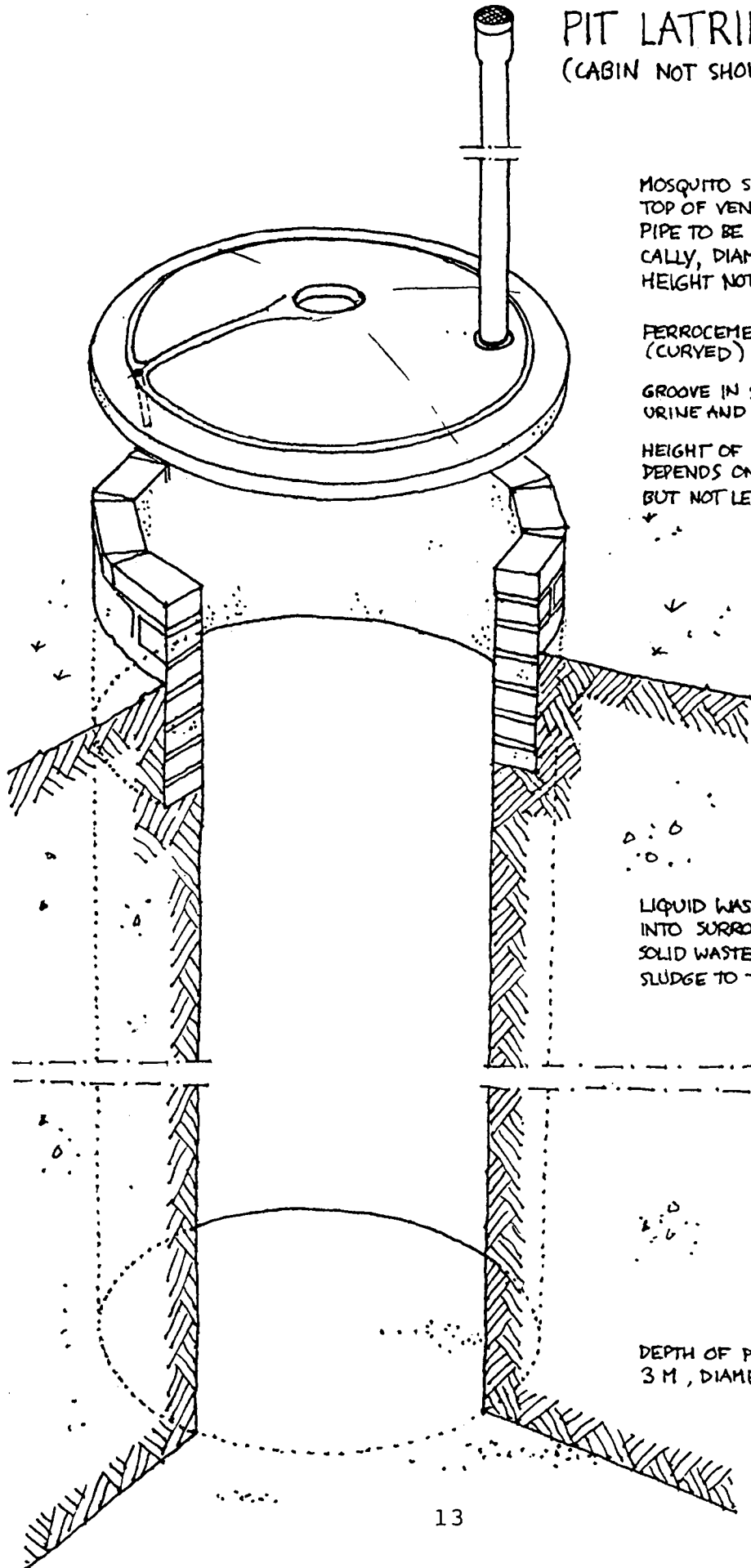
In the improved pit latrine the WC waste (excreta) is deposited in a deep pit which is gradually filled and then sealed and left undisturbed for about a year until the content has become harmless. Under favourable circumstances, these large pits of 3 - 5 cubic metres or more can serve for periods exceeding ten years and during that time they are almost maintenance free.

Pit latrines have, however, developed a bad name for a number of reasons. A poorly constructed pit latrine can easily collapse (in particular if surface water enters the pit and undermines its stability). It can be flooded, it can be smelly and it can be plagued by insects. The liquid from the pit can pollute the groundwater over a wide area and can contaminate wells nearby.

In recent years, pit latrines have been improved considerably. In most soils, the upper part of the pit is now lined to prevent it from collapsing. A high ventilation pipe is connected to the pit and topped with mosquito netting which allows daylight to enter the pit. This attracts the flies in the latrine which are trapped and die in the upper part of the pipe.

(Illustration on following page)

VENTILATED IMPROVED PIT LATRINE (CABIN NOT SHOWN)



MOSQUITO SCREEN FIXED TO TOP OF VENT-PIPE/LIGHT SHAFT. PIPE TO BE MOUNTED VERTICALLY, DIAMETER 0.10 M. HEIGHT NOT LESS THAN 2.5 M

FERROCEMENT OR CONCRETE (CURVED) COVERSLAB

GROOVE IN SLAB CATCHING URINE AND CLEANSING WATER

HEIGHT OF MASONRY LINING DEPENDS ON SOIL CONDITIONS, BUT NOT LESS THAN 0.6 M.

LIQUID WASTE PERCOLATES INTO SURROUNDING SOIL. SOLID WASTE SETTLES AS SLUDGE TO THE BOTTOM.

DEPTH OF PIT NOT LESS THAN 3 M, DIAMETER 0.9 M.

Vietnamese
toilet

The Vietnamese toilet consists of two above-ground tanks for dry anaerobic composting. The tanks are built on a groundslab with steps leading up to the door.

The base structure measures only 0.8 x 1.5 x 0.8 metres and can be built in blocks of any available material. The small volume is possible because the system only treats the 20 per cent of solids in human waste, and not the urine, for a period of not more than two months.

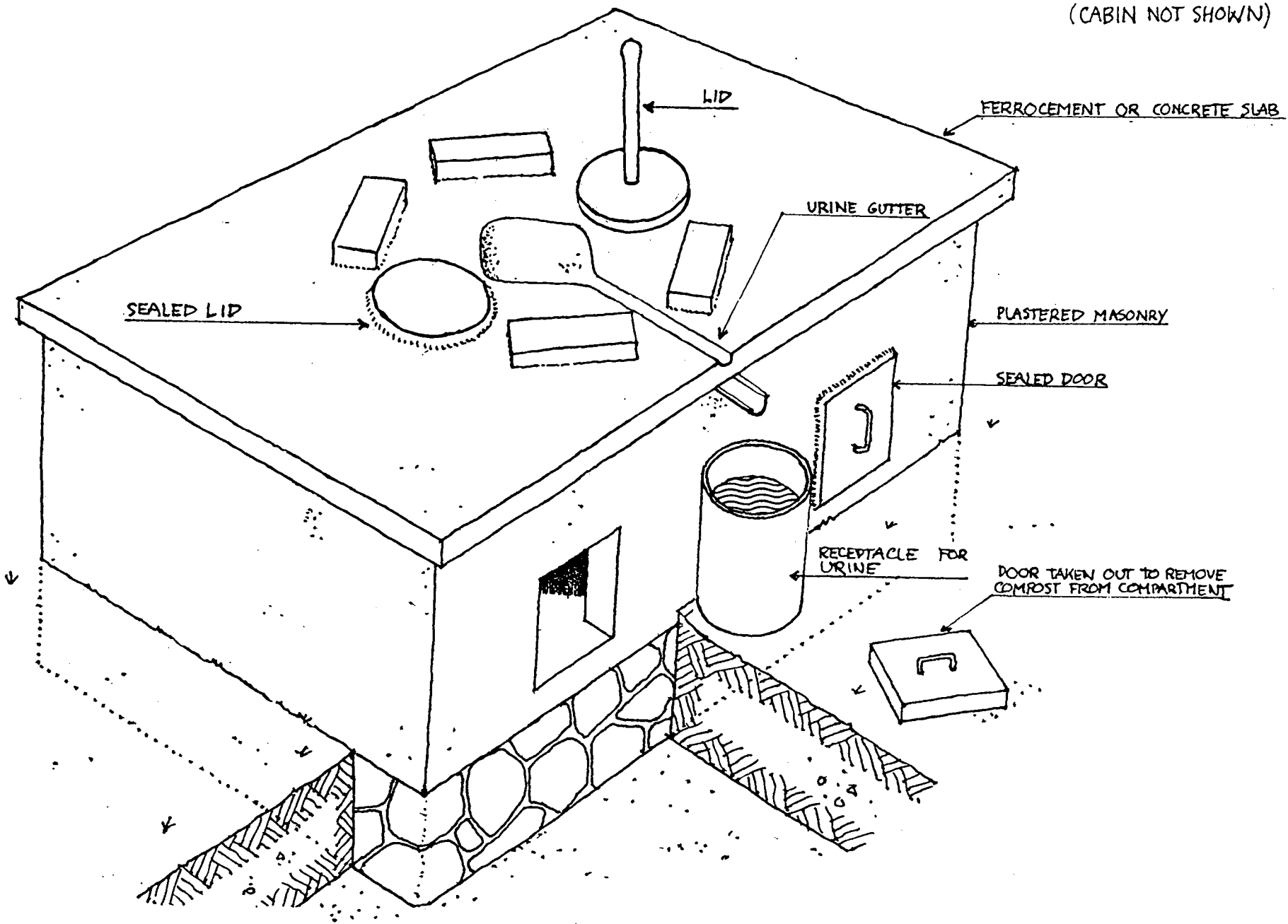
Only faeces are collected and composted in these tanks; the squatting plate is designed in such a way that urine runs off into a separate container. Ash is regularly dropped into the tank to eliminate the smell and to speed up mineralization.

When one tank is full, it is sealed off for anaerobic composting for at least two months, while the second tank is put into use.

Because it is above-ground, the system works well in flood-prone areas. The toilet is very simple to construct and to maintain. In Viet Nam it is generally applied in rural and peri-urban areas.

(Illustration on following page)

VIETNAMESE TOILET (CABIN NOT SHOWN)



Communal latrines
versus
private latrines

Few countries have chosen communal toilets (as opposed to family latrines) as the main element in a sanitation programme, but communal latrines are usually part of such programmes.

Resistance to communal latrines is often linked to the common reluctance to share a toilet with others; modesty, a desire for privacy as well as fear of contamination play a role. Many early sanitation programmes have given communal facilities a bad name, because of the offensive conditions found at public toilets.

Maintenance is a crucial element in public-toilets programmes; it will only work if paid and inspected workers are responsible for cleaning and upkeep. Public latrines are usually free of charge, which may hamper the constant maintenance that is needed. However, the Bihar experience (see India case study), where toilet and washing facilities were provided against payment, shows that a purely commercial operation is acceptable, even for the poorest.

The availability of well-kept and convenient public toilets can improve the acceptance of private sanitation. Many African countries start pilot schemes for their latrine programmes with demonstration latrines in schools, clinics and community centres.

During implementation of a latrine project in Mozambique, many slum dwellers built two latrines instead of one, using the second latrine exclusively as a urinal. This was never propagated by the authorities but proved to be very functional. The spontaneous initiative was related to the communal toilets the migrant workers had grown used to in the factories and mines of neighbouring countries.

An Ethiopian sanitation project was geared to the provision of public toilet facilities in bars, clinics and schools and proved to be of great value for later general sanitation projects.

III. GENERATING COMMUNITY PARTICIPATION

Past experiences

The successful completion of a latrine construction programme does not guarantee a successful sanitation project. Participation in low-cost sanitation is important because low-cost sanitation does not have the 'flush and forget' comfort of conventional sewerage, in which treatment of the excreta takes place far away and is taken care of by a specialized agency.

Users have to be aware of operation and maintenance requirements that in sewerage systems are handled by the municipality.

There are numerous sanitation projects that never develop beyond the demonstration stage because of erroneous assumptions about the people's ability and willingness to participate. The World Bank estimates that globally 40 per cent of sanitary facilities are out of order. It gives two reasons for this failure:

- 1) the choice of technically or socially inappropriate systems - which points to the lack of user consultation at early stages of the projects; and
- 2) the failure to achieve user participation, resulting in a lack of understanding or knowledge needed to handle and maintain the facility properly.

The experiences of the past decade clearly show that user involvement at various stages of planning and implementation is basic to the success of sanitation projects.

What is needed

The degree of participation achieved in the project depends on three main factors: motivation, education and training.

Motivation

Too often project staff assume that the community has the same motives with regard to improving the sanitary conditions as they have themselves, while this is seldom the case. The development of a participation strategy should be based on some understanding of what motives people have to behave in a certain way.

Such motives are not always straightforward. For instance, known dangers are sometimes overruled by hidden motives or established habits. Examples are:

- continued smoking even after receiving detailed information about its dangers;
- driving after drinking alcohol.

Sanitation programmes will only generate community participation and will only meet with success if motivation is so strong that sanitation becomes a priority to the users. If people cannot be sold on the idea that sanitation is a priority, a sanitation programme is doomed to fail.

Success can only be achieved if there is basic knowledge about the future users of the facilities. This knowledge has to be acquired through socio-economic surveys. These surveys should collect information about the users' prevailing opinions, attitudes and motivations as well as skills.

The surveys will provide the information which is necessary for the project authorities to decide how the programme will motivate the participants and what education and training will be required.

Many sanitation programmes use the direct approach of asking people what they like. The responses are, however, often not helpful. Frequently, one detects a discrepancy between people's proclaimed choice and their actual behaviour. Perhaps they wish to please the investigator, while their true feelings remain hidden.

The most reliable ways to find out the motives behind a certain behaviour are:

- 1) to play the devil's advocate, i.e. to criticize the user's choice as inferior and let him or her defend it;
- 2) to observe the user's actual behaviour and question him or her about it.

Users often find it easier to explain what they dislike than what they like. Misuse and non-use of toilets, operational failures due to misuse etc. can give many clues about moti-

vation. Stories about discomfort, dangers, or disturbance often indicate feelings which are not openly mentioned.

A systematic inventory of misuse and rejection patterns is an essential preparation element for a sanitation programme. Only after the motives have been identified can one start generating community participation.

Motives that can contribute to participation in sanitation programmes are:

- group pressure;
- the drive for modernization;
- comfort, safety and privacy;
- affordability and profit.

Group pressure

There is little doubt that group pressure is the most important motivating factor to participation in sanitation. When a massive campaign addresses itself to the entire population in a certain area, different forms of group pressure will automatically emerge.

Group pressure can take the form of political pressure whereby the authorities make house-to-house checks and regularly review progress. It may also take the form of group pressure amongst the participants. The mere fact that most people participate constitutes a psychological pressure on the others to conform. Those who have complied will remind the others, and in the end the latecomers may find the social cost of lagging behind too high.

Compliance with authority is often a reason for participation. In each community there is considerable internal pressure to comply with decisions taken by the leaders after consultations with the community. Even if the individual community member does not understand the decision or partially disagrees with it, it is not easy to disobey and face questions from others.

Schoolchildren also play an important role in influencing the parents. Parents will find the appeal by their children, not to lag behind and to be a progressive community member, a strong form of group pressure.

It is therefore advisable to avoid rushing decisions and to give the community time to discuss and consider the sanitation project.

If after some time the leadership agrees to implement the programme, then most members will be inclined to obey whether they understand it or not.

Modernization

A very common motive to participate in a sanitation programme is the wish to modernize. In Pakistan, Tanzania and Viet Nam participants proudly announced progress by putting up signs or by building the latrine more beautifully than the rest of the buildings in the compound. It is a way of saying: "I am a modern person; my whole house will be that good one day".

Comfort, safety and privacy

Old latrines are often associated with fears of falling into them and of possible collapse, foul odours, insects and the sense of uncleanness. When people start to appreciate the absence of these unpleasant aspects of the old latrines, they will be motivated to participate in a sanitation programme. The knowledge that the latrine is safe is of great importance. It is also appreciated if the latrine can be built close to the dwelling so that one does not have to walk in the dark to reach the latrine.

In some societies, it is not only necessary to show that the latrine is safe from the structural point of view, but also to dispel hidden fears of sorcery, for instance by pointing out that the place will become inaccessible to evil-wishing outsiders.

A survey among schoolchildren in Kenya found that 35 per cent of the children had latrine fears associated with black magic, 14 per cent had fears of being left alone, 86 per cent feared snakes and other animals lurking in the darkness of the latrine, 56 per cent feared falling into the pit and 40 per cent had fears of smells, filth and insects. It was not the lack of knowledge, but anxieties that made children avoid the latrines at home and in the schools.

In India, some women do not eat lunch so as to avoid having to defecate in daylight. A latrine that gives privacy is an important improvement. The possibility of having one's own latrine can also be an important motive to participate. Usually people do not mind sharing latrines with close relatives, but object to sharing it with outsiders. The

maintenance of collective latrines is always a problem, but within the same family it is easy to make maintenance arrangements.

Affordability
and profit

Early designs of the Vietnamese composting toilet were rejected because of their inefficiency in delivering manure in time for each agricultural cycle (on which people's income was based). If the compost was not ready in time, the people opened the vaults of the toilet and used the raw excreta, thereby defeating the purpose of the system. The users only accepted the system when it became profitable.

In Botswana, the sanitation campaign did not link toilets to family health but rather to the health of the cattle, the main source of income for the population. The authorities related the losses of cattle due to measles to the non-use of toilets by the family.

The economic profit of a sanitation system may be difficult to establish, but it is one of the most effective motivating arguments. Family health is, of course, also a profit argument, but it is much more complicated to establish and appears not to be so effective.

Fear of the cost and effort required to install and maintain a latrine may deter a potential user from participating. Project staff must, therefore, have the right arguments to dispel such fears. The availability of extension services, supply of materials, assistance in construction, advantages of pre-fabrication, availability of moulds, tools and building kits may persuade the user that affordability is assured.

In addition, the user might acquire some skills on the way that can turn a profit later on. Masons trained in Baldia (Pakistan) and Manging'ombe (Tanzania) for a sanitation project became self-employed latrine builders. Their skills as builders were in demand for other types of construction work as well. In this way the latrine project contributed to development in a broader sense.

Although motivating potential users to participate is essential to a successful sanitation programme, it is not sufficient. In addition, the future users have to be educated and trained.

Education

Most sanitation projects emphasize health education as the proper way to generate community participation. Studies on participation in sanitation projects point out, however, that health education does not contribute much to participation or to a change in sanitation habits. It may even increase fears and discourage the use of latrines by its emphasis on demonstrating the terrible effects of all kinds of diseases.

Another type of education is needed which stresses not so much what happens inside the human body (usually invisible to the eye of the user), but rather what happens to the community as a whole.

The information exchange that takes place between the parties involved in the project is usually called "project support communication". Its purpose is to explain the whys, whens and hows of the sanitation programme. It explains how the latrines are built, how they are used and maintained, and should focus in particular on those motives which have been found most relevant for the people in the community.

General educational material can be brought out in local or regional campaigns with radio programmes, plays, posters and meetings. The various case studies in this module give several examples of successful public education. Questions of use and maintenance are particularly important in such efforts. The main theme should be the individual and collective need for participation.

The use of demonstration latrines in public places (schools for instance) plays an important role in making people familiar with the use of latrines; it is therefore essential that such facilities are at all times in an exemplary condition. The construction of demonstration latrines in full scale is reported from all successful projects. The availability of scale models that can be carried along by extension workers helps in explaining construction and the use of the latrines.

The collective interest of sanitation can be propagated by competition between households, communities and even districts. Awards for excellence improve the status of this traditionally despised subject.

Education most often focuses on school children, as they can be reached easily. Educational material can be added to their normal learning programme.

House calls by community workers play an important role (see case studies of India, Botswana and Pakistan). Door-to-door visits by female extension workers will more easily reach the women in the households who are the 'managers' of sanitation in the house. Communication with the male heads of households is often not very effective since they do not feel responsible for cleanliness and hygiene, and ultimately serve as rather poor communicators in the family.

Health workers often play an important role in sanitation projects and can be effective in mobilizing a community. In several projects, women from the community were given training as basic health workers and used over an extended period of time to make house calls, giving general information related to sanitation and basic health information as well.

Training

Training in sanitation projects depends on local conditions and varies therefore from place to place. Two main areas of training can be identified which directly promote community participation in low-cost sanitation:

- crafts training; and
- management training.

Crafts training

Many successful sanitation projects have chosen to train masons to do the most important construction work for the community members. Masonry is the most important construction skill in latrine building, but it also is valuable for other purposes. Masonry training improves the general development capacity of the community and gives the trainees a marketable skill.

If it is decided to establish a small prefabrication unit to produce, for instance, slabs, squatting plates, vent pipes, moulds or prefab tanks, the staff for that unit should be trained. Thereafter, the unit can become a suitable training site for crafts training. This training is not given to all community members but only to a selected number.

It may be useful to formalize training and widen its scope to general basic construction skills. Issuing a certificate is usually a great incentive and bolsters the pride of the trainee in his work.

Management training

The implementation of a large-scale sanitation project entails a number of management tasks which continue after the completion of the construction work. It is an advantage if project extension staff and selected community members can be involved from the start of the construction programme in management work, which includes time planning, procurement, transport of material, accounting and book-keeping. These skills are very useful for all development programmes, and a training scheme for this purpose within a sanitation project is in all respects a good investment.

Participation may not be equally attractive to all those involved in a sanitation project. Technicians may feel that working with professionals will lead to better results than with amateurs, that it will be faster and will ensure a certain quality of work. The technicians have to be motivated (perhaps even educated and trained) to develop a project together with the future users.

Who participates?

Six categories of people play a significant and distinct role in any sanitation project:

- | | | |
|------------------------------------|--|---------------------|
| 1. children; | | community residents |
| 2. women; | | |
| 3. men; | | |
| 4. local leaders; | | |
| 5. non-governmental organizations; | | |
| 6. central and local government. | | |

When planning to generate community participation, project staff should examine the importance of each category in the community they are dealing with and try to gain the maximum potential participation from each category.

1. Children

Children are the adults of tomorrow, the future users of sanitation, and therefore important community members. They also have some special qualities in sanitation work. They have less established habits and less taboos than adults; they are more open-minded and have not yet developed rigid patterns of behaviour. Because of their innocence and lack of shame they also are less likely to give an outsider misleading information. Children are open to new ways and therefore open to education. In sanitation projects children have shown to be more reliable as informants about the existing habits and conditions than many adults, and they are often effective information channels between the authorities and the community.

2. Women

New patterns of behaviour involved in new sanitation practices require a thorough understanding of the routines of use and maintenance of the system. Women are the essential target group here, since they take daily responsibility for the personal and environmental hygiene of the household. Their daily activities and examples in behaviour set the pattern for the life style of the next generation. Failure to mobilize women will undermine a sanitation project.

3. Men

Although the role of men in the actual changes vary greatly between different cultures, they are usually the builders. Their involvement in the decision to undertake construction is critical. Failure to win over the men in some projects provoked their resistance; as a result, not many latrines were built. The biggest mistake, however, is to view a sanitation programme as a construction programme only and to discuss it only with the men.

4. Local leaders

Sanitation programmes should mobilize local leaders in project planning and implementation. The contribution of school teachers, religious leaders and other respected persons in the community is essential to achieve full participation of the community. Having them define contributions to the project gives it the broad support that guarantees the long-term strength so essential for change. The role of local leaders is to be agents of change.

5. Non-governmental organizations (NGOs)

Many of the most successful sanitation programmes have been organized by community organizations of various kinds: religious groups, charities and neighbourhood organizations, which have all the strength of being rooted in the community. Their capacity for community mobilization very often surpasses that of governmental organizations. Since NGOs make long-term commitments and do not leave the community after completion of the project, they are often able to contribute to the sustained success of sanitation programmes.

6. Central and local government

Sanitation programmes are the result of a policy established by the government. The authorities (including project staff) participate in the programme by providing the necessary institutional support.

IV. PARTICIPATION IN PLANNING

Community participation in planning is necessary to ensure adoption of the sanitation system by the users.

The problem as far as the users are concerned is that a wide range of technical and economic considerations have to be taken into account. These may be difficult to judge for non-professionals, thus making planning rather difficult.

Decisions to be made

When planning a sanitation project, the following planning decisions have to be made:

- What sanitation system?
- What financial procedures?
- What construction procedures?
- What use and maintenance procedures?

What sanitation system?

The following factors commonly determine whether a sanitation system is potentially suitable for local conditions:

- soil conditions, especially soil permeability and ground water level;
- cultural behaviour of the future users;
- density of the built-up area in the community and availability of space on each plot;
- availability of water for flushing;
- availability of organic waste material or ash;
- potential use of stabilized waste material as fertilizer; and
- availability of municipal or private systems for emptying pits or vaults.

It will normally be impossible to select one single low-cost sanitation system for the entire country as local variables may make a system eminently suitable in one place and totally inappropriate in another.

For example, in Botswana, shallow pits were used for all sites, although some sites had very loose soils while others were in rocky areas. As a result, pits constantly caved in in some places while in others jackhammers had to be used to dig the pits. The use of jackhammers defeated the low-cost principles of the system and also made it difficult to copy by the local community.

Scope for
participation

Community participation in choosing the sanitation system consists mainly of providing project staff (social researchers, economists, sanitary engineers) with complete and reliable information on the important factors which determine the choice of a system (see 'motivation' on page 17 and 18).

Information that cannot be provided by the community, such as soil permeability and ground water levels, will be collected by technicians.

Although the role of the community is still rather passive, waiting for questions to be asked, it is essential in putting project staff on the right track. Good participation in choosing the appropriate system can only be achieved if project staff possess highly developed communication skills. It is their duty to make the future users understand the various sanitation options and factors determining their choice. Only then will the future users be able to provide suggestions on the most suitable system.

Once the sanitation system has been selected, project staff and future users can discuss procedures for financing construction and use/maintenance of the system. 'Procedures' does not only mean what is going to be done but also what the role of each party will be, including how and where the future users will participate in project implementation.

The following chapters discuss in more detail the information needed to reach decisions on the matter and to establish the necessary procedures.

It will not always be possible to make ALL decisions in the planning stage, but a deliberate effort should be made to reach as many decisions as possible before embarking on the project. This will reduce the risk of confronting future users with unpleasant surprises that can destroy their commitment to the project.

It also safeguards project staff against unexpected problems which can cause serious delays resulting in loss of participation.

V. PARTICIPATION IN FINANCE

Introduction

In most urban areas, infrastructure is built by the municipality and the cost is recovered through taxation based on plot frontage, plot size or the value of the building. From these revenues, amortization and maintenance of the facilities is financed. In addition, there are usually separate user-charges for electricity, water and telephone use.

The municipal responsibility for infrastructure makes centralized infrastructural systems such as sewer systems attractive. However, such systems are difficult to apply in unplanned settlements which are being upgraded. The development of decentralized and low-cost systems is partly a response to the need for gradual improvement and upgrading. The municipal burden of having to double the water supply for centralized water-borne sewerage systems contributed to this development.

The cost of the various urban sanitation systems have been reviewed by the World Bank to find the Total Annual Cost per Household (TACH). TACH allows a financial comparison between very different systems and provides the basis for cost calculations in sanitation. (See chart on following page)

The TACH figure includes both development cost (investment) and recurrent costs (operation and maintenance costs), calculated on the basis of the expected total life span of the system. For the Ventilated Improved Pit Latrine (VIP) this is three to five years, while for the other low-cost systems it is at least ten years. The medium and high-cost systems normally last thirty years.

Where calculation is applied to public toilets or facilities shared by several households, per capita costs have determined assuming an average of six persons per household.

Average Annual Investment and Recurrent Cost
per Household for Sanitation Technologies
(1978 US dollars) ^{1/}

TECHNOLOGY	MEAN TACH	INVESTMENT COST	RECURRENT COST
Low cost:			
Pour-flush toilet	18.7	13.2	5.5
VIP latrine	28.5	28.4	0.1
Communal toilet	34.0	24.2	5.8
Septic tank (basic)	51.6	40.9	10.7
Composting toilet	55.0	50.9	1.8
Bucket latrine	64.9	36.9	28.0
Medium cost:			
Sewered aqua privy	159.2	124.6	34.6
Aqua privy	168.0	161.7	0.3
High Cost:			
Septic tank	369.2	227.5	141.9
Sewerage	400.5	265.9	130.4

The figures show that a cheap system such as the ventilated improved pit latrine can become more expensive in the end than a permanent, but more complicated, system such as the pour-flush latrine because of the VIP's more limited life span or more frequent repairs.

It is clear that the TACH figures have to be carefully calculated in the planning stage of a sanitation project.

^{1/} Adapted from: Appropriate Technology for Water Supply and Sanitation: A Summary of Technical and Economic Options, World Bank 1980.

Scope for
community
participation

In deciding what financial procedures will apply to the project, the community can participate by discussing, estimating and deciding with project staff the following matters:

- a) the various cost components that together make up the total cost of the project and the resulting cost per unit;
- b) the cost to be borne by the users and the resulting grants and subsidies, if any;
- c) the loan and cost recovery system to be used, including disbursement and repayment schedules.

Cost per unit

To facilitate the discussion of unit costs with the users, two types of costs are considered:

- the cost of construction and maintenance; and
- overhead costs.

The chapters on construction, and on use and maintenance of the sanitation system give the information on the basis of which the first type of costs can be estimated. These costs include:

- building materials;
- prefabricated components;
- unskilled (self-help?) labour;
- skilled (hired?) labour;
- inspections;
- servicing and repairs.

Some of these costs can only be estimated by technicians and planners, after which they can be discussed with the future users.

Costs that have to be taken into account for overheads are:

- transport;
- project support communication;
- education and training;
- planning, design and administration.

Such costs depend very much on the type, scale, location and coverage of the sanitation programme. Cost estimates can only be made when these variables are known. It is therefore not possible to provide guidelines for calculating such costs in this paper.

Grants and subsidies

The net result is expressed as an overhead cost per unit. The user has to understand how this figure has been arrived at. Whether he has to pay for it depends on the authorities' policy with regard to cost recovery.

On the basis of socio-economic surveys, planners have often concluded that sanitation in low-income areas can not be paid for by the user. In the earlier low-income housing projects a considerable subsidy was considered essential. Sanitation in many squatter settlement upgrading projects and sites-and-services schemes was often a free government service. In the Indonesian settlement upgrading projects, for example, the entire contractor-delivered sanitation system was financed by the Government without any cost recovery.

It gradually became clear that such approaches to low-income housing would not have much chance to survive as housing policies unless cost recovery could be achieved. Moreover, reality shows that affordable sanitation is possible. Pavement dwellers in Bihar (see India case study) certainly belong to the lowest income groups, but their communal toilets are operated commercially.

Although the principle of paying for services rendered can be applied to low-income areas, it may be necessary to consider some forms of subsidies or cross-subsidies.

Cross-subsidies can serve the poorest members of the community or special categories such as woman-headed households, which may have difficulties in doing excavation work or other self-help construction work.

The negative effects of grants are demonstrated in the Pakistan case study. The population had the impression that everyone was entitled to a free latrine after some had been built by charity. A proper explanation of the extent of and conditions for grants and subsidies is therefore necessary.

It may be attractive to follow a mixed approach whereby a financing arrangement includes some incentive such as an installation grant. The India case study shows a municipal arrangement whereby the house owner is offered the combination of an installation

grant and a construction loan (together called a "conversion grant").

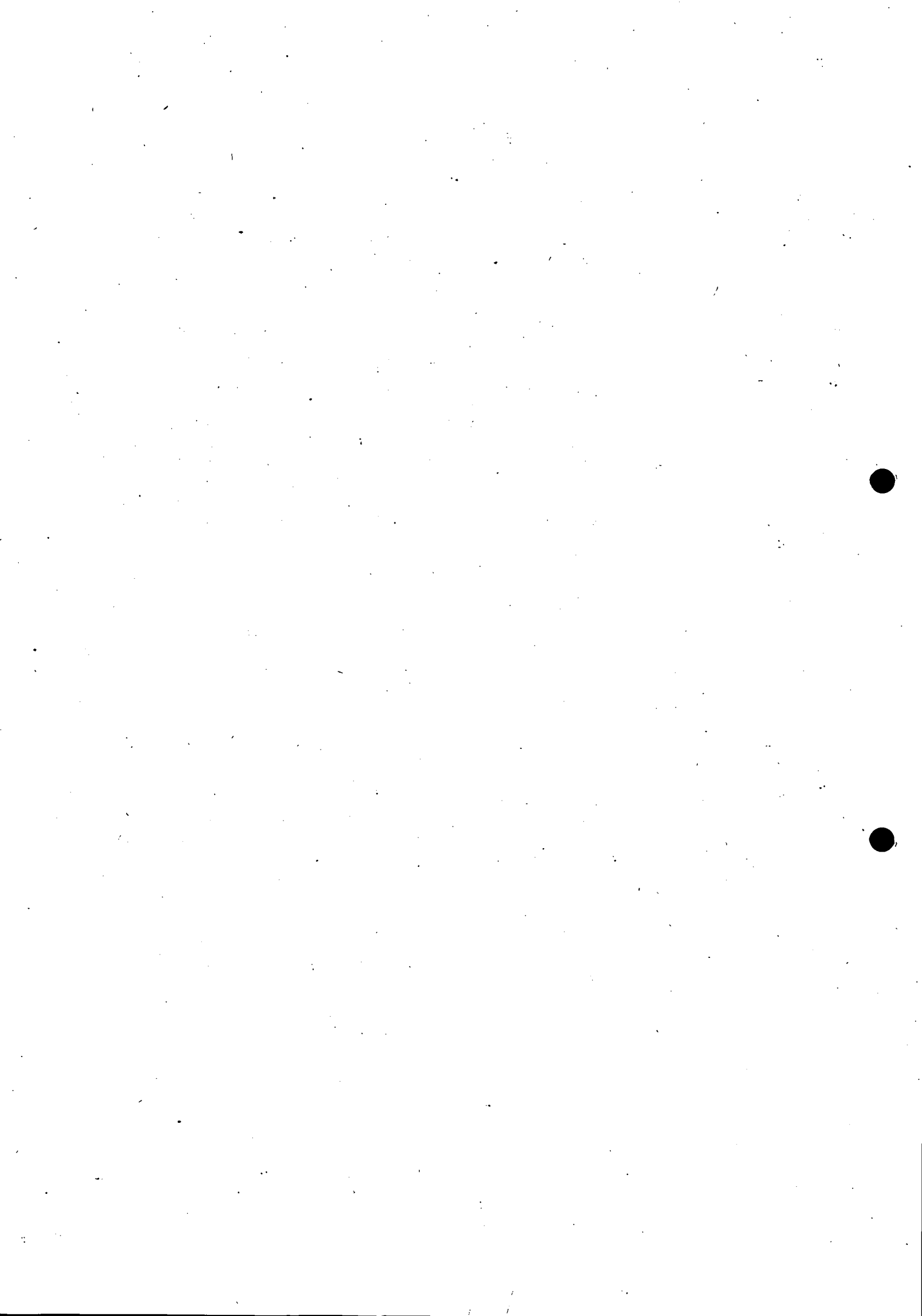
Loans and
cost recovery

Sanitation projects in low-income areas often use material loans as part of the financial arrangement, paid in building materials (but calculated in money), or paid in cash, leaving procurement to the user. Other contributions, such as skilled labour, prefabricated components and transport may be included in the same loan package.

For many clients financial arrangements are difficult to understand and there is usually a great reluctance to commit oneself out of fear of being cheated. There is an advantage in presenting a standardized package which not only defines the construction methods and the routines for inspection and maintenance of the latrine, but also explains financial obligations and sanctions in case of failure to pay.

The financial arrangement for construction and maintenance of latrines is better understood if the two aspects are combined. Group pressure is a very important element in sanitation, but it is doubtful whether the actual collection of funds can be delegated to the community without becoming a source of contention.

Loans administered through a housing bank have the advantage of a proper system of cost recovery, while other arrangements would require a new organization of payment collection. Housing banks, however, usually tie the loan to land ownership - which in many cases is undefined in squatter-settlement upgrading. Integrating cost recovery with maintenance and inspection provisions has the advantage of professional services being clearly tied to fees, which is acceptable to most users.



VI. PARTICIPATION IN CONSTRUCTION

Introduction

The construction of a latrine is in itself a simple job. Still, it is a task which not just anyone can do without proper guidance. Quality control is important, as construction mistakes can have rather unpleasant consequences.

To be in a collapsing pit is an unforgettable experience which will discourage any further participation in a sanitation programme. Leaking latrines will change friendly neighbours into enemies. A badly-ventilated pit latrine can easily produce two hundred flies a day and enough mosquitos to drive the user out of the cabin.

Experiences with user participation in the construction of latrines are similar to those with self-help construction in sites-and-services schemes: even if people are motivated to participate, there are still many constraints which make it difficult for them to complete the work according to the requirements. People may lack the time to construct the latrine in the set period. They may not have the strength to dig the pit and build the substructure or the superstructure. They may have problems imitating a full-scale demonstration model, even if they understand its use.

The question of user participation in the construction of a latrine therefore requires careful consideration. It is necessary to study the various constraints before embarking on a large-scale programme.

What construction procedures?

First of all, technical decisions have to be made with regard to construction of the selected system. Construction procedures can be split into three elements:

- a) construction methods;
- b) production and delivery system; and
- c) production and delivery schedule.

Construction methods

The following factors commonly determine which construction methods are potentially suitable for local conditions:

- availability of building materials; and
- availability of construction skills.

At this stage the choice of system is not that important, because all viable low-cost sanitation systems are small units built from similar components such as pits, slabs, linings and pipes. We will discuss them one by one and see by what methods they are commonly built.

The pit

With the exception of the Vietnamese toilet, all systems need an excavation as the first step in their construction. The proper dimensions have to be respected; and guidance is usually provided for this purpose. The construction of a ring beam prior to excavating is recommended. The use of a timber frame, or mould, to fix the size of the pit has proved practical. The design of the pit should eliminate the risk of pit collapse due to penetrating water, loose soil or both.

In most cases pits will be small and shallow. Only single-pit latrines need to be deeper than one metre. In most cases, the excavation work is done by the user. In areas with a very high water table or with very rocky soil, it may be wise to choose a latrine type that can be built above the ground.

The excavations are to be used for either leaching pits or for closed tanks or vaults. In stable soils, pits may be left without lining; the waste water percolates from the pit into the surrounding soil, while the solids remain in the pit itself. In most cases, it is necessary to reinforce the sides of the pit to prevent its caving in. It may be sufficient to line only the top part of the pit, which usually also serves as a base for the superstructure. In most cases, however, it is good to build the leaching pit as a lined tank, including a bottom, and allow seepage through the open joints in the brickwork. Closed tanks do not allow any seepage into the surrounding ground. Linings can be done in concrete or masonry.

A circular excavation gives the pit greater stability and the excavation work should preferably not exceed the dimensions necessary for the construction of the tank itself.

Closed tanks

Watertight tanks can be built under the actual toilet cabin or to the side of it. The latter method has the advantage of making the tank easily accessible for servicing and improves the stability of the construction.

It is common to construct tanks in blocks or bricks, in which case the tank should be plastered. Concrete tanks are poured in situ.

Few unskilled people will be able to build these tanks by themselves. Masons are, in most cases, required to do the work.

Leaching pits

The methods used for building closed tanks also apply to leaching pits. They are slightly more difficult to build because of the worked-open masonry that has to be inserted at regular intervals.

Cover slabs

Cover slabs are best pre-cast. This is always done by specialized workers, often in workshops. In Mozambique, concave, round slabs have been produced on sand moulds and without steel reinforcement. The slabs are very strong and can be rolled to the site. It may be wise to have them supported by a ring beam in the pit.

The construction of brick domes has been introduced in several projects as a cheap solution. In all these cases work is carried out by trained volunteers or paid craftsmen.

Squatting plates and water seals

Squatting plates are sometimes integrated into the cover slab but often made separately. This is certainly the case if a water seal is part of the system. This seal always requires formwork and is therefore done in large series. As the plates are difficult to produce individually, many projects supply or sell them to the users or to local co-operative production groups.

Drop-pipes and connecting tubes

The pipes are either produced centrally, or are commercially available. Individual production by the users is not very realistic, since the cost of one mould is very high.

Vent-pipes

Ventilation pipes are usually commercially produced, though large vent pipes are sometimes produced by the users. If so, they may take the form of masoned chimneys or hessian or reed tubes which are then plastered. Such solutions are of interest where the participant can contribute labour more easily than money.

Superstructure

Low-cost superstructures are usually made with the same conventional technology used for the other parts of the dwelling.

Their design is not essential to the proper functioning of the sanitation system as such, but rather a matter of comfort and privacy. The choice of construction methods for the superstructure is therefore more or less free. Users can decide to start with a simple screen that can later be upgraded to form a more permanent structure.

Scope for participation

Community participation in the choice of the construction methods consists mainly of providing project staff with complete and reliable information on locally-available building materials and construction skills. In addition, selected people can participate by undergoing training to improve their skills and/or to improve building material production.

Above all, the community participates by sharing its know-how of local construction practices with project staff. It is strongly recommended that project staff do not experiment with novel building methods that are alien to the users, but work instead with methods already more-or-less familiar to the users. This will reduce the risk of costly mistakes.

After construction methods have been chosen, participation in the actual building work will provide the user with a basic understanding of the operation and maintenance of the latrine. Even if craftsmen do most of the actual construction work, some involvement of the user in construction will benefit proper upkeep of the installation. It is also in this construction period that the basics of the use and maintenance of the latrine are

communicated to him.

Construction can be done collectively or individually. It can be based on the construction of certain components of the system or the whole unit.

The following forms of participation can be distinguished:

a) individual self-help.

Each user builds the facility entirely on his or her own. Few projects have succeeded in this, because considerable construction skill is required to build an entire unit.

b) self-help in groups with technical assistance.

Users are organized in groups with the purpose of creating a production flow and of having groups perform specialized tasks. The advantage is that speed of work is increased and quality of the components improved.

Project staff supervise groups and provide technical assistance.

c) commercial construction.

Users' participation is limited to payment of the contractors for the work they have done. In many countries, commercial construction of latrines has been very successful. Its advantage lies mainly in the superior quality resulting from serial production and quality control.

In urban areas, construction by contractors may eventually prove to be more economical than individual construction.

Making a choice

Usually, a mixed system of user construction, group construction and commercial construction is applied.

In most situations, the excavation work, the tanks and the superstructure are produced individually, while all other components are produced by trained groups or specialists.

The actual construction of the latrine (the lining of the pit, the fixing of the slab and squatting plate, the installation of the vent-pipe and all other masonry work) is

What production and delivery system?

usually done by skilled labour.

The superstructures are usually built by the users themselves with the same technology and building materials which they use for the construction of the houses.

It is normal in construction work to use repetition of activities to one's advantage. This can be done by prefabricating certain components of the latrine, at one site or at various sites, so that the same moulds or a standard construction kit can be used and taken from one site to the other.

Prefabrication

All case studies in this paper report the prefabrication of some components. The water seal, squatting plate and cover slabs are always prefabricated. Consequently, it seems necessary to establish some type of central production unit. Production of components can take place in workshops on or off the site.

If the components have to be distributed over a large area where transport is not easy, it might be better to supply moulds to local on-site workshops created for the purpose. If components are to be distributed to areas with concentrated population where transport is easy, off-site centralized production might be preferable.

Production can range from cover slabs to complete units. In Botswana and Thailand, complete fibre glass aqua privies are produced and delivered on-site in urban areas.

The Thai cesspool consists entirely of ready-made concrete components.

In general, the choice between production in a central workshop or prefabrication on-site (one site or various sites) with sets of moulds depends above all on the scale of the project (number of units to be built) and the distances to be covered for delivery (transport costs).

Moulds

Moulds are the most important elements of the prefabrication process. Some are made from wood, such as excavation moulds, while others are made from steel. Moulds for pipes, concrete rings, cover slabs and squatting plates can either remain in a central pro-

duction unit or circulate between the various construction sites.

The use of steel guarantees long life for the mould and an accurate shape for the component, but is only economically justified for very large series or permanent production.

Transport and storage

Sanitation projects involve a large number of very small construction tasks, which together form a large construction enterprise. Supply and transport of building materials and components is therefore in most cases a big task. Only in countries with a very well developed building material supply system can one afford to leave this question outside project planning considerations. In most other countries, it is advisable that the project set up its own supply, storage and transport units to ensure that construction does not stop for logistical reasons.

Prefabrication requires a reliable transport system, and transport damages have to be reckoned with. In dense urban areas, special carts may be needed to bring the components to the site.

Quality control

Since latrines are very simple constructions, a considerable degree of self-help is possible. This does not mean that construction can take place without supervision. A well-established inspection routine for the construction work is necessary.

At certain stages, as for instance after completion of the foundations, inspection should precede the authorization to continue with the next phase of the work. This is important to ensure the quality of the work. It also reassures the amateur builder that his work is all right and that he is not going to fall into the pit later. The inclusion of a regularized inspection routine in the programme will also facilitate financing because the authorities will have more confidence in the sanitation programme.

Scope for participation

Community participation in establishing the most suitable production and delivery methods is rather limited. The technicians have to estimate the costs of the various options

before any reasonable discussion can be held in favour of one method or another. It is the duty of project staff, however, to inform the users fully on the reasons why certain choices are made and to ask for their approval. Otherwise, users might later complain that production and delivery methods selected by project staff are too expensive or inefficient.

The chart on the following page gives an overview of the viable sanitation systems with their standard components and the way these components are usually manufactured.

TYPES OF SYSTEMS					PRODUCTION METHODS		
T H A I C E S P O O L	A Q U A P R I V Y	P O U R - F L U S H	V I E T N A M E S E	V I P	M O S T L Y P R E F A B R I C A T E D	S O M E T I M E S P R E F A B R I C A T E D	M O U L D S U S E F U L

COMPONENTS

15cm. VENT-PIPE				X	X	X	X
SMALL VENT-PIPE	X	X	X		X		
CHUTE/DROP-PIPE		X		X	X	X	
WATER SEAL	X		X		X		X
SQUATTING PLATE	X	X	X	X	X	X	X
COVER SLAB/DOME	X	X	X	X	X	X	X
CLOSED TANK		X		X	X		X
LEACHING TANK	X		X			X	
CONNECTING PIPE		X	X				X
PIT	X	X	X	X			X

What production and delivery schedule?

Proper timing of a project is a way of concentrating resources on critical periods and places so as to improve efficiency. Careful time planning allows construction work to be completed in the shortest possible time.

Prefabrication makes it possible to accommodate the individual user's timing and seasonal changes. During periods that construction has to slow down, workshops can build up a stock of components, to be distributed in periods of intensive construction activity.

The first latrine campaign in Mozambique took place at the beginning of the rainy season in 1976. As a result many excavations collapsed during construction. A rural sanitation campaign at harvest time was doomed to fail, because nobody had the time to build during that period.

Sanitation projects are often very decentralized, reaching people spread out over large areas. Such projects therefore tend to be difficult to organize and to co-ordinate. Failure to provide building materials at the right place and at the right time, for instance, may affect the speed and quality of the work considerably and may discourage participation.

The main elements for establishing the production and delivery schedule are:

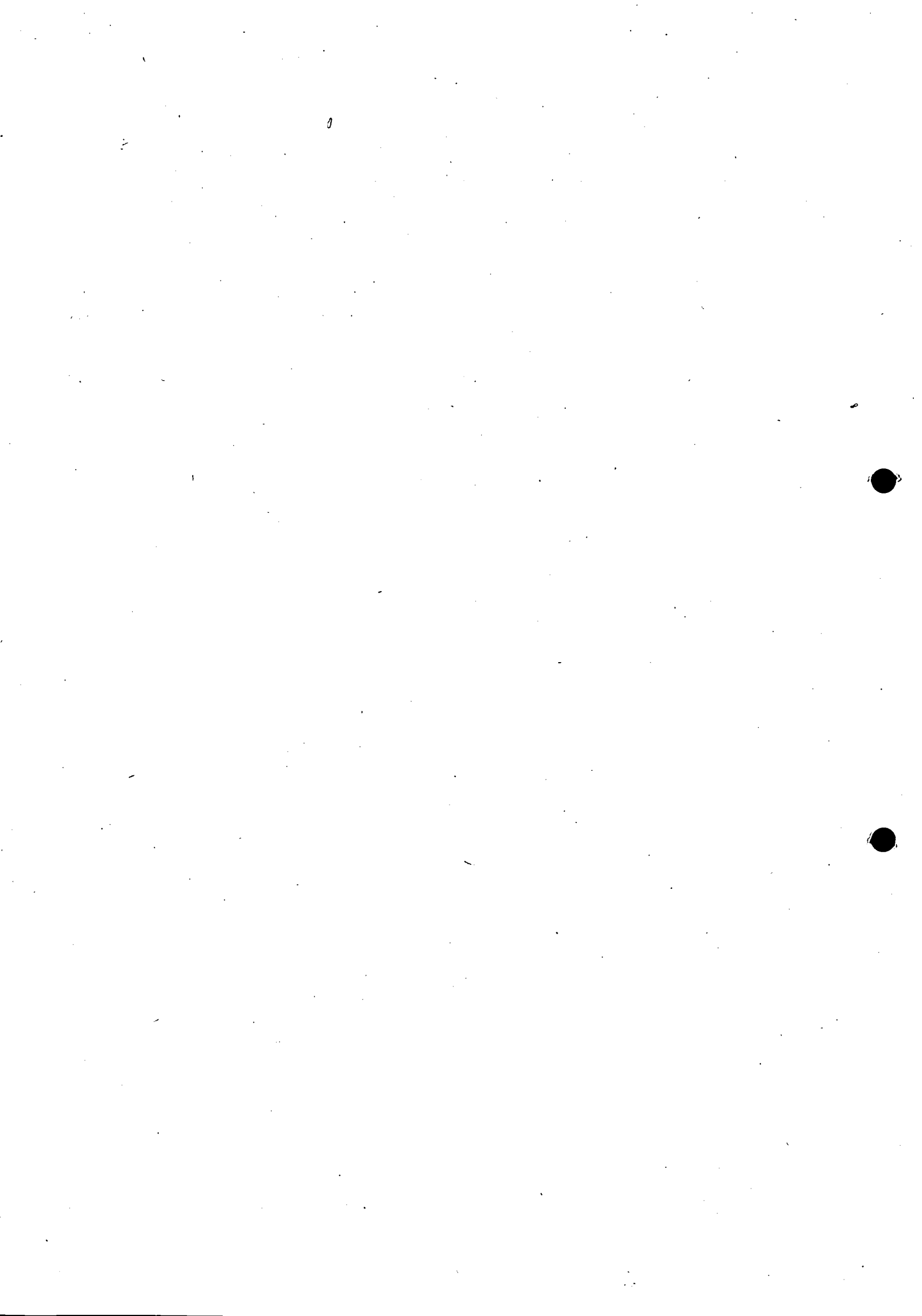
- supply and transport of materials;
- manpower planning and development;
- construction time;
- inspection routine.

For each of these, administrative procedures have to be set up. It is necessary that such routines be discussed and made known to all involved in the construction work, because co-ordination requires co-operation. Otherwise, much time can be wasted in waiting for each other. Steady progress of the construction work at each small site avoids labour standing idle and reduces the possibilities of building materials disappearing or being wasted.

Scope for
community
participation

Irrespective of the workers' construction skills, organization and co-ordination of the construction work is a critical factor for the success of latrine programmes. This is a task that requires professional skills, offering little scope for community participation.

As production and delivery schedules of a sanitation project depend very much on the type and scale of the project, they will not be discussed further in this paper. It is assumed that the above management issues will be dealt with as soon as the decisions on financial, construction and use/maintenance procedures have been taken.



VII. PARTICIPATION IN USE AND MAINTENANCE

What is needed

The basic requirement of successful low-cost sanitation projects is the correct use and maintenance of the latrines. This is a joint responsibility of users and authorities and cannot be performed properly without a formal procedure.

In general, the user has the responsibility of developing a "latrine routine", which consists of three parts:

- using the system correctly;
- cleanliness;
- ability to detect and repair (or report) malfunctions.

The authorities in turn will have the responsibility of developing their own latrine routine, comprising the following:

- regular monitoring of the system's performance;
- detecting and countering improper use of the system;
- servicing and repairing of the system.

Inspection

This is done on the basis of an established inspection schedule. Inspections have the additional advantage of stimulating the users to fulfill their responsibilities.

The inspection schedule should specify which components require periodical servicing, and should generate data for periodic reports. Such reports can then be used to assess the performance of the system, and, if necessary, to make improvements.

For inspection purposes, the following indicators for proper use and maintenance can be applied:

- cleanliness of the superstructure;
- presence of bad smells;
- presence of insects (flies, mosquitoes, maggots, cockroaches);
- overflow of tanks;
- blockages;
- physical condition of components (leaks, cracks, cave-ins).

Servicing and repair routines might include the following:

- checking and filling waterseals;
- topping up (aqua privies);
- pumping out sludge (tank);
- removing stabilized solid waste;
- switching position of drop-pipe (double vault systems);
- smoking out insects;
- deblocking drop-pipes (waterborne systems).

Scope for
community
participation

It will be clear that responsibilities and arrangements will have to be specified in the planning stage. It has to be determined who repairs what, who pays for it and which procedures apply. Especially when repairs are involved it must be decided how much the users can do themselves, as this influences cost, as well as inspection schedules. More self-help generally means more inspection.

Community participation in the planning stage must include discussion of use and maintenance routines. It will greatly help in making the workings of the system clear to the future users and is absolutely necessary to ensure proper use and maintenance once construction is completed. Failure to agree on future arrangements and routines during the planning stage will undermine the proper use and maintenance of the system.

The India case study shows that although users did not contribute much to actual construction work, they participated by adopting the inspection and service routines developed for the project. This ensures survival of the system even if it is not hundred per cent perfect technically.

VIII. SIX CASE STUDIES

CASE STUDY 1: THE VIP LATRINE OF WANGING'OMBE, (UNITED REPUBLIC OF TANZANIA)

Background

During Tanzania's villagisation campaign, the rural population had been gathered from its dispersed homesteads into Ujamaa villages where it had to live and work together. This had brought about a dramatic change in the life style of the people: new houses, education, health care, water supply, communal agriculture, cash crops. Moreover, they were brought under the active administration of the Government.

The success of the villagisation campaign had in part been the result of the very enthusiastic participation of some local politicians who were known for their genuine commitment to development.

The villagisation programme also included the obligation of each household to build a latrine. Almost ten years of latrine practice and health education had passed. Questions about former beliefs just received a casual confirmation: 'Yes, that is what we believed before.' The re-use of human waste as manure by digging out old latrines had only been a small change in the context of the entire villagisation programme. It had taken place without much questioning, while the passing of time and the health education had done the rest in replacing old ways with new ones.

Wanging'ombe was the scene of a UNICEF-sponsored water-supply project between 1977 and 1982. In 1982 the scope of the project was widened to include a low-cost sanitation scheme intended to reach all the 500 villages in the area, with a total population of 80,000 people. The rationale behind this effort was the continuing high incidence of diseases in spite of the completion of the water-supply system.

Existing latrines in the area smelled and were full of flies. They collapsed frequently and accidents, especially with child users, were common.

The idea of improving the existing latrines was rejected by project participants and it

was decided to introduce VIP latrines. A massive health education campaign was the first step taken to prepare future users.

A large base camp served as the headquarters for the development and demonstration of technology and the production of certain construction parts, especially cover slabs. The demonstration units at the base camp proved very valuable. The demonstration latrines allowed entry into the vaults to reveal the construction details. A special syllabus for health education was developed, and a health team was to work with the families during the construction period.

The pilot schemes in four villages led to several adjustments within the organization of the project.

As the area was well suited for brick making, it was decided to start training in basic masonry at an early stage for primary school leavers.

Community participation

The project participants had decided that all households in the district had to provide labour for the construction of their new latrines. A special communication programme was set up for this purpose. Cash outlays were not accepted as a contribution. Each family had to:

- produce 800 - 1500 burnt bricks (depending on their choice of building materials for the superstructure);
- supply sufficient sand for mortar and plastering of the substructure;
- excavate the pit;
- feed the mason;
- complete the superstructure.

After completion of the brick production and the excavation of the pit, the family could ask the mason to come for the construction of the substructure.

The average labour requirements for the whole operations would be 42 man-days for the household and 4 man-days for the mason, who would be exempted from all other communal duties, but receive no pay.

Implementation problems

Not enough training and supervision were provided. Although transport of materials was

adequate, transport problems occurred when health officers had to inspect the construction work.

Shortages of fire wood and water slowed down the brick production, while masonry tools were also lacking.

A lack of data on sanitation habits, (especially children's) was noted, since accidents and wrong habits appeared common.

The replicability of the project was questioned by the project evaluation team on two major points:

- a) the requirement that masons should work without payment with only the reward of being exempted from communal duties;
- b) the possibilities of the Government to extend the same level of operational support elsewhere without UNICEF involvement.

Conclusions

The successful mobilization can be seen as a result of previous Government-sponsored development programmes which in general had been well received in this district. The exceptional engagement of some political leaders played a major role and certainly generated much supportive group pressure within the communities.

The new latrine became associated with status, and the users often expressed the wish that their houses would be as good as their latrines one day.

Although the quite massive health education campaign reached much of the population, it is most doubtful whether it motivated people to participate. A study done in 1983 showed that many people could recall parts of the health lessons, but had not understood the link between a lack of sanitation and disease.

Comfort elements, especially smell and insect control, proved to be more effective motivation factors.

QUESTIONS

- 1) Why had the people of Wanging'ombe lost certain superstitions?
- 2) Health education did not appear to have motivated the people to participate. Should the project in future still maintain this health education element ? If so, what should be its purpose? If not, what should replace it?
- 3) What would motivate people in this city to participate in a sanitation programme ?

CASE STUDY 2: THE VIETNAMESE TOILET

Background

The Vietnamese sanitation project took place in a period of war when the Government barely managed to sustain the existing rural services and was unable to start any significant new development projects in the countryside. The project was, therefore, the main rural intervention during that period. The spectacular improvement in preventive health conditions and the sharply reduced incidence of a number of major diseases related to bad sanitation can therefore hardly be attributed to other development activities. Viet Nam is possibly the only country where the health improvements of one period can clearly be attributed to environmental health planning and sanitation.

The National Institute of Hygiene and Epidemiology in Hanoi introduced the system after a long process of tests and redesigning.

The Vietnamese technology and the implementation strategies differ fundamentally from what other countries have attempted. Nor is the technology suitable for all countries, in that implementation requires a very high level of public participation and a very disciplined approach to project execution.

The situation in Viet Nam was also different from other countries in that sanitation was accepted by virtually the whole population at the start of the project. The proposed improvements did not directly face a complicated array of rejections. The most difficult participation factor in the sanitation programme was the rejection of any sanitation system that would leave the human waste inaccessible during the planting season. The use of human waste in agriculture has strong roots in South East Asia and is not only accepted but requested by the peasants as a necessary economic condition for agriculture. The public health concerns of the Government would not be allowed to interfere with this need. Adjustment of the technology and not of the people was therefore mandatory. The main problem for the research team was to ensure the availability of sufficient quantities of manure at the time of ploughing. The problem was solved by reducing the treatment period of waste to two months and thereby ensuring that a good quantity of safe manure

would be available at that time. Questions of comfort, such as the avoidance of bad odours, were of less importance.

Community participation

The maintenance of the Vietnamese toilet requires extraordinary participation and understanding by its users. As a dry composting system its decomposition process fails and causes disagreeable odours if urine or water enters into the vault. Urine has to run off into a separate tank. Small quantities of ash need to be added daily to speed up the mineralization process. The full tank has to be sealed carefully and may not be opened for sixty days. All this requires training, understanding and care.

This necessitates intensive communication between the project teams and the households over a long period of time. Such an organizational network existed in Viet Nam when the project started. The Red Cross Society in Viet Nam had, as part of the war effort, organized the population to a very high degree. One member of each household would become a member of the local Red Cross Society branch and act as information and extension officer within the household. These members would regularly attend training sessions and were responsible for all aspects of health planning in the household: vaccination, personal and environmental health, family planning, and participation in all of the public health and environmental campaigns.

Participation was carefully monitored and published. Communication methods included meetings, surveys, posters, scale models and demonstration units in schools, community halls and clinics. Much of the information material would be produced by local teams rather than by provincial centres. Mobilization tactics included publication of project progress statistics, the giving of awards and citations, and the organization of festivals.

In some cases, demonstration teams would visit a village and construct latrines together with the population. During informal talks, the teams would collect case histories of family health which later, during inauguration, would be used in theatre plays to show the dramatic effects of poor sanitation.

The desire of the local officials to win the village or district citation constituted a firm basis for generating strong social and sometimes political pressure to join.

Implementation problems

The whole campaign took place during the war, with hardly any other Government inputs for rural development, while a considerable part of the productive population was called away on duty elsewhere. Only local materials and resources could therefore be used. Motorized transport was not available. The production of building materials was in these times demanding and competing with other reconstruction tasks.

Conclusions

Introduction of the Vietnamese system required a mobilization programme of considerable magnitude and complexity to reach 90 per cent of the rural population.

It is almost impossible to demonstrate the measurable health effects of sanitation in normal situations, but in the case of Viet Nam, it was convincingly shown that public health is intimately linked with safe water supply and good sanitation.

Throughout Viet Nam, it can be noticed that toilets are very visibly sited on the plots and designed with care and pride. In many compounds the toilet is the most decorated and well-built part of the buildings.

It should be noted that the system never gained acceptance in the cities. Although operational problems were cited as an explanation, it seems clear that the sales argument of agricultural benefit is lacking in town and could not be used to achieve the same high degree of participation as in the countryside.

QUESTIONS

- 1) Would it be possible to change the system so as to make it attractive for urban areas? How could this be done?
- 2) In remote areas construction is at times poor and inspection almost impossible. What can be done to ensure a lasting latrine that can be easily maintained in such conditions?

CASE STUDY 3: THE BALDIA SOAKPIT, PAKISTAN

Background

This project started as an upgrading scheme for Baldia Township, a squatter settlement in Karachi, Pakistan, with over 150,000 inhabitants. In view of the poor sanitary conditions in the area, it was decided to launch a sanitation project by introducing an improved soakpit latrine.

Soakpit latrines were already in use in the settlement. However, the pits were filled with stones to prevent them from collapsing; and this considerably reduced the volume of the pit and thereby its life span. Moreover, the slab and squatting plate were often poorly constructed.

The new latrine was designed to last between 15 and 20 years. A dome design which could be built by local masons was developed to reduce the size of the slab. The pit is about 5 metres deep and has a diameter of 1.2 metres. It is lined with sand-cement blocks to prevent collapse. The latrine also has a water seal. The latrine and the pit are located inside the plot, whereas many of the original soakpits had been located in the street where they could easily be damaged by vehicles.

Community participation

In Turk Colony, one of the neighbourhoods of Baldia Township, a neighbourhood welfare society took up the production of blocks for the lining of the pits, of cover slabs and of water seals. The project trained and employed two masons to construct the substructures.

The welfare society (started by a local cricket team) became the organizational base for community development plans beyond the soakpit project. The extension workers of the project increasingly focused their attention on the women of Turk Colony. The gradual involvement of women was an important development and many women were soon mobilized for other activities as well. Ten local women were trained as community workers.

It appeared that those who joined the project exerted pressure on the others to participate. This developed into efforts to impose a form of environmental discipline on the community, which was demonstrated when neighbours demanded that the mother of a child who had

defecated in the street should clean the mess up.

Visits to the area by dignitaries reinforced the self-respect of the community and thereby its respect for the project. Neighbouring communities came to see the results of the project and received guidance from the welfare society as to how to organize similar projects in their own areas.

Meetings, posters and leaflets were used to inform the people about the project; a community newspaper was also developed. The first soakpits served as demonstration models for the neighbourhood and when the entire Turk Colony had been covered, they served as demonstration models for other areas.

However, the most efficient way to mobilize the people proved to be regular house calls. These continued a long time after the completion of a soakpit as it was found that changing a habit takes much more time than installing a latrine.

It took several years before the sanitation campaign bore fruit. Initially, the need for improved sanitation was not felt to be a priority and the proposed solution was distrusted. Also, sanitation was not a subject which could easily be discussed. Once the campaign took off, this changed: people put signs on their houses showing that they had a latrine. Group pressure developed into a major force for participation.

Implementation Problems

Initially, the pits were offered free of charge by a local charity organization; in a later stage, UNICEF offered only the building materials free. Both approaches proved to be a mistake; they created the belief that latrines were a gift to all households. Eventually, the materials were offered at cost price.

Inspection remained necessary long after the facilities had been installed. Understanding of the relationship between sanitation and health remained weak, but the environmental improvement was recognized. Status and the wish for development certainly played a role in the acceptance of the improved pit latrines.

Conclusions

As in many other cases, it took several years before the sanitation work took off. Group pressure developed into the major force for participation. The gradual involvement of women was an important development which soon mobilized them into other activities as well. It required more communications but less organizational efforts: the actual implementation was done by paid masons.

Still, inspection and maintenance were necessary long after the facilities had been made.

QUESTIONS

- 1) People put signs on their walls indicating that they had a modern latrine. What message was conveyed?
- 2) The welfare society got engaged in the procurement, storage and production of building materials and latrine components. It also organized the training of masons. Is it worthwhile to do this instead of using a contractor?
- 3) After a period of building latrines for free, the project started to charge the full cost, which earlier surveys had indicated to be beyond the paying capacity of many people in Baldia. Should low-income people be forced to pay for a service they do not ask for?

CASE STUDY 4: THE BOTVIP OF BOTSWANA

Background

Low-cost sanitation in Botswana started with an experimental urban project in the period 1976-1979. Technical options and the reactions of the users to these options were studied to find the most appropriate system.

Much was learnt from the rejection and misuse of existing toilets. Privacy and convenience proved to be the most important reasons for the acceptance of a new system, while strong feelings were discovered against being seen in any act linked with defecation and work related to it. The original idea of complete self-help was abandoned and replaced by aided self-help with substantial project support.

It was decided to introduce REC II latrines in the (urban) sites-and-services scheme. Contractor-built substructures were provided, while for the superstructure a materials loan was provided which had to be paid back through a monthly service levy. Later, a rural project was organized, for which the BOTVIP, a single-pit (off-set) latrine was selected as the most suitable system.

The pit remained a fixed system component, even in areas with unsuitable soil conditions, such as very loose soils which required costly pit lining, or rocky areas where jackhammers were needed.

Since the project planners wanted to achieve a very high coverage and eventually reach the entire population, thorough organization and preparation were needed. An elaborate administrative structure was established with national, district and village committees, coordinators and a large number of trained foremen and workers. Supply and construction routines and schedules for surveys, extension work, meetings, demonstrations, and cost recovery were established.

Community participation

The project opted for community participation in some parts of the construction work and in the cleaning of the facility, but it decided that maintenance, in particular the emptying of the pits, would be a municipal responsibility. The cost of the latrine would have to be borne by the user.

Construction work followed a basic pattern. The project delivered prefabricated parts to the site: the seat cover, the drop-pipe, the vent-pipe and the slab. The material for lining was also brought to the site. Excavation work, the supply of bricks and the construction of the superstructure was the responsibility of the user. Lining of the pit and the mounting of the vent-pipe, the cover slabs and the seat were done jointly by the user and an extension worker.

The project agency gave extensive general information on sanitation and public health through meetings; it used scale models, simple booklets, audio-cassettes, demonstration latrines, information sheets and surveys. All available political and educational channels were used to reach the population. School-children were mobilized to distribute written invitations to the meetings. Studies preceding the implementation phase revealed that improved sanitation could prevent the cattle from catching measles. This proved to be a good 'sales' argument among the cattle-keeping population of Botswana. House calls proved to be most effective in generating community participation.

Implementation problems

Before the start of the project as well as during implementation, user reactions were studied. Questions of system preference, privacy, local habits, superstitions and other attitudes were registered. The intensive exposure to health education resulted in improved knowledge but not always improved behaviour. The fear of accidents often kept the children from using the toilets. Handwashing was not often observed.

The question of maintenance was not solved when implementation started. The problem of emptying the pits will therefore have to be solved by the municipalities during the coming years. Fears have been expressed that few people will be willing to empty pits for fear of being looked down upon by the community.

Conclusions

The original idea of a complete self-help approach was abandoned, and aided self-help with very substantial operational support was then chosen. The project wished to achieve very wide coverage; the programme was therefore developed as a massive operation that eventually would reach the entire popula-

tion. This necessitated a large organization and much educational and operational preparation. Very detailed instructions were therefore prepared and applied throughout the project. As a result, flexibility was difficult and the implementation of large ventilated pit latrines in rocky areas led to high excavation costs and doubtful results.

The experiences in Botswana are important for several reasons. The early recognition of the socio-cultural factors which play a role in the acceptance or rejection of a sanitation system protected the project from the development of negative sentiments amongst the people. It also produced very useful documentation which other projects may wish to use. It also showed the advantages and disadvantages of a large standardized operation.

QUESTIONS

- 1) In the pilot project several technical options were tested. The study of rejections and misuse played an important role in the final selection of the system. What can one learn from rejections and misuse that one cannot learn from interviews ?
- 2) Children were instructed to tell their parents about meetings which were being organized by the project. How else could children be used in sanitation projects?
- 3) What topics would you discuss during the first two public meetings in a sanitation campaign, and what results would you expect to achieve ?

CASE STUDY 5: THE THAI CESSPOOL

Background

The cesspool as it is now found in the slum areas of Bangkok, Thailand, is a much simplified version of the double-pit latrine which was introduced by the Ministry of Health in the early seventies. It consists of a single pit made out of a set of rings forming a shaft down into the ground. It has a squatting plate with a water seal. The tank sometimes barely enters into the soil; it rises through the surrounding water up to the floor of the house, which is usually built on stilts.

Several factors have facilitated the rapid acceptance of this type of latrine in the slums of Bangkok. Sanitation is not a controversial subject in Thailand. Most of the taboos surrounding the subject existing in other countries are unknown here. The effective water seal of the cesspool prevents unpleasant smells; therefore, the vicinity of a toilet in these densely populated areas no longer provokes any strong negative reactions from neighbours. However, as most of the slum areas of Bangkok are regularly flooded, the pollution caused by these pits is considerable. The untreated fluids from the pit leach directly into the surrounding surface water.

Community participation

The construction of the latrine is very simple. The entire latrine is available in prefabricated parts from a multitude of suppliers at a very low cost. Almost all hardware shops in Bangkok have a small workshop in their backyards where components are produced from steel moulds.

All a client has to do is to decide to buy one and call a contractor. The cesspool can be easily assembled. A complete unit can be installed by a mason in a few hours time. The system is so cheap that many households build a second latrine instead of emptying the original one. Authorities do not need to generate participation in order to promote the use of the system.

Implementation

Users often complain about the problems created by the latrines of their neighbours rather than by their own latrines. The main complaint concerns the pollution caused by the careless emptying of the tank, especially the

de-sludging, done by breaking the tank and spilling its content on the surrounding land.

Since the existing method is satisfactory to the user, improved systems are likely to meet with considerable resistance. Within the Government, little concern has been shown for the special problems in sanitation. Roads, water supply and garbage disposal are seen as far more urgent infrastructural needs.

Conclusions

A purely commercial implementation system has succeeded in covering almost the entire slum population of Bangkok without any noticeable governmental involvement.

Although the system is in fact unsuitable for areas with a high watertable and causes severe pollution, all surveys show considerable satisfaction with the system. People feel that sanitation is adequate as it is. Public health and environmental considerations are not considered issues within their control, and therefore fail to draw their attention. The absence of smells gives the people a false sense of security.

QUESTIONS

- 1) The Thai cesspool is very different from other systems in its production method. What are the advantages of this production method?
- 2) The present practice in Thailand developed spontaneously as a modification of the latrines introduced by the Ministry of Health. The users seem to be happy with a system that is not really suitable for their low-lying areas. What went wrong? What should be done now?
- 3) The Government does not play a role in the delivery of a low-cost sanitation system in the slum areas of Bangkok. Yet, almost all households have a cesspool. Should the Government become involved?

CASE STUDY 6: THE POUR-FLUSH LATRINES OF BIHAR, INDIA

Background

In 1970, the State of Bihar declared bucket latrines illegal. The work of converting them into pour-flush latrines was pioneered by a non-governmental organization (NGO) established for this purpose by the Gandhian movement in Bihar in 1970. In 1974, the Sulabh International Society was created, which aimed at implementing a conversion programme, eliminating the carrying of night soil by 'scavengers'.(*)

Earlier activists had concentrated on educational work for the same purpose, but the effect of this information did not result in much actual conversion. The Society therefore undertook the administration as well as the construction, and offered maintenance services to the users.

After building some demonstration units, this NGO used the participation of prominent community members for propaganda. Financial participation was facilitated by a government subsidy to home owners who converted their latrines. This gave the NGO the chance to act as a contractor and take care both of administration and construction.

The publicity work was started with house visits by the NGO workers. They brought loan application forms and building authorization forms to the client. Masons and labourers then executed the work under the supervision of the user. The user received a guarantee card and a service-and-maintenance booklet, with a free first service for the first emptying of the pits. The users were also assisted in obtaining loans.

In addition to the construction of individual units, the Society also built a large number of public pour-flush latrines, which provided commercial services to the pavement dwellers and other people without individual sanitary facilities. The supervision, maintenance and

(*) In India this term normally refers to persons traditionally engaged in manual cleaning of bucket latrines and disposal of excreta.

collection of money from these public latrines are the duty of paid employees of the Society.

The public latrines are based on the same system as the single-household latrine, but the building's layout separates men and women. Added features include wash basins, an overhead water tank, a septic tank, an office and a store.

Both household and public latrines are locally known as Sulabh Sauchalaya.

Community participation

The entire construction work was executed professionally by NGO workers. Various types of slabs and water seals were prefabricated, while most of the tank and superstructure were masoned. The larger public facilities were contractor-built. The implementation in the denser areas of town required imaginative approaches and solutions. Location of the pits was varied; in the backyard, under the kitchen floor, as the front doorstep and as the verandah of the house. Involvement of the population proved very difficult, as anything even remotely related to scavenger work and sanitation in Bihar is not even fit for discussion, let alone action. The actual construction work therefore did not rely on any community participation. Motivation for change, however, was essential. Comfort and group pressure were identified as motives for participation. The discomfort endured during scavengers' strikes and the irritation the bucket latrines gave to neighbours were reported as factors that persuaded people to modernize.

The use of demonstration sites and project support communication figure prominently in the project. For community motivation, 'liberation of the scavengers' was stressed. The agricultural utilization of the manure also received much public attention. The influence of prominent personalities and law enforcement in promoting the project was common.

Implementation problems

Psychological and sociological constraints formed one major barrier to community participation. Difficulties in dealing with the bureaucracy was another. The sanitation work in Bihar started with information campaigns aiming at self-help activities. These failed, and the project then took responsibility for

both the production and maintenance of the system. From then on, communication work continued but focused on promoting changes in habits and not the actual implementation by the people.

Conclusions

Although the NGO stresses its non-profit principles, it is the business sense of the leaders that ensures the programme's success. It stresses the principle that the user pays.

The overall success of the Society is also to a large extent related to its success at communicating at the highest level in the state and the community.

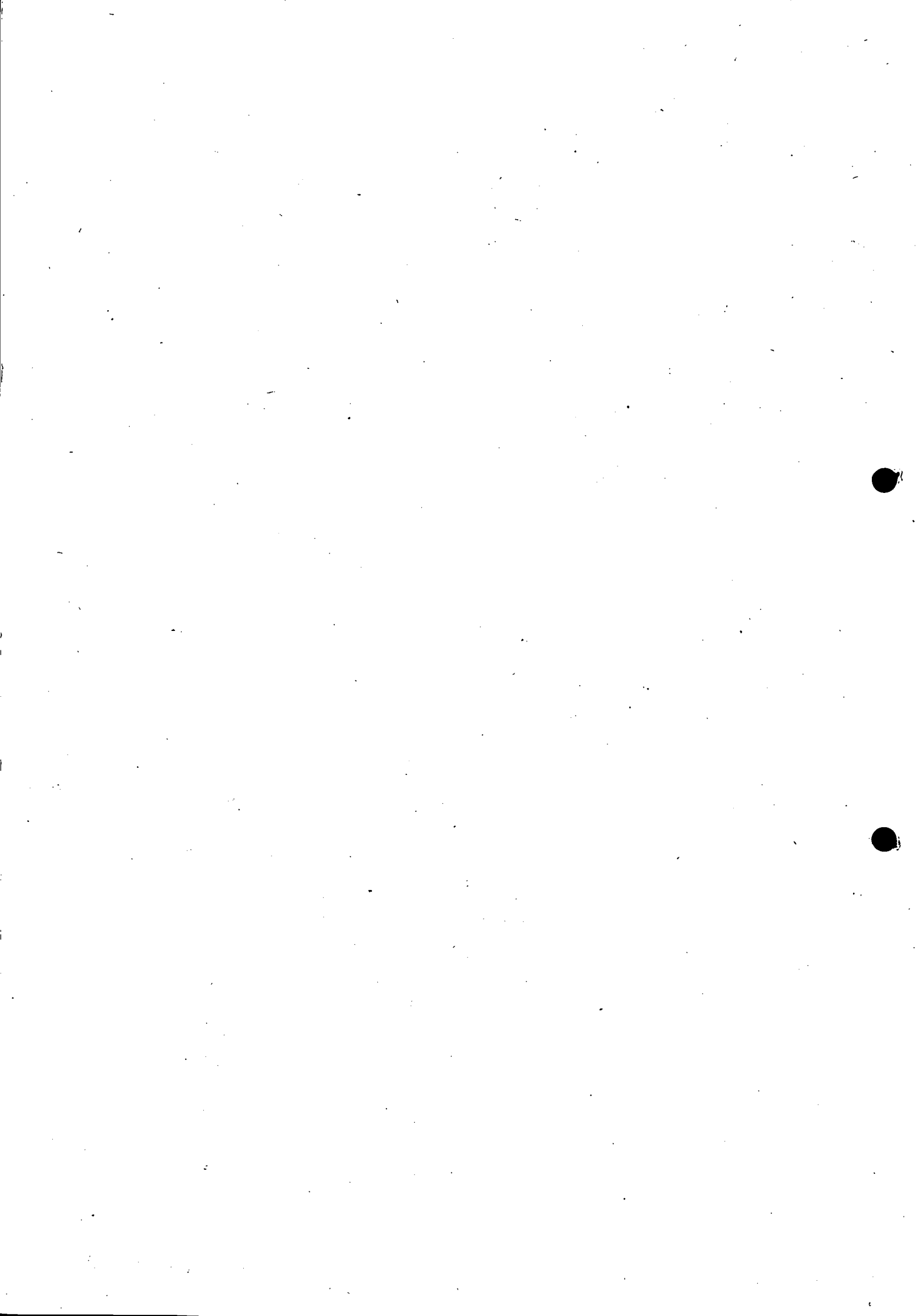
The Society can convince people, obtain their authorization to build, handle the paperwork and do much of the maintenance. This is all only possible by earning the trust of the clients as well as of the authorities.

QUESTIONS

- 1) The Sulabh International Society acts as a 'developer' and arranges finance, administration and construction for the user. What role do the users play?
- 2) Maintenance is set up with service cards, indicating periodic maintenance steps, much the way it is done with automobiles. What elements should a service card list?
- 3) The source of finance is the local government, while the NGO/builder administers the loan. What advantages and disadvantages can you see for the user?

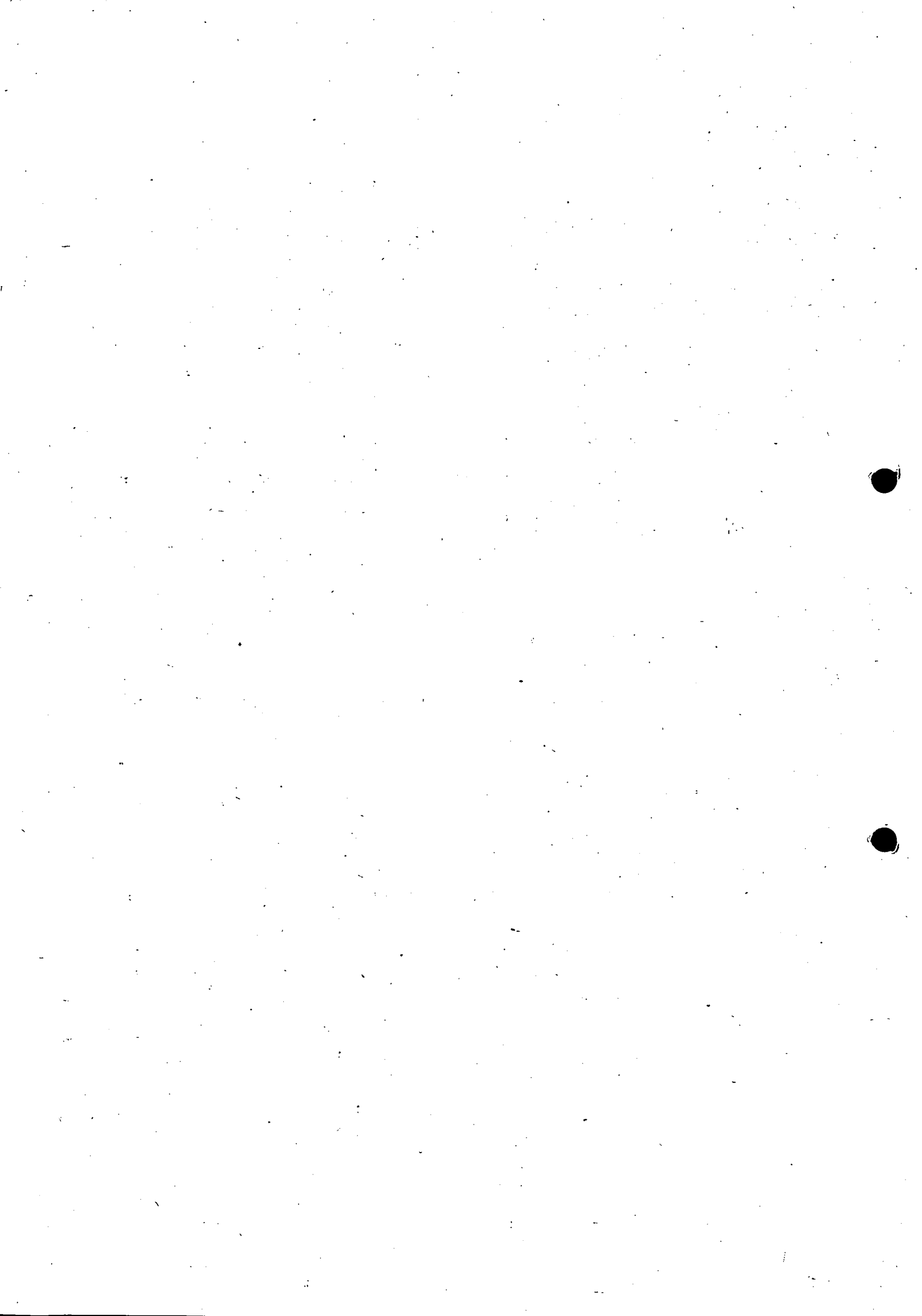
IX. COMPARATIVE TABLE

	Tanzania	Botswana	Thailand	India	Pakistan	Viet Nam
UNIT COST	US\$100	US\$46	US\$30	US\$100	US\$120	?
CONSTRUCTION METHOD	Brick masonry and prefab slabs	Blockwork	Prefab concrete slabs	Masonry & prefab slabs	Masonry & prefab slabs	Masonry & prefab
CONSTRUCTION DELIVERY	Aided self-help	Aided self-help, circulating craftsmen	Contractor built	Contractor built	Craftsmen built	Self-help, some external supervision
CONSTRUCTION SERVICES	Prefab + transport supplies	Prefab + supplies	Total	Total	Supplies and main construction	Supplies
COMMUNICATION SUPPORT	Demonstration site, political action, circulating health team	Booklets, tapes, meeting school-children, sociological studies, house calls, demo units	None	House calls, users manuals, application forms	House calls, posters, meetings, newspapers	Through political action, total campaign on hygiene, communication support-but also coercion
PARTICIPATION	Excavation, brick production, shelter construction	Self-help construction and maintenance Employing not yet solved	None except as client	Assisting the construction workers	Excavation and assisting the building workers	All construction, & maintenance and finance
LESSONS	Gradual cultural change after long exposure to sanitation Successful Central Workshop	Streamlined administration, little concern for local conditions Maintenance not well considered	Poor system that satisfies users because of convenient & cheap delivery and use	Excellent communications selling sanitation as cars: administrative & maintenance guidance	Direct communications well developed, poorly planned, mobilization of women	Successful as a total hygiene campaign; difficult to apply elsewhere; first-class low-cost system



X. GLOSSARY

AEROBIC	Chemical or biological reaction in the presence of air
ANAEROBIC	Chemical or biological reaction without air
AQUA PRIVY	Latrine containing water-tank for the digestion of solid matter
BOTVIP	Botswana type Ventilated Improved Pit Latrine
CESSPOOL	Single tank, connected with pour-flush or full flush system
COMPOST	Organic material (leaves, excreta) which has been stabilized into manure through bacterial activity. The composting process can be either aerobic or anaerobic. Compost produced by the anaerobic process is not free of disease-causing organisms.
DESLUDGING	Process of removing settled human waste
DIGESTION	The breaking down of organic waste by bacteria
EXCRETA	Liquid and solid human waste (urine/faeces)
FAECES	Solid human waste
GROUNDWATER	Water permanently present in the ground
LEACHING PIT	Pit that retains solids, but allows fluids to seep away
MINERALIZATION	Chemical reduction of organic matter to stable mineral compounds
NIGHT SOIL	Human excreta transported before digestion
OXIDATION POND	A pond in which wastewaters are stabilized
PAN	Excreta receptacle (with or without waterseal)
PATHOGEN	Organism or germ which causes disease
PERCOLATION	The seeping of water through a porous substance
PERMEABILITY	The extent to which a substance will allow water to seep through
POROSITY	See permeability
PIT LATRINE	A hole in the ground used for defecation, including simple cabin
REC II	Botswana latrine with two shallow pits
ROEC	Reed's Odourless Earth Closet: a pit latrine with an off-set superstructure (i.e. the cabin is built to one side of the pit and connected to it by means of a discharge chute)
RING BEAM	Layer of blocks or concrete lining a pit under cover slab or cabin
SEEPAGE	Infiltration into the subsoil
SOAKPIT	See leaching pit
SUBSTRUCTURE	The latrine part under the hut or cabin, including the cover slab
SUPERSTRUCTURE	Hut or cabin built over the substructure
UPFLOW FILTER	Stone-filled tank with low inlet and high outlet
VIP	Ventilated Improved Pit latrine
WATERSEAL	U-shaped tube containing water, preventing air flow between pit and cabin (between substructure and superstructure)



ANNEX 1

ROLE PLAY: PRESENTING THE SYSTEM

Objectives	To sensitize participants to the problems of introducing a sanitation programme.
Requirements	If available, video equipment. One copy of each of the six role descriptions. Enough participants to form one or more groups of six.
Time	2 hours.
Overview	<p>The situation is a meeting between authorities and the community of Urbana squatter settlement.</p> <p>The City Council wants to introduce a sanitation programme in Urbana, where only about half of the inhabitants have something which resembles a latrine. The other half does not use a latrine at all.</p> <p>There is no health centre in Urbana, but the clinic which is nearest reports a high number of visitors from Urbana as having complaints which can be related to poor hygiene and inadequate sanitation.</p> <p>The authorities are represented by four people: a sanitation engineer and a health expert from the Ministry of Health, a community development officer and chief physical planner from the District Council.</p> <p>The Urbana settlement is represented by the chairperson and vice-chairperson of the Residents' Committee. The purpose of the meeting is to introduce the Council's plan for sanitation which should cover the whole population of Urbana. The authorities have already conducted a survey in Urbana some months ago. The results were encouraging, but not decisive: the inhabitants were aware of the fact that various diseases were common in Urbana, but when asked how health could be improved, not many people proposed improved sanitation as a possible solution. The authorities seek agreement on the following points:</p>

- Acceptance of the sanitation programme as a priority activity in Urbana;
- Agreement on the sanitation system to be used;
- Agreement on the division of responsibilities between authorities and users for implementation of the programme.

Proceedings

- The instructor explains the role play with the help of the overview and answers questions, if any (10 min.);
- The instructor divides participants into groups of six and assigns to each group a separate room to hold their meetings;
- The instructor then distributes a set of role descriptions to each group;
- Each group assigns roles to its members at random;
- The participants study their roles, but do not discuss them with each other (10 minutes).

At this point a simple, hand-drawn list of the main options already discussed should be available on the wall for recapitulation and reference (photo size, A1).

In the meantime, the instructor calls all the persons who are playing the sanitation engineer together in a separate corner and decides with them which sanitation system will be presented in the meeting. One choice should be made from the viable systems presented in the training module (10 minutes).

- The meeting is acted out (1 hour maximum). It is not necessary that participants cover all the points on the agenda. If video is available, one of the meetings can be recorded. The instructor visits each group occasionally for observation only.
- The participants come together to review the meeting with the instructor and to assess their performance (30 minutes).

Observations

When reviewing the meeting, the following questions should be considered:

- Did all members of the meeting fully understand and approve the selected sanitation system?
- Did it become perfectly clear to all members of the meeting what the role of each was when implementing the programme?

ROLES (The instructor has to give a separate copy to each player)

ROLE 1

Chief Physical
Planner

You are representing the Council in this meeting, together with the community development officer from the Housing Department of the District Council. You think about the improvement of Urbana in general terms: infrastructure and services. You are basically in favour of sanitation, but you are only familiar with the waterborne systems which are used in the middle- and higher-income areas of town. You suspect that any other type of sanitation, especially low-cost, must be of an inferior quality.

However, you will let the sanitation expert and the health expert from the Ministry of Health explain their ideas before you decide to go along with or to reject their proposals.

ROLE 2

Representative
No. 1
(Residents'
Committee)

You are the chairperson of the Residents' Committee of Urbana and you have come to this meeting together with the vice-chairperson to listen to what the people from the District Council and the Ministry of Health have to say. You remember the health expert who conducted a survey in Urbana several months ago and asked a lot of questions.

You understand the authorities want to improve sanitation in Urbana but you do not know much about the subject. You are also not very interested in sanitation. It sounds expensive, and if financial contributions have to be made, you would rather spend money on a health centre or dispensary for Urbana.

ROLE 3

Representative
No. 2
(Residents'
Committee)

You are the vice-chairperson of the Residents' Committee of Urbana and you have come to this meeting together with the chairperson to listen to what people from the District Council and the Ministry of Health have to say. You remember the health expert who conducted a survey in Urbana several months ago and asked many questions.

You understand the authorities want to improve sanitation in Urbana but you do not know much about the subject. You also do not like to talk about it as you consider it a private matter.

ROLE 4

Sanitation
engineer

You are the sanitation engineer from the Ministry of Health and you would like to see sanitation in Urbana improved. You have selected a sanitation system which you think is best suited for the area and you envisage a programme which brings sanitation to every household in Urbana.

You will have to explain how the system works, how it has to be built and what its unit cost is. You will have to convince the representatives of the Residents' Committee of the advantages of the system. You expect that the future users will all fully participate in the construction of their latrines.

ROLE 5

Health expert

You are the health expert from the Ministry of Health. You conducted a survey in Urbana several months ago which convinced you that the population of Urbana has little notion of hygiene and sanitation.

In the meeting, you intend to explain to the representatives of the Residents' Committee how the presence of disease-carrying insects as well as dangerous bacteria and germs undermine the health of the population. The nearest clinic in town is overburdened by visitors from Urbana who suffer from diseases related to inadequate sanitation. You want to stress the point that the solution is not to be found in more clinics but in better disease-prevention in Urbana itself.

ROLE 6

Community
Development
Officer

You are the C.D.O. from the District Council's Housing Department and you have come to this meeting together with the chief physical planner from the same department.

You do not know much about sanitation, but you favour the idea of improving sanitary conditions in Urbana. You know from your regular visits to the area that people are frequently ill and that many young children die each year.

You will have to listen to the proposals made by the visiting health expert (who conducted a survey in Urbana several months ago) and the sanitation engineer from the Ministry of Health, because you want to fully understand the programme they have in mind. You are worried, however, that the representatives from the Residents' Committee and the technicians will not understand each other and you expect to hear some objections to the proposals. You want to find out whether the population of Urbana would appreciate any type of sanitation programme.

ANNEX 2

EXERCISE: THE LATRINE PROGRAMME

Objectives	To give participants an opportunity to assess the merits of a fictitious sanitation programme and to suggest improvements.
Requirements	<ul style="list-style-type: none">- One copy of the information sheet for each participant;- Enough participants to make two to four groups of five.
Time	1.5 hours.
Overview	<p>Lack of sanitation in the country's ^{low-income} squatter settlements has resulted in a high infant mortality rate due to diarrhoea and other intestinal problems. About 40 per cent of the people use latrines, which are normally built by the houseowners but also used by renters. Only a third of these are properly used and maintained. About 60 per cent of the people defecate in the field or in the river.</p> <p>The Government has designated the coming year as the Year of the Latrine. Latrine building has been given high priority, and one million units are scheduled to be built and installed in ^{low-income} squatter settlements all over the country. Community participation is considered important for successful programme implementation. All squatter settlements have been ordered to organize latrine-building co-operatives.</p> <p>To build a latrine, each household will contribute half of the unit cost to its building co-operative, and the Government will contribute the other half of the unit cost as soon as the substructure is completed.</p> <p>Radio ownership is common in most parts of the country and radio programmes are scheduled to promote and support building cooperatives. The radio programmes will stress the advantages of latrines in reducing gastrointestinal infections.</p> <p>The Government estimates that it will have reduced infant mortality due to diarrhoea and other intestinal disorders by 30 per cent at the end of the Year of the Latrine.</p>

It is the task of each group to assess whether the Year of the Latrine has a good chance to succeed or not. Reasons for success or failure have to be clearly stated. Recommendations for improvement, if any, have to be made.

Proceedings

- The instructor explains the exercise with the help of the overview (10 minutes) and answers questions, if any;
- The trainer divides the trainees into groups of five and assigns separate rooms to them; He also distributes copies of the information sheet (5 minutes);
- The groups have 45 minutes to examine the case and to prepare their statements;
- Each group presents its statement and is questioned by other groups. The session is evaluated (30 minutes).

INFORMATION SHEET (for trainees)

A recent survey in squatter settlements has shown that residents rank their problems as follows:

- 1) lack of land;
- 2) lack of job opportunities;
- 3) lack of clean drinking water;
- 4) overpopulation
- 5) poor health care facilities;
- 6) lack of latrines;
- 7) lack of security;
- 8) lack of roads;
- 9) lack of schools;
- 10) lack of public transport.

The survey above shows that most plot owners who build latrines do this because there is no nearby field or river to defecate.

ANSWER KEY (for instructor only)

The chances of meeting the objective of the Year of the Latrine are low.

- Even though latrine building is a high priority of the Government, it is not seen as a priority by the residents of the squatter settlements.
- The programme does not include support activities to ensure proper use and maintenance.
- The programme is not specific about the sanitation system to be used nor the production and the delivery of components.
- Other identified by the participants.

Check whether the trainees' proposals for improvement of the Latrine Programme cover the inadequacies listed above.

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