

STRATEGIC PLANNING FOR MUNICIPAL SANITATION

A guide



First Edition

July 2000

GHK
Research & Training Ltd.

in association with

Water, Engineering and Development Centre
and
Water and Sanitation Program, South Asia

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about this guide

This Guide has been produced by GHK Research and Training in collaboration with the Water, Engineering and Development Centre (WEDC) at Loughborough University, UK and the South Asia Regional Office of the UNDP-World Bank Water and Sanitation Program (WSP-South Asia).

The primary author and editor is Kevin Tayler with additional inputs from Jeremy Colin (section 4) and Jonathan Parkinson. Jeremy Colin also played a key role in guiding the pilot strategic planning process in Bharatpur, Rajasthan, which heavily informed the content of the guide.

The guide will be further developed and we would appreciate your comments and feedback and encourage you to fill in the evaluation form. We will endeavour to incorporate your recommendations in future editions of the guide. Information of how to access updates and additional tools for strategic planning will be posted on the GHK Research and Training web-site at <www.ghkint.com>.

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Many of the diagrams that illustrate Tool 2.1 were produced by Rod Shaw at WEDC. Most of the photographs have been taken by the authors or other members of the research team. Some of the Faisalabad photographs, including the cover photograph, were taken by staff members of the DFID-funded Faisalabad Area Upgrading Project.

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Glossary of Sanitation Terms

Aerobic treatment

Treatment of sewage or sullage that relies on aerobic bacteria

Anaerobic digestion

Decomposition of organic material by anaerobic bacteria in the absence of air

Anaerobic treatment

Sewage treatment process that relies on anaerobic digestion processes

Aqua privy

Latrine in which excreta is deposited through a hole and a vertical pipe into a watertight chamber. The vertical pipe should extend below the water surface to form a water seal. Excess water is allowed to overflow into a drainfield or soakaway

BOD

Biochemical oxygen demand: a measure of the organic pollutant strength of sewage measured in milligrams per litre. Equates to the mass of oxygen consumed by organic matter during aerobic decomposition under standard conditions over a fixed duration (usually 5 days).

Bucket latrine

A latrine in which users defecate into a bucket or other receptacle that is regularly emptied

Composting latrine

A latrine designed to receive both faeces and waste vegetable matter with the aim of reducing the moisture content of the waste and to achieve a carbon to nitrogen ratio that encourages its rapid decomposition

Dry latrine

The term dry latrine is used to describe both:

- 1) crude systems in which faeces are excreted onto a slab or into an improvised container, from which they are manually removed; and
- 2) a latrine from which water and urine are excluded in order to increase the rate at which excreta decomposes

Excreta

Faeces and urine

Latrine

An installation used for defecation and urination

Overhung latrine

Latrine sited so that excreta falls directly into a lake, river or other body of water

Nightsoil

Human excreta, with or without anal cleansing material, which are deposited into a bucket or other receptacle for manual removal

Off-set pit

Pit that is partially or wholly displaced from its superstructure

On-plot sanitation

A sanitation system that is contained within the plot occupied by the dwelling and its immediate surroundings (for instance when disposal is to a leachpit immediately beyond the plot boundary).

On-plot facilities

Sanitation facilities that are located on the householder's plot. May be an on-plot system or the on-plot components of a more extensive system

Pathogens

Micro organisms such as bacteria, viruses and protozoa, that cause disease

Percolation rate

The rate at which liquids move through soil

Pit latrine

Latrine with a pit for accumulation and decomposition of excreta and from which liquid infiltrates into the surrounding soil. (The term is sometimes used for pour-flush latrines but this usage is technically incorrect)

Pour flush latrine

A latrine that depends on small quantities of water, poured from a container by hand, to flush faeces away from the point of defecation. The term is normally used for a latrine incorporating a water seal. (See below)

Primary facilities

The term primary is normally used for facilities, such as trunk sewers and municipal sewage treatment works, that are designed to serve either a whole town or a sizeable zone of a large city. (Note that the term primary is used to describe solid waste collection services at the local level. In other words, it is used in exactly the opposite way to that commonly used for other services)

Sanitation

A system for promoting sanitary (healthy) conditions.

Secondary facilities

Facilities that serve a district within a town or city

Septic tank

A tank or container, normally with one inlet and one outlet, that retains sewage and reduces its strength by settlement and anaerobic digestion of excreta.

Sewage

Wastewater from a community, including excreta that is, will be, or has been carried in a sewer

Sewer

A conduit, usually a pipe, that is used to convey the wastewater from more than one property

Sewerage

System of interconnected sewers

Soakaway

Soakpit or drainage trench for subsoil percolation of liquid waste

Soakpits

Hole dug in the ground serving as a soakaway

Stormwater

Run-off caused by rainfall

Sullage

Wastewater from bathing, laundry, preparation of food, cooking and other personal and domestic activities that does not contain excreta. (Sometimes known as greywater).

Superstructure

Screen or building enclosing a latrine to provide privacy and protection for users

Tertiary facilities

Facilities that serve streets or local neighbourhoods, typically up to about 10 hectares in area

Vent pipe

Pipe provided to facilitate the escape of gases and odours from a latrine or septic tank

VIP latrine

Ventilated improved pit latrine, pit latrine with a screened vent pipe and a dark interior to the superstructure

Water closet

A pan, incorporating a water seal, in which excreta are deposited before being flushed away using water

Water seal

Water held in a U-shaped pipe or hemispherical bowl connecting a pan to a pipe, channel or pit to prevent the escape of gases and insects from the sewer or pit

Wastewater

Sewage or sullage

Y-junction

Chamber in which liquid may be directed along either of two pipes or channels

INFORMATION ON THE GUIDE

What is this guide about?

This guide is about improving sanitation conditions in the rapidly growing towns and cities of the 'South'. The scale of the sanitation problems created by rapid urbanisation is well known as is the fact that limited progress has been made to date in addressing those problems.

The guide assumes the need to think, plan and act strategically to solve these problems but it emphasises that a strategy will only be successful if it is based on a sound understanding of existing conditions, constraints and opportunities. It recognises that:

1. **a person's options for action will be influenced by his or her position, the powers associated with that position and the available resources; and**
2. **policy development is a two-way process.** Action in the field can provide important inputs into the development of policy which in turn provides the context for the widespread implementation of good practice

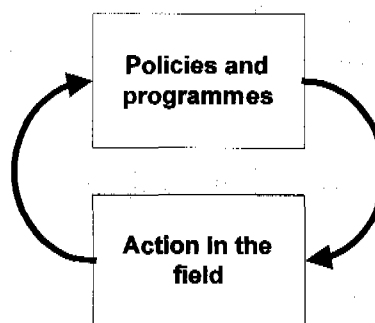


Figure i Links between policy and practice

The guide also assumes that the need is to provide sanitation **services** rather than sanitation **facilities**. It is not sufficient to **provide** facilities, they must also be **managed** if they are to achieve long-term benefits. Issues of **operation** and **maintenance** must therefore be seen as central to sanitation provision

Starting from these basic premises, the guide explores the ways in which the various individuals, organisations and groups with an interest in sanitation (stakeholders) can take action to improve sanitation services. It emphasises the need for them to co-ordinate their efforts in order to deal with problems and opportunities in an effective way.

For each reader, the guide aims to answer the following questions.

- **What can I do to improve sanitation in the urban areas for which I am responsible or in which I operate?**
- **How can I ensure that my actions are part of an overall strategic approach to sanitation provision?**
- **What can I do myself and for what tasks should I seek support?**
- **Where might I find that support?**

Who is the guide for?

The guide aims to encourage initiatives wherever they occur rather than to insist that there is one 'correct' strategic sanitation approach. Policy makers and those who advise them obviously have an important role but there are many examples of local initiatives that have led to changes far beyond themselves. So, the guide aims to show you how you might act more strategically, whoever you are and whatever your position. You are likely find the guide useful if you:

- advise an international agency, central or state/provincial government on urban sanitation policy.
- are responsible for converting that policy into national and state/provincial programmes;
- wish to develop effective sanitation plans at the municipal level.
- are involved with local projects and programmes.

While the focus of the guide is on urban sanitation, many of the principles and approaches presented are applicable both to rural situations and to other infrastructure sectors.

Why use this guide?

Why will this guide be useful to those working to improve sanitation systems? In what ways does it say something new? The answers to these questions are likely to vary from reader to reader. However, we believe that it has value for the following reasons:

- **It is founded upon practical experience.** It draws upon examples from throughout South Asia and beyond and in particular from a pilot strategic sanitation exercise that was started in the municipality of Bharatpur, Rajasthan in 1998.
- It recognises the reality that **urban sanitation is provided by a variety of individuals and organisations** and promotes an **inclusive** approach to sanitation provision that draws upon all available resources..
- It emphasises the need to **link technology and institutions in appropriate systems**. These systems must be compatible with social structures and manageable within existing financial and managerial resources. This means that it is concerned with the **processes** through which sanitation systems are provided and managed.

When to use this guide

You can use the guide if you are starting a sanitation planning process and want to develop your ideas about how to proceed.

Alternatively, you may be already working to improve sanitation and be interested in how you can make your activities more strategic and effective. If so, consider what this guide has to offer you.

HOW TO USE THIS GUIDE

Structure of the guide

The guide is divided into three main parts :

Part A - Context and concepts

Part B - Processes

Part C - Tools

The contents and structure of each of these parts further divided as shown in Figure ii and described further on the following page.

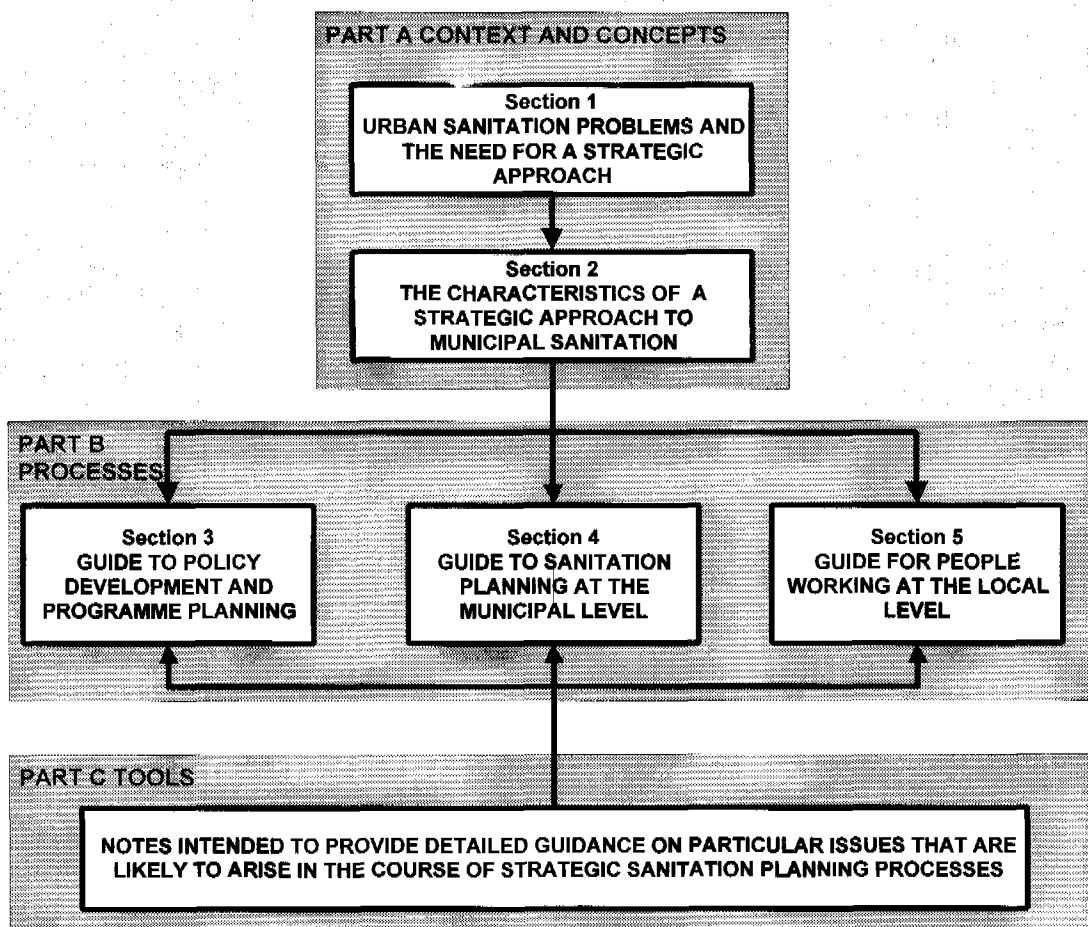


Figure ii Structure of the guide

PART A

Part A introduces important strategic concepts and is intended to put the rest of the guide into context. **All readers should find something of value in this part of the guide.** It is divided into two sections.

Section 1 provides an introduction to sanitation problems and the ways in which they have been tackled in the past. *Read this section if you need to know why sanitation improvements are important, the ways in which different groups may look at sanitation, how sanitation services might be deficient and how sanitation problems have been tackled in the past.*

Section 2 identifies the essential characteristics of a strategic approach to sanitation planning and explores these characteristics in some detail. *Read this section in order to obtain an understanding of the thinking that underlies the remainder of the guide.*

PART B

Part B is the heart of the guide. It is divided into three sections, each containing information on the processes to be followed to develop a more strategic approach to sanitation service provision at a particular level.

Section 3 sets out processes to be followed in developing policy and converting that policy into effective programmes. *Read this section if you are concerned in any way with policy development and planning sanitation programmes at the national or state/provincial level.*

Section 4 sets out an approach to sanitation planning at the municipal level, stressing that planning will only be effective if it involves the various stakeholders with an interest in sanitation. *Readers of this section are likely to include municipal officials and others who are interested in developing a more effective approach to sanitation planning at the municipal level.*

Section 5 deals with the processes that are required to establish, inform and respond to demand for improved sanitation services at the local level. *Anyone who is interested in improving sanitation services at the local level should read this section.*

Further information on the contents in Part B is contained in the introduction at the beginning of each section.

PART C

Part C contains a set of tools to assist strategic planning, training modules, and a section suggesting further sources of information. Some of the Tools cover a single subject while others are comprised of number of shorter notes on a series of linked subjects.

Further details on the subjects covered by the tools can be found in the introduction to Part C. These notes provide suggestions for a series of training modules based on the material contained in the guide.

Navigating your way around the guide

We assume that readers will want to use this guide to answer issues and specific questions that arise as they attempt to improve sanitation services. Rather than reading it from cover to cover, the guide has been designed for you to use the section that will be most relevant to your interests and needs. Table A provides as quick reference to enable you to identify the sections of the guide that you should read.

The following conventions are used to help you to navigate your way around the guide :

- Detailed information on the contents of each of the five main sections is provided at the beginning of the section. This is followed by a box entitled '**About this section**'. Read this to obtain an overview of what is in the section.
- A summary of the most important points that you should aim to remember from each section entitled '**key points in this section**' is also included. Use this to remind yourself of the key points that you need to take from the section.
- In the process sections (Sections 3-5), short notes are provided at key points. These are usually found at the beginning or end of sub-sections and are enclosed in boxes and shaded. They summarise what has gone before and/or provide an introduction to what is to follow.
- At the beginning of each of the process planning sections, you will also find a diagram which illustrates the steps towards sanitation planning and implementation that is described in each section (Figures 3.1, 4.3 and 5.1).
- Each tool in Part C starts with a box entitled '**About this tool**' designed to inform you of the contents of the tool. Each tool is also introduced by a short sub-section entitled '**what this note will tell you**', which is intended to provide a brief overview of the subject.
- Throughout the guide, the top of each page is marked with a reference to the part or section of the guide that is being read.

Table A Which Sections of the Guide should you read ?

SECTION		Policy makers and advisors	Funding agencies and international NGOs	Municipal councillors and administrators	Municipal engineers and agency officials	Local NGOs and CBOs
1	Introduction	■	■	■	■	■
2	Concepts of strategic sanitation planning	■	■	■	■	■
3	Policy development and programme planning	■	■	■		
4	Planning at the municipal level			■	■	
5	Sanitation planning at the local level				■	■

Strategic Planning for Municipal Sanitation

Section 1



URBAN SANITATION PROBLEMS AND THE NEED FOR STRATEGIC PLANNING

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Section 1

Urban Sanitation Problems and the Need for a Strategic Approach

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URBAN SANITATION PROBLEMS AND THE NEED FOR A STRATEGIC APPROACH

ABOUT THIS SECTION

This section of the guide provides an overview of urban sanitation problems and current responses to them. It starts by briefly defining sanitation and exploring the reasons why improved sanitation is important. Different groups may want improved sanitation for different reasons and the need to consider different viewpoints and mediate between the objectives of different stakeholders is stressed.

Attention then moves to the ways in which sanitation services might be deficient and this in turn leads into consideration of current responses to sanitation deficiencies. Problems with these responses are discussed and the need for a strategic approach to municipal sanitation provision is introduced.

KEY POINTS IN THIS SECTION

1. Sanitation involves not just physical facilities, but also the social, institutional and financial systems that support them.
2. Different people may have different reasons for wanting to improve sanitation. It is important to be aware of these reasons and reach consensus on objectives when developing a sanitation programme.
3. Sanitation services can be deficient in a number of ways. The problem is not just one of an absolute lack of facilities.
4. Sanitation problems can only be solved by co-ordinated action that uses the resources of all those with an interest in sanitation provision.
5. Initiatives must be contained within a strategic approach to sanitation that is demand-responsive and recognises the need to provide effective incentives.

1.1 What do we mean by sanitation?

Sanitation can be defined as a system for promoting sanitary health conditions. The use of the word 'system' suggests that sanitation is not primarily about physical facilities but rather about the services that are provided through those facilities. It also suggests the need to consider sanitation services and facilities in terms of the social, institutional and financial systems that support them.

Sanitation is sometimes viewed in terms of either excreta disposal or solid waste management. Promotion of sanitary health conditions also requires attention to storm and sullage water drainage and water supply. This guide focuses mainly on waste disposal and drainage, considering water supply only in so far as it affects either the choice of sanitation option or the need for wastewater disposal.

1.2 Why improved sanitation?

Different groups are likely to have different reasons for wanting to improve sanitation services.

Householders are likely to have some understanding of the health risks of poor sanitation, but their main concern will often be with convenience and improvements in their immediate environment. Their view of sanitation may be influenced by socio-cultural factors

Health professionals will naturally emphasise health benefits and in particular the role of sanitation in removing potentially harmful pathogens (disease-causing organisms) from the environment.

Engineers are often more concerned with the wider environmental aspects of waste water disposal, particularly biological and chemical degradation of surface water and groundwater. (See Box 1.1).

Politicians and local councillors may be concerned with all the above, but they will be aware that physical improvements in their constituencies will increase the number of people who vote for them.

Economists might argue that improvements in health, the environment and convenience are only steps towards providing increased economic benefits.

From a more **general** development perspective, improved sanitation can contribute to poverty reduction by reducing vulnerability to disease and allowing low-income people to make better use of their resources.

Box 1.2 provides an example from Bharatpur of what these different perspectives can mean in practice.

Overall, the goal of environmental sanitation should be to ensure that:

- **people lead healthy and productive lives; and**
- **the natural environment is protected.**

Box 1.1 Why engineers focus on the environmental aspects of sanitation

The reasons for engineers' emphasis on wastewater disposal are largely historical. In the West, the initial impetus for improvements in sanitation and drainage was provided by concerns about health, hence the fact that engineers concerned with the sector are commonly referred to as public health engineers. Efforts were concentrated on the improvement of the local environment, often at the expense of receiving waters. By the 20th century, inadequate sanitation persisted only in isolated pockets and the attention of engineers focused mainly on efforts to improve water quality in polluted watercourses - rivers, streams, lakes and the sea. Conventional training for engineers reflects this focus and concentrates on the overall design of sewerage and sewage disposal systems, taking the existence of household sanitation and local sewers more or less for granted. **Where existing sanitation provision is poor, there is a need for greater emphasis on the health impacts of sanitation provision. Conversely, where existing household sanitation is reasonably good, more emphasis will have to be given to environmental concerns.**

Box 1.2 Differing objectives - the case of Bharatpur, India

Bharatpur is a small town in Rajasthan, India. In 1997, it was selected as the location for the development of a pilot strategic sanitation planning process. Early in the process, it became clear that different stakeholders had different objectives.

Driven by their concern with sound finances, representatives of the UNDP-World Bank Water and Sanitation Program were initially concerned with the systems for financing sanitation facilities. They asked whether programmes were demand driven and whether they ensured that sanitation users were paying at least something towards the cost of sanitation services.

The main concern of municipal officials was with the pollution of the Sujan Ganga, the moat that encircles the historic fort at the centre of the town.

Residents of low income areas and representatives of the non-government organisations working with them were, not surprisingly, more concerned with improvements in their own sanitation facilities and the effect that these might have in affording them greater convenience and improving their immediate environment.

1.3 The need to mediate between objectives

In the last section, we saw that different stakeholders are likely to have different reasons for wanting improved sanitation. In other words, they are likely to have different objectives. In particular, some stakeholders will focus mainly on the needs of people while others will wish to protect the wider environment.

Where resources are scarce, it will be difficult to achieve everyone's objectives at the same time. This suggests that planning processes must be able to mediate between different objectives in order to identify agreed goals that are acceptable to everyone. This will best be achieved if:

- all stakeholders are involved, or at least represented, in the process from the start; and
- the processes by which decisions are made are as transparent as possible.

The practical implications of these principles are considered later in the guide.

1.4 How may sanitation services be deficient?

Deficient sanitation is a fact of life for an increasing number of people in rapidly growing urban settlements. Official figures give some idea of the scale of the problem, but the picture that they provide is incomplete. In order to understand why this is so, it is necessary to look at the ways in which sanitation provision may be deficient.

1. There may be an **absolute lack of sanitation facilities**, particularly, but not exclusively in rapidly growing 'informal' settlements on the urban fringe. This is often a **transient condition** and is likely to be replaced in time by one of the following situations.
2. **Sanitation facilities are provided, but they are inconvenient, unpleasant and/or unhygienic.** Examples include over-used and poorly maintained communal latrines and bucket latrine systems.
3. Sanitation facilities are available, but **some people have limited access** to them. Access to sanitation may be influenced by who you are and what you can pay. Just because a sanitation facility is provided, it does not mean that everyone will be allowed to use it.
4. Sanitation facilities have been provided, but **they are not operated or maintained properly.** Poor operation and maintenance of a facility shortens its useful life and may, at worst, result in rapid total failure as graphically illustrated in Figure 1.1.
5. **Solutions to local problems result in wider environmental problems** because local solutions transfer problems outwards rather than eliminating them.



Figure 1.1
Community-built sewer in Lahore, Pakistan

The sewer has failed because of poor design and lack of maintenance.

Box 1.3 provides an example of each category of sanitation deficiency. It is based on the experience and observations of the authors of this guide.

Box 1.3 Examples of sanitation problems**Absolute lack of sanitation facilities**

Pavement dwellers and those who occupy land alongside railways and canals are obvious examples of people who have very limited legal rights and often have no access to sanitation facilities. Another situation is illustrated by one 'busti' in Howrah, Calcutta where people have been squatting in the houses that they previously occupied as employees of a jute mill since the mill closed in the mid 1960s. Although they have sufficient political support to protect them from eviction, the landowner has threatened to take them to court if they attempt to install improved facilities. The result is that they still lack even the most basic sanitation facilities after over 30 years. See Figure 1.2

Sanitation facilities provided but they are unpleasant and hygienic

In most towns in Sudan, a 'conservancy' system operated in middle and lower income areas during the colonial period. Latrines were built with provision for buckets to be removed by 'scavengers' employed by local government. The system was officially abolished in the 1960s, but in the absence of alternative provision, people continued to use the old bucket latrine system. However, the lack of any official management meant that operations were disorganised, there was nowhere to dispose of the contents of buckets and the system was even more unhygienic than before.

Limited access to sanitation facilities

Many bustis in Calcutta are what are known as thika tenancies. The land has been taken over from the original owners by the government. However, the 'thika tenants', relatively poor people who were given rights to raise buildings on plots of land and let them to even poorer people, still collect rents from their sub-tenants although the rights of the latter are now protected in law. Typical thika tenancies in Howrah consist of small plots, perhaps 200-300 square metres in area and occupied by around 200 people. Under various sanitation improvement programmes, many of these thika tenancies were provided with toilets, usually 2 toilets for one plot. The common pattern is for the thika tenant, who normally resides on the plot, and his family to reserve access to one of the toilets for themselves, leaving the other to be shared by all the other tenants.

Facilities provided but not operated properly

This is a widespread phenomenon. It has been observed that pumping stations in Lahore, Calcutta and Chennai are often allowed to fill to above the level of the soffit or crown of the incoming sewer. This means that the sewer is almost always running surcharged and not as designed and the inevitable result is rapid siltation. Studies in Lahore by Carl Bro International revealed that many sewers were over half full with compacted material that had set as hard as lean concrete and was very difficult to remove.

Solutions to local problems result in wider problems

In informal areas in Pakistan, there has been a strong move to replace unhygienic 'dry' latrines with pour-flush WCs. In an area in north-east Lahore, for instance, surveys suggested that the percentage of households with water-flushed sanitation went from around 35% in 1986 to around 85% in 1990. The common pattern is for WCs to discharge to open drains, usually but not always via a septic tank. In many areas, people have gone one step further and have worked together to provide sewers which discharge waste water to the nearest collector drain or natural watercourse. In Orangi, a large informally settled area on the outskirts of Karachi, some community groups worked together under the guidance of the well known Orangi Pilot Project, to provide collector sewers serving whole neighbourhoods. Each stage pushes the problem one step further away from local people, but there is still no treatment for the sewage produced in Orangi. This means that it pollutes local 'nullahs' and is eventually discharged untreated into the Lyari River.

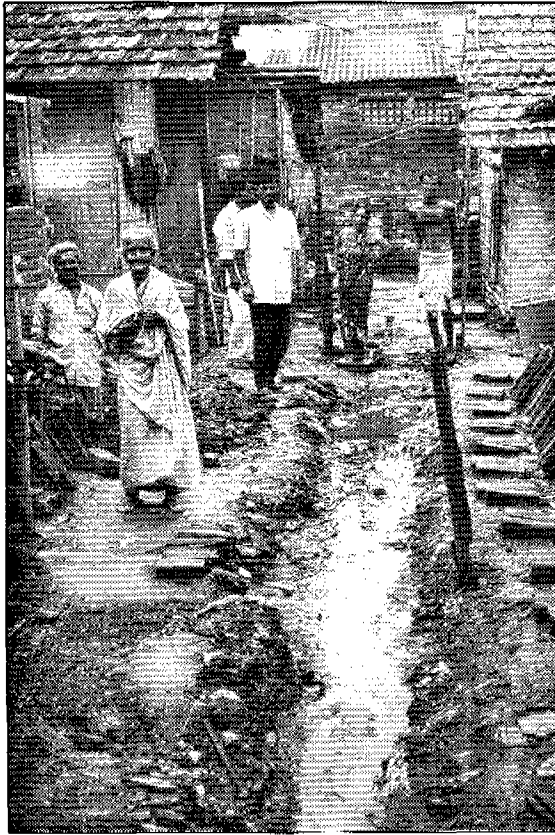


Figure 1.2 Existing inadequate drainage in a 'refugee' settlement on the outskirts of Calcutta - an example of an absolute lack of facilities

Lack of legal tenure means that communities are often denied access to basic sanitation and drainage.

Action to solve the problem could only be funded once the community's tenure was formalised.



Figure 1.3 Formal solid waste transfer station in Bharatpur

An example of poor management. Poor management of the transfer station has led to insanitary conditions and blockage of drains.

The situation is worsened by the use of equipment that requires double handling of waste. Note the presence of informal rag-pickers in the background.

Failure to recognise the existence of such groups when redesigning facilities may result in operational problems.

1.5 Responses to sanitation problems

Responses to sanitation problems can be broadly categorised as follows.

1. **Large planned schemes.** Many, but not all, of these schemes are supported by external donors. In addition, they usually involve some combination of central government and state/provincial government funding.

These include:

- *centralised schemes*, normally involving sewerage, that focus first on the development of overall plans and then on the construction of trunk and collector sewers and, in some cases, treatment plants.
- *large 'programme' schemes* that involve the provision of a large number of small-scale facilities. This approach is well suited to schemes to provide on-plot sanitation, but could also be used to provide local sewers and drains, perhaps as part of a larger sewerage/drainage scheme.

- 2 **Small-scale schemes to provide solutions to local problems.** These may be initiated by local government, NGOs and community groups, occasionally acting together and sometimes with funds provided by higher levels of government. The level of technical input and the degree of formal planning attempted vary between initiatives, but both are generally low.

1.6 Problems with current approaches

Centralised schemes.

Problems with large centralised schemes include the following.

- **Implementation of centralised schemes rarely keeps pace with the development of new areas.** This means that a backlog of unsewered areas always remains. The emphasis on large trunk sewers often leaves few resources available for the construction of local (secondary and tertiary level) sewers. This in turn often means that few houses are connected to sewers. A related point is that the first priority is often to improve water supply, with little thought given to the impact this will have in the absence of drainage.
- **The large capital investment in new facilities is rarely matched by a practical concern with their operation and maintenance.** Sanitation planners often talk about the need for better operation and maintenance, but words are rarely matched with deeds.
- **Plans tend to be 'supply driven'.** Little attempt is made to obtain the views of potential sanitation users as large schemes are implemented in a 'top-down' supply driven way

Large programme schemes

It may be difficult to manage the provision of a large number of small-scale facilities. Where this is the case, there will be a temptation for the executing agency to say where and for whom facilities will be provided rather than responding to user demand. Household members may then misuse facilities or even fail to use them at all.

Small scale locally-initiated schemes

These schemes may be responsive to the immediate needs of users, but the solutions that they provide are often partial. They may shift problems from the local level to the wider environment and/or fail prematurely because of the use of poor technical standards, specifications and construction details. The lack of planning means that individual initiatives are rarely coordinated, either with each other or with higher-order facilities provided by central providers. Because of these limitations, national planners and international agencies often ignore this form of activity. However, the large number of individual schemes means that the overall impact of small-scale activity can be significant and for this reason it needs to be taken into account in any strategic approach to sanitation provision.

1.7 The need for a strategic approach

The limitations of current approaches suggest the need for a strategic approach to sanitation provision that makes the best use of the available resources by combining them into a coordinated whole. A strategy may be defined as "a plan of action or policy". There are, of course, examples of both good and bad strategies. This guide aims to identify the key ways in which the elements of strategic planning can lead to practical action to improve municipal sanitation services.

The starting point for the development of the guide is the Strategic Sanitation Approach (SSA), developed by the UNDP-World Bank Water and Sanitation Program (WSP). The SSA was initially tested in West Africa, in Kumasi, Ghana and Ouagadougou, Burkina Faso. Saidi Sharouze (1994) has described the work in West Africa and a more comprehensive definition and review of the SSA has been produced by Albert Wright (1997).

Wright states that the primary goal of a strategic sanitation approach must be to achieve sustainable expansion of sanitation coverage. In order to do this, he suggests that sanitation programmes must be based on the twin principles of **demand** and attention to **appropriate incentives**. The former is seen primarily in economic terms and is strongly related to **willingness to pay** for sanitation services. The SSA stresses a number of other key issues relating to the ways in which sanitation systems should be perceived and managed.

The research that led to the production of this guide revealed a need for some changes in emphasis from those proposed in the original SSA. Section 2 of the guide develops a modified set of principles and concepts, based on practical experience in South Asia. Read on to provide yourself with a framework for understanding the more detailed guidance that follows in later sections of the guide.

Strategic Planning
for
Municipal Sanitation

Section 2



**CHARACTERISTICS OF A
STRATEGIC APPROACH TO
SANITATION PLANNING**

Section 2

Characteristics of a Strategic Approach to Sanitation Planning

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CHARACTERISTICS OF A STRATEGIC APPROACH TO SANITATION PLANNING

ABOUT THIS SECTION

This section is concerned with what makes an approach to sanitation planning strategic. A strategic approach is defined by its and its overall approach to achieving those objectives. In terms of objectives, a strategic approach must aim to take a town or city-wide perspective while ensuring that services are equitable, institutionally and environmentally sustainable.

The conditions necessary for these objectives to be achieved are then examined. The need for a supportive context is emphasised, as is the importance of complying with basic strategic principles. Appropriate incentives, effective support systems and sound finances are identified as key features of a supportive context. Basic strategic principles are then introduced and briefly examined.

KEY POINTS IN THIS SECTION

1. Sanitation plans must be grounded in the existing situation and respond to actual rather than assumed problems and deficiencies. In particular, they must address any problems with the management of existing facilities.
2. Plans will work best within a supportive context that provides appropriate incentives, support and guidance where necessary, particularly for sound financial systems.
3. It is necessary to first inform and then respond to user demand.
4. Action must be matched to available resources. This may require that you proceed in small steps but the ultimate aim must be to have a city-wide impact.
5. There is a need for appropriate sanitation systems that recognise the links between technologies and the available financial, human and institutional resources.
6. One organisation does not have to be responsible for all aspects of sanitation provision. Some division and devolution of responsibilities will often be appropriate. Conversely, there will be situations in which the priority is improved co-ordination between the various stakeholders.
7. Different sanitation technologies are likely to be appropriate in different locations in the same town or city.

2.1 What should a strategic approach set out to achieve?

A strategic approach can be partly defined in terms of its objectives. It must aim to be:

- **concerned with cities and towns as a whole.** This does not preclude the need for more local efforts but the need to replicate them and or increase their scale must be taken into account;
- **equitable** - in that it addresses the needs of all, especially the urban poor, who are most likely to suffer from sanitation deficiencies;
- **institutionally sustainable** - in that it continues to address those needs over time; and
- **environmentally sustainable** - in that solutions to local problems do not cause deterioration in the wider environment or use resources that cannot be replaced.

When you are evaluating whether or not an approach is strategic, ask yourself whether it sets out to achieve these objectives or has the potential to contribute towards them. Box 2.1 gives some additional points on strategic objectives in practice.

Box 2.1 Some points on strategic objectives in practice

The need to deal with **cities as a whole** does not exclude the possibility of local, more limited actions. It does mean that each action needs to be assessed to determine whether it is widely replicable with locally available resources. This is especially true of projects funded by international agencies. Most rely on resources that are not available to local stakeholders. The planners of such programmes should always consider how lessons learnt in the course of their programmes can be absorbed into mainstream in-country practice.

Equity will often require that special attention is paid to the sanitation needs of the poor and vulnerable. In some cases, this attention shows itself in special sanitation programmes that target the poor directly. These programmes are necessary and useful but mainstream sanitation initiatives should also take account of the needs of the poor.

Institutional sustainability requires that arrangements exist to operate and maintain facilities. In general, simple self-contained sanitation technologies, for instance pour-flush toilets discharging to household leach-pits, are more institutionally sustainable than those, such as sewerage, that require complex networks and treatment processes. Note, however, that a process is not necessarily easier to manage because it is local. For instance, localised sewage treatment may present greater management problems than centralised treatment.

When water is in short supply, the need to ensure **environmental sustainability** requires that serious attention is given to alternatives to sewered sanitation. For instance, Sana'a in Yemen is facing a water supply crisis as its population grows rapidly and existing groundwater sources close to the city are rapidly being depleted. In effect, water is being mined and there is no alternative source of water. In such circumstances, it clearly makes little sense to use scarce water resources to flush human wastes out of the city. Sana'a had traditional 'dry' systems of sanitation that have attracted considerable attention but these have mostly been abandoned, apparently because people prefer the convenience offered by flushed toilets. This example illustrates the point that considerable effort will sometimes be required to make sanitation users aware of the wider implications of their sanitation choices.

2.2 What is necessary for strategic objectives to be achieved?

The need for a supportive context

Local efforts can achieve local benefits and can provide lessons about what does and does not work. However, it will be difficult to sustain them over time or replicate them widely unless the context is supportive. Three aspects of this context are particularly important. Sanitation programmes and initiatives must be supported by:

- **incentives**, designed to ensure that sanitation providers and users **want** to act strategically;
- **guidance** designed to ensure that providers know **how** to act strategically; and
- **sound financial** systems that provide the funds that **enable** them to act strategically.

Those who deal with policies and overall government programmes should be particularly concerned with developing a supportive context.

Adherence to basic strategic principles

In order to be strategic, a plan or process must:

- **be grounded in the existing situation**; (See Figure 2.1 and Section 2.4)
- **respond to informed demand**; (See Section 2.5)
- **involve all the stakeholders**; (See Section 2.6)
- **match action with available resources**; (See section 2.7) and
- **take a wide view of sanitation** (See Section 2.8).

Each of these basic requirements for a strategic approach is considered further in the pages that follow.



Figure 2.1 Grounding action in the existing situation

Do not assume that nothing exists already - Household septic tanks discharging to an open drain in Faisalabad suggest that on-plot sanitation exists.

They could be incorporated into a sewered interceptor tank system. Refer to Tool 2.1 for more information.

2.3 Developing a supportive context

As indicated in Section 2.2, a supportive context, encompassing appropriate incentives, effective support and guidance systems and sound financial systems, is necessary if sanitation plans are to have city-wide impact. What are the key points about each of these requirements?

Appropriate incentives

Incentives can take the form of:

- **rewards for taking effective action** - for instance, increased funding for municipalities that succeed in implementing effective sanitation programmes and promotion for government officials who carry out their duties efficiently and effectively; and
- **sanctions against harmful actions and/or failure to act** - for instance, a ban, supported by fines, on the use of untreated sewage to irrigate crops.

As a general rule, base incentives on rewards rather than sanctions wherever possible.

Incentives are unlikely to be effective unless there are clear **rules** for implementing them, and **referees** to see that the rules are enforced. Referees, in the form of regulatory bodies, are likely to be particularly important when the private sector is given a large role in sanitation provision.

Effective support systems

Incentives on their own are not enough if people do not have the capacity to act effectively and responsibly. To be strategic, an approach must consider the action that is needed to increase the knowledge and skills of both the users and providers of sanitation services. Particular attention may have to be paid to ensuring that both users and providers consider the wider environmental implications of their actions.

Sound finances

Institutional sustainability requires that dependence on subsidies from external sources is minimised. Subsidy of capital costs may be appropriate when funds are available, for instance from taxes, but **subsidy of recurrent costs should always be avoided**.

Sound finances require that the **costs** of sanitation facilities and the systems that support them are **affordable** to those who have to pay for them. This requirement will influence the choice of sanitation system. For instance, it may preclude the use of 'conventional' sewerage using 'western' standards in low-income areas.

They also require that **charges** for sanitation facilities are realistic and that those charges are **collected**.

The working out of these principles in practice is further considered in the processes section of this guide.

2.4 Grounding plans in the existing situation

Sanitation initiatives should always start by asking the question '**where are we now**'. Too many initiatives fail because they tackle the wrong problems, fail to ask what people want or make unwarranted assumptions about capacity to respond to demand. So, sanitation initiatives and programmes must:

- **take into account what has already been done;** and
- **be responsive to actual problems and deficiencies.**

Taking into account what has already been done

Sanitation planners often start from the assumption that nothing exists already so that they are starting with a blank sheet. **This will very rarely be the case.** Good strategic planning requires that you look at what already exists and consider whether you can build upon it. After all, existing facilities and services can represent a sizeable 'sunk' investment.

Beware of trying to achieve a perfect solution. Even where what already exists is less than perfect, it may be more realistic to develop and improve it than to build something completely new. New facilities have an unfortunate tendency to suffer from the same operational problems as their predecessors.

This does not mean that you should automatically incorporate existing facilities into your plans just because they are there. Some existing facilities, for instance poorly constructed and detailed community-built sewers with no fall, may have to be replaced. Study the performance of such facilities and the reasons for their failure before deciding to retain them.

Responding to actual problems and deficiencies

The need to respond to actual problems and deficiencies may seem obvious. However, it is all too easy to do something because you know how to do it rather than because it is really necessary.

For instance, engineers know how to design and build drains. When flooding occurs, our first reaction is to assume a need for new and larger drains. However, inspection of existing drains will often reveal that they were originally much deeper and have since lost capacity because they are full of silt. The problem may be **lack of maintenance** rather than the fact that the existing drain is too small. Before taking a decision on what to do, it is essential to investigate the reasons for the current problems.

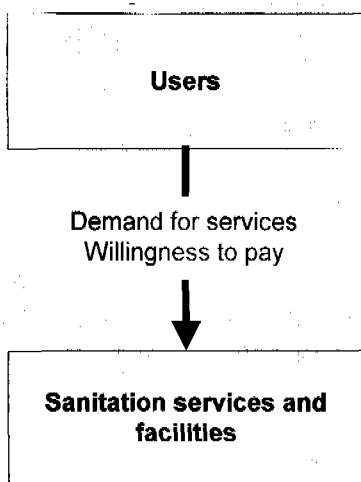
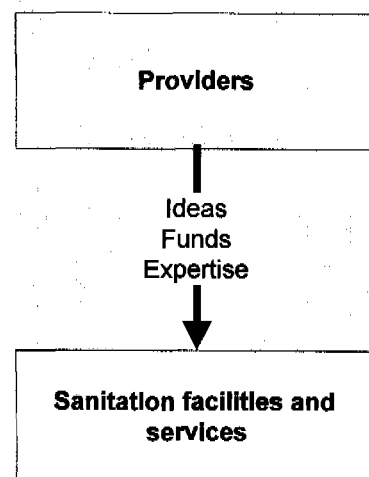
Strategic planning should always start from investigation of the existing situation. What has happened before and why is the situation as it is. Further information on investigating the existing situation at the local, municipal and state/provincial/national levels is provided in Tool 4.

2.5 Responding to informed demand

There are two broad approaches to the service provision. One approach is to focus on **supply** - what the providing organisation can deliver. The second is to base actions on what people want, in other words on their **demand** for services.

Traditional **supply driven approaches** are based on the knowledge of outsiders and pay little attention to what users want and the amount they are willing to pay for services. They can lead to premature failure of sanitation facilities because they do not take account of the local situation and people's needs.

At worst, **supply-driven approaches can result in facilities and services that are not used because they are not what people want.**



Purely **demand-based** approaches are limited by what people know. For instance, people's willingness to pay for services is likely to be influenced by what they know about what others are already paying for similar services.

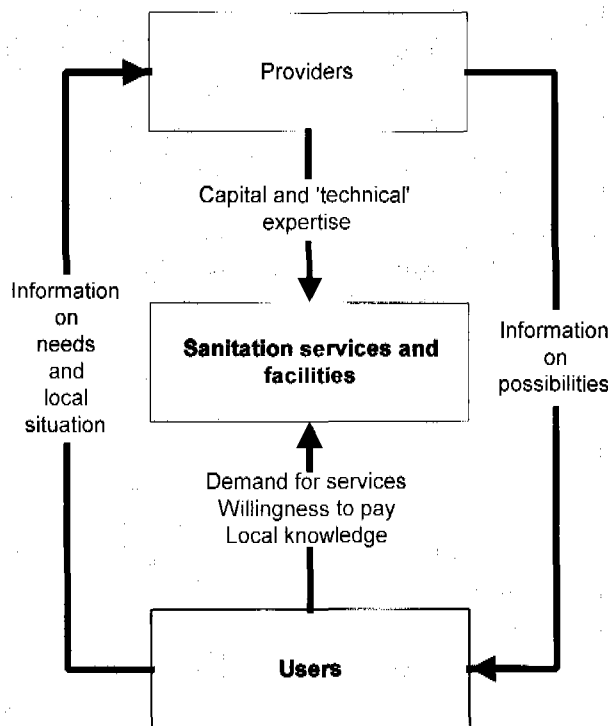
They may **stress local improvements at the expense of the wider environment.** Remember the need to mediate between the objectives of different groups.

Perhaps most importantly, they ignore the **capacity of service deliverers to respond to demand.**

From the above, it is clear that sanitation strategies need to **respond to demand**, recognising that the options for change are affected by what can be supplied. Responding to demand does not mean accepting demands in the form in which they are first expressed. Rather there is a need for a process that:

1. **assesses demand**
2. **informs demand and**
3. **responds to informed demand**

Capacity building may be necessary in order to respond to informed demand.



2.6 Involving all the stakeholders

Given the limited resources available, no strategic approach can afford to consider the efforts of only one set of stakeholders. The individuals and organisations involved in sanitation provision will normally include most of the following:

Householders, who are normally responsible for providing and maintaining facilities within their plot boundaries.

Community groups and community-based organisations (CBOs), which can provide and/or maintain local services.

Non-government organisations, which have two potential roles:

- to provide financial and technical support to householders and community organisations;
- to provide and/or manage facilities such as community toilets.

Private sector organisations, both formal and informal, which may be responsible for providing and managing services ranging from local solid waste collection services to city-wide water supply and sewerage systems.

Local government organisations, which are often the statutory providers of sanitation services.

Specialist government agencies. State/provincial agencies are often responsible for planning sanitation facilities for small towns. In larger cities, responsibility for sewerage and drainage provision often rests with specialist water and sanitation agencies. Government agencies at the national and state/provincial level may provide finance for sanitation through special programmes such as the Indian Government's Integrated Low Cost Sanitation Program.

International agencies may provide financial support in the form of grants or loans. They may also provide policy support and guidance.

The challenge is to involve all these stakeholders, as appropriate, in an **inclusive** approach to sanitation provision. This will only be possible if there is:

- **Recognition of the validity of the efforts made by the various stakeholders**. In particular, government stakeholders should recognise that people in low-income areas already provide many of their own sanitation services.
- **Agreement on roles and responsibilities** - who is best placed to do what.
- **Provision for co-ordination between the different stakeholders**.

Each of these is discussed on the following pages.

Recognising the validity of stakeholder efforts

Many urban settlements are **informal** in the sense that they are planned and developed without reference to official government regulations and procedures. Residents often extend their activities to include the provision of basic local services. For instance, community-built sewers are very common in some cities in Pakistan. Similarly, local 'informal' entrepreneurs provide local solid waste collection services in many cities throughout South Asia and beyond. These efforts represent a valuable resource. The problem is that government departments often do not recognise them. How might this situation be overcome?

This question will be considered in more detail when we consider processes in Sections 3-5 of the Guide. For the moment, three points can be made.

1. **Mutual recognition is helped if people from the various organisations and groups that are involved in sanitation are brought together to consider their needs and possible responses to those needs.** (See the example of the Bharatpur Sanitation Co-ordination Committee described in Section 4).
2. **Demonstration can be a powerful tool.** Showing sceptical government officials good examples of what people have done for themselves will be much more effective than talking about the benefits of participatory approaches.
3. **Disagreements on approaches and standards should be resolved by testing the various options.** The more common approach, that each side asserts that its approach is right, is unlikely to lead anywhere.

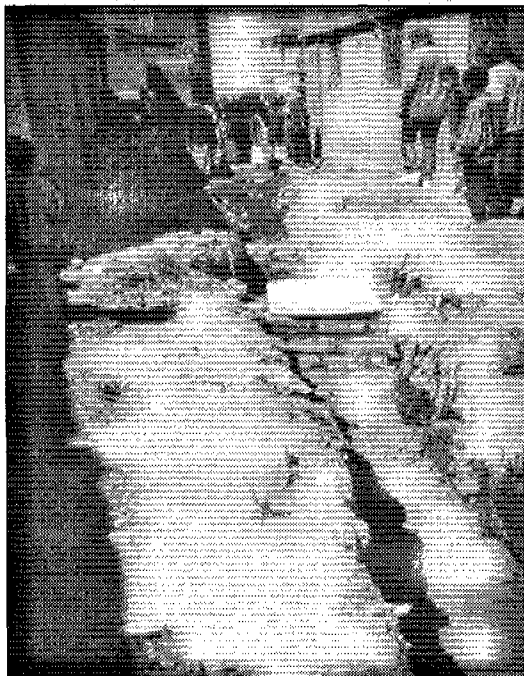


Figure 2.2 Community built sewer under construction, Noqom, Sana'a, Yemen

This initiative was started by a local member of parliament who had been an employee of the National Water and Sanitation Agency (NWASA). Local people paid for the sewers.

The overall design was carried out by NWASA engineers. Note the relatively shallow depth and the use of small rectangular inspection chambers rather than standard manholes. The chamber cover is temporary.

Later extensions have been funded through the World-Bank supported Public Works Program. This is a good example of cooperation in which government has recognised the validity of stakeholder efforts.

Agreement on roles and responsibilities

When considering roles and responsibilities, it is important to recognise the following points

Sanitation systems are more or less hierarchical systems incorporating components at different levels from the household level upwards. (See Box 2.3 for further information on this point).

It is possible to divide such systems in various ways. Different organisations may be responsible for providing or managing services in different areas (**division**) or at different levels within the system (**devolution**). In each case, the arrangements do not have to be the same everywhere. In other words, there is scope for **diversity**.

It may be useful to think of division, devolution and diversity as the 'three Ds'.

Box 2.2 gives further information on the links between division and devolution.

Note : In this guide, the terms "division" and "devolution" are used in place of the terms "horizontal unbundling" and "vertical unbundling" which were used in the original *Strategic Sanitation Approach*, (Wright, 1997).

Box 2.2 Links between division and devolution

The scope for division is greater at the lower levels of the system. Think of the way in which sewerage has been traditionally managed. Each individual householder is responsible for managing his or her sanitation facilities within the plot boundary. The sewerage authority is responsible for everything else. So, there are two levels in the hierarchy. A large number of individual households operate at one level and a single organisation provides the system to which they connect. Other variations on this general principle are possible. For instance, local community organisations and/or municipalities may be given responsibility for the provision and perhaps the ongoing management of services at the local level. These then provide an intermediate tier between individual householders and the municipal provider.

Using these overall principles as guidelines, it is possible to reach agreement on roles and responsibilities. In general:

- community organisations, ward councillors, local NGOs and local branches of municipal government are best suited to deal with relatively simple local systems; and
- larger more formally structured organizations will be required to manage higher-level services

Remember that people need resources in order to carry out their responsibilities. Training may be needed to enable people to carry out their assigned tasks effectively. It is also very important that financial arrangements and responsibilities are fairly worked out and agreed by the various stakeholders. This point is illustrated in Box 2.3.

Box 2.3 Hierarchy of sanitation systems

Many sanitation systems are more or less hierarchical systems. This is clearly illustrated by conventional sewerage systems, which include the following:

- **Household facilities** (WCs, washing facilities etc.) connected to
- **tertiary or street sewers**, which in turn connect to
- **secondary facilities** - collector sewers serving local neighbourhoods and municipal districts. These in turn require
- **primary facilities** - trunk sewers and sewage treatment facilities.

This point is illustrated diagrammatically below in Figure 2.3

These principles are applicable to other types of sanitation service. For instance, solid waste may be stored in the house, carried to a local collection point by privately employed sweepers, moved to a main transfer point by municipal sweepers using handcarts and finally transported to the disposal point by truck. This is clearly a hierarchical system.

In other cases, for instance, household pit latrines, leach pits and septic tanks, the existence of a hierarchy may be less obvious. However, even these apparently self-contained technologies require emptying at intervals and so there is a need for some form of higher-order sludge disposal system.

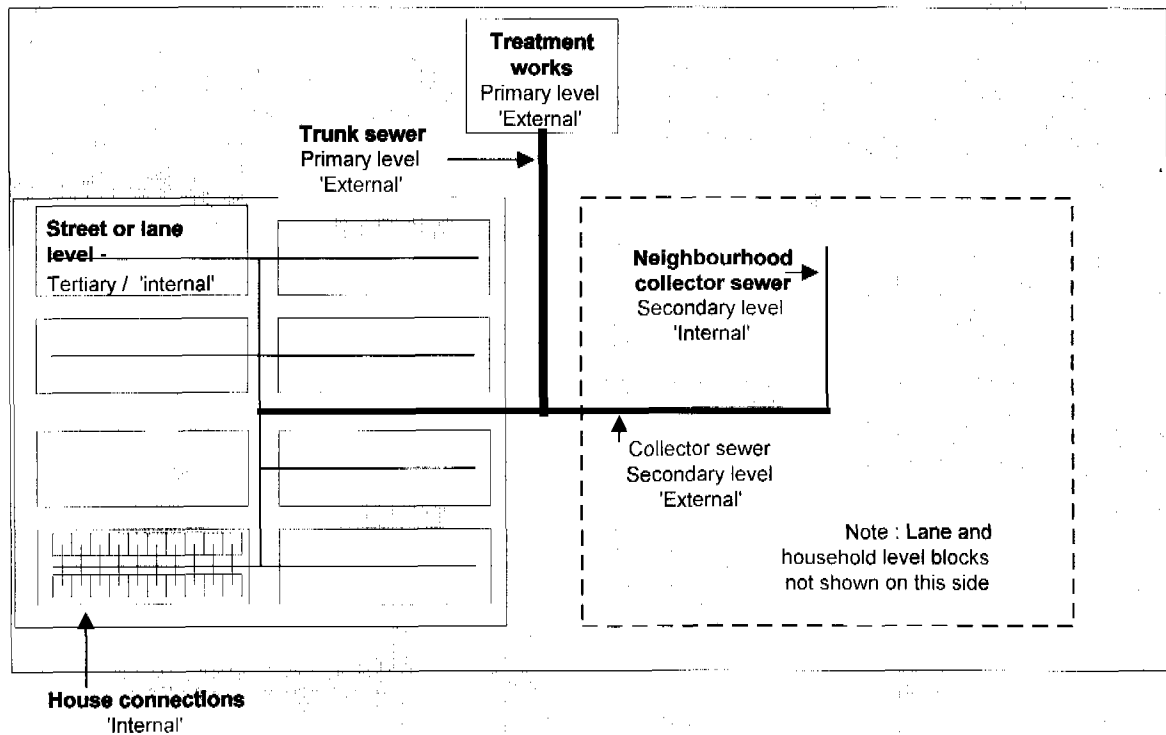


Figure 2.3 Components of a sewage disposal system

Box 2.4 The need to define financial responsibilities

In the course of the DFID-funded Faisalabad Area Upgrading Project (FAUP), local community groups have come together to build their own local 'lane' sewers. Most of these are connected to the sewers of the Faisalabad Water and Sanitation Agency (FWASA). Initially no attempt was made to consider the management arrangements for these sewers. Later, the need for clarity on roles and responsibilities led to efforts to develop acceptable institutional arrangements for managing the sewers. FWASA was unwilling to take responsibility for operation and maintenance of the sewers because they had not been built to its standards. In any case, there were doubts about its capacity to manage all the tertiary sewers in Faisalabad. It seemed better that the community groups should take responsibility for any maintenance required on their own local sewers.

This raised the issue of who should pay for what. Even if the community groups took responsibility for their own sewers, there was still a need to manage the system to which they were connected. In particular, someone would have to pay the pumping costs incurred in lifting the sewage at the downstream end of the system. If the community groups paid nothing, the principle of sound finances would clearly be violated and the ability of FWASA to operate the system would be compromised. On the other hand, if they paid the full connection charge and tariff, it would seem that the principle of equity was being ignored. Why should the poor pay these charges in addition to those incurred in installing and managing their own services if the rich only paid the regular charges?

The need was clearly for a system of charges that offered reductions on standard rates to take into account the work that people were carrying out for themselves. Unfortunately, the Punjab Government's standard rules and regulations make no allowance for such arrangements and so the issue has remained unresolved.

Co-ordinating stakeholder efforts

The advantage of dividing and devolving responsibilities is that financial and managerial responsibilities are spread so that limited resources go further. **The disadvantage is that division and devolution create a need for co-ordination between different organisations.** In many cases, the need is not to involve more organisations in sanitation provision and management. Rather, it is to improve coordination between the many organisations that are already involved in aspects of sanitation provision. Lack of co-ordination between the various individuals, groups and organisations with an interest in sanitation is one of the biggest obstacles to the development of a strategic approach.

What can be done to overcome this obstacle? It is certainly important to **clearly define roles and responsibilities** so that everyone knows what they are meant to be doing and with whom they need to liaise.

It may also be advantageous to **form a sanitation co-ordination committee** including representatives of all those with an interest in sanitation. It will be important to decide which organisation will take the lead in convening the committee and ensuring that its decisions lead to action. Otherwise, it may be nothing more than a talking shop which rapidly ceases to operate because it is achieving nothing. It is best if the need for such committees and guidelines for their operation are defined by higher levels of government.

2.7 Matching action to available resources

The need to proceed in small steps

We have already seen that the overall goal of a strategic sanitation approach should be to provide services to the town or city as a whole. The question is how to achieve this goal, bearing in mind the fact that existing institutions are often weak and uncoordinated.

Figure 2.4 illustrates the fact that it is often impossible to achieve an ambitious goal in one step. Rather, the aim should be to move towards the overall goal in a series of **achievable steps**. Each step can then build on what has already been done and match actions to available institutional and financial resources.

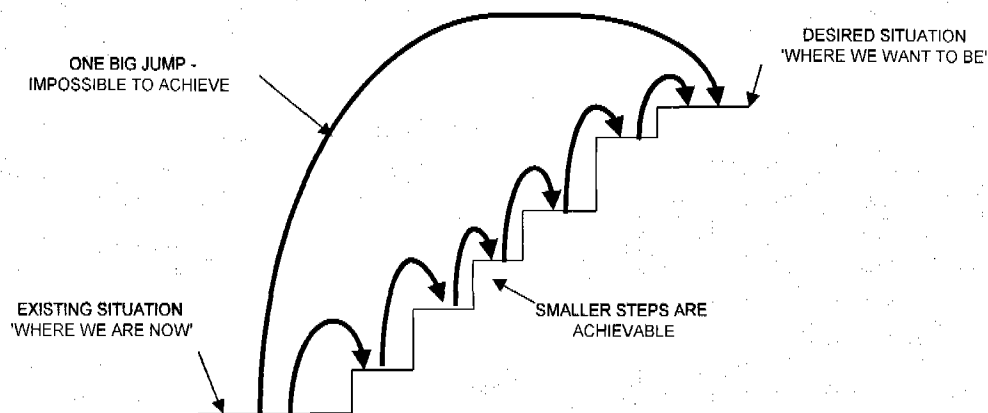


Figure 2.4 Several small steps are easier to achieve than one big jump

The steps shown in Figure 2.4 are not all the same height since some tasks will be more difficult than others and not every step can be small. The important thing is to prepare carefully for each step and make sure that the resources required to complete it are available. Regardless of this, a good general principle is to **'think big but start small'**.

Matching technologies with human and institutional resources

Without effective institutional support, even the most simple sanitation technology is likely to fail. In the past, there has been a strong emphasis on the development of **appropriate sanitation technologies** but this did not lead to the expected improvements in sanitation coverage and performance.

This is partly because insufficient attention was paid to the links between technologies, their costs and the human and institutional resources required to implement and operate them. It is better to think in terms of **appropriate sanitation systems** that match technology with the available financial and management resources while respecting cultural preferences. In general, the larger and more complex a scheme, the greater its requirement for sophisticated planning, implementation and management skills.

2.8 Taking a wide view of sanitation

A strategic view of sanitation is also a wide view that sees beyond local solutions to narrowly defined problems. This requires that it:

- looks beyond immediate concerns to consider the wider environmental impacts of proposed initiatives and activities; and
- deals with the sanitation problems in an integrated way rather than in isolation.

Considering the wider impacts of sanitation initiatives

When resources are scarce and people are suffering poor health and inconvenience because of the absence of adequate sanitation facilities, the priority will almost always be to remove excreta and waste water from under people's feet. In such circumstances, it is easy to ignore the need to protect the wider environment. This limited approach may save resources in the short-term but there are likely to be long-term implications. There may be potential dangers to health if wastes are left untreated, for instance surface and groundwater sources will be polluted and require higher levels of treatment. Another potential problem is the transmission of beef and pork tapeworms when people eat animals that have grazed on land irrigated with untreated sewage. River pollution may kill fish and affect the livelihoods of fishermen.

Bearing these points in mind, every effort should be made to consider the wider environmental impacts of sanitation initiatives. What might this mean in practice? The answer will vary depending on the local situation. However, when considering choices, it is perhaps useful to remember that sewage is difficult and expensive to treat. From this point of view, sanitation systems that retain excreta on or near the plot and allow it to decompose naturally in a pit or tank are preferable to those that carry it off the plot as sewage.

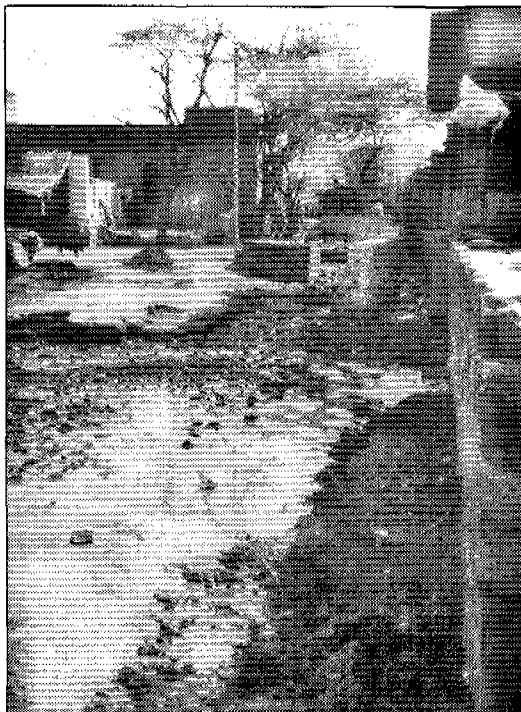


Figure 2.5 Drain discharging to an informal pond in Bharatpur.

This is a very common situation. Local problems are solved by transferring them to a point outside the built-up area. The problem with this approach is that the problem is transferred rather than eliminated, affecting the health and quality of life of the people living close to the pond. Another problem is that the pond may fill to a level at which it prevents free flow from the upstream area. As a first stage in solving the problem, the Bharatpur plan included a proposal to build a new drain to by-pass the pond shown in this photograph, not a complete solution but a first step towards that solution.

Dealing with sanitation problems in an integrated way

Sanitation is concerned with the removal and disposal of liquid and solid wastes from the household environment and their disposal in a way that does not cause harm to either people's health or the environment. Note the emphasis on the wastes rather than one particular type of waste.

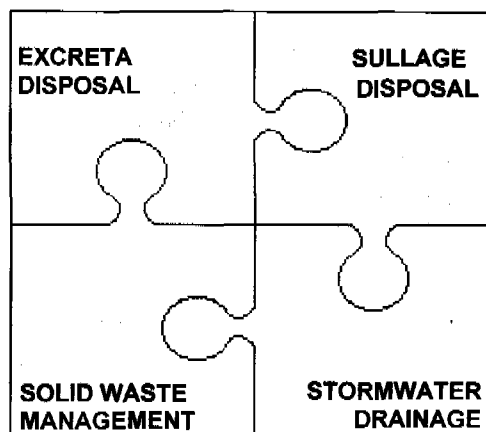


Figure 2.6 Integrated approach to waste management

Figure 2.6 illustrates the point that excreta disposal, sullage disposal, solid waste management and stormwater drainage are inter-related. The best results are obtained if they are considered in an integrated way.

Some examples of the links between different services are given below:

- Sullage and stormwater are often carried in the same drains.
- Maintenance of drains and sewers will be more difficult where there is poor solid waste management is poor
- Some excreta disposal methods (for instance pit latrines) will require that separate provision is made for sullage disposal.

When developing proposals for sanitation improvements, explore the options for integrated action in your own local situation.

Seeing sanitation in terms of services rather than facilities

The need to think of sanitation services rather than facilities is stressed throughout this guide. When planning, it is easy to think only of new facilities and forget that they are only useful if they help to provide improved services. In this respect, taking a wide view means paying particular attention to the way in which services are operated and maintained. Sanitation provision is not just about construction. **It is also about the ongoing management, operation and maintenance that is required to provide a service continuously over a long time.**

This section has introduced the key characteristics of a strategic sanitation approach. You can now move on to consider how to ensure that efforts to improve sanitation provision can be designed to include these characteristics. Do this by moving on to the appropriate section of Part B of the Guide.

Read Section 3 if you are concerned with either developing or influencing policy.

Read Section 4 if you work at the municipal level and wish to develop a strategic sanitation plan for your town or city.

Read Section 5 if you wish to improve sanitation services at a more local level, perhaps that of a ward or an individual settlement or neighbourhood.

Strategic Planning for Municipal Sanitation

Section 3



**GUIDE TO POLICY DEVELOPMENT
AND PROGRAMME PLANNING**

Section 3

Guide to Policy Development and Programme Planning

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GUIDE TO POLICY DEVELOPMENT AND PROGRAMME PLANNING

ABOUT THIS SECTION

This section of the guide is intended for those who guide policy and develop programmes to implement that policy at the national and state/provincial levels. It is divided into the following sub-sections:

An **introduction** (Sections 3.1 - 3.5), which explains why sanitation is an important policy matter and examines the ways in which policies and centrally initiated programmes can contribute to improved sanitation planning at the municipal level. You may wish to share the contents of this section with those who are responsible for formulating policy.

A section which provides an overall framework for **policy development** (Sections 3.6 - 3.17) based on the principles already set out in Section 2 of this guide.

A section on the **implementation of policy** (Sections 3.17-3.22), which focuses particularly on the role of programmes in ensuring that policies are implemented.

KEY POINTS IN THIS SECTION

1. Improved sanitation services can have important economic and social benefits for both individual households and society as a whole.
2. Policies provide the strategic framework for efforts to improve sanitation provision at the municipal and local levels.
3. Policies should start from a sound understanding of the existing situation, based on accurate and relevant information. They should reflect the ideas, concerns and experience of all stakeholders and not just a small group at the centre.
4. Limited resources may affect the way in which policies are implemented in practice. What actually happens is as important as what is intended to happen.
5. Appropriate incentives, enshrined in legislation, can play an important role in encouraging a strategic approach to urban sanitation planning.
6. Programmes, developed at the centre but implemented through local stakeholders, can serve to introduce appropriate incentives and channel resources.
7. Externally funded projects should be integrated into mainstream programmes rather than being seen as self-contained initiatives.

INTRODUCTION

3.1 Who should read this section of the guide?

This section of the guide is aimed particularly at **government officials** and **policy researchers** who advise senior officials and politicians on the development of policy and its conversion into effective programmes.

You may find it useful to share some of the points contained in this section of the guide with those to whom you report. These are likely to include **senior politicians**, **senior secretaries** and **directors** of government departments that deal with aspects of sanitation provision. These departments might include those with responsibilities for health, public health engineering, local government and urban affairs.

You should also find this section interesting and useful if you are:

- a **consultant or academic** who advises government on aspects of sanitation policy;
- an **official of a multi-lateral or bilateral agency** who engages in policy dialogue with government and its policy makers; or
- a **representative of a regional or national NGO** whose field experience may inform the policy discussion.

3.2 Who should be involved in shaping policies?

The inclusion of groups from outside government among the potential readers of this section points to an important principle. **Policy should not be shaped only by those within government.** Rather, there is a need to draw upon the insights and experience of all those who are working to develop improved sanitation services.

Officials of multi-lateral and bilateral agencies and the consultants who work for those agencies have an important role to play in promoting discussion of key strategic concepts and facilitating knowledge transfer between different countries and regions. They should aim to influence policy where appropriate but never to force policies on partner governments.

NGOs and those who work for them may have knowledge of strategic approaches to sanitation provision in other countries and regions. They also have an important role to play in ensuring that those responsible for policy receive information from the 'grass roots'.

3.3 Why is improved sanitation an important policy matter?

Why is it important to improve sanitation and drainage? In Section 2, it was suggested that the goal of environmental sanitation should be to:

- create and maintain the conditions necessary for people to lead healthy and productive lives; and
- maintain and, where necessary, enhance the natural environment.

However, for those with responsibility for formulating overall government policy, sanitation is only one concern among many. They may start by asking the questions – how important are these goals in the overall scheme of things? Why should scarce resources be invested in something that appears to be essentially non-productive? Some broad answers to these questions are suggested below. See Tool 1.1 for further information on the links between sanitation and health.

1. Improved sanitation leads to improved health and hence to better productivity in the workplace. It does this by:

- reducing the vulnerability of workers to debilitating sanitation-related diseases (particularly worm-related diseases such as ascaris) and hence increasing their capacity to work efficiently and effectively;
- reducing the time that people take off work because of diarrhoea and other sanitation-related illnesses; and
- increasing the earning power of poor people, thus allowing them to participate more fully in economic activities.

2. Sanitation-related health improvements lead to a reduction in expenditure on health care. This means that people's resources, particularly those of the poor, are used more effectively, providing benefits for both individual households and the overall economy.

3. Failure to provide adequate sanitation facilities results in environmental degradation. In particular, untreated wastewater is likely to pollute watercourses and aquifers. Environmental degradation is difficult to reverse once it has started so sanitation strategies should aim to protect the environment at the same time that they meet other more immediately obvious economic and social concerns

4. Considerations of equity require that all citizens should have access to basic services including sanitation. The success of a society depends on its social capital - the relationships of trust and confidence that exist within it. Social capital is difficult to build when a society is grossly unequal and denies some people access to services like sanitation.

Sanitation improvements can be achieved without undue strain on government finances if policies are based on the key strategic sanitation principle that as far as is possible, users should pay the full economic cost of providing and maintaining sanitation improvements. There may well be a need for subsidies for the poorest but a **properly formulated and executed sanitation policy does not have to be a major drain on government finances.**

3.4 The role of policy and those who shape it

Policies provide the **framework** within which state agencies, municipal government and civil society operate. If this framework is not well conceived, the tasks of those concerned with sanitation provision become very difficult. Policy-makers also develop **systems** for providing **support and guidance** to those involved in sanitation provision. So, policy-makers play a key role in ensuring that sanitation programmes tackle actual problems and respond to the strategic objectives set out in sub-section 2.1 of this guide.

In essence, the role of policy makers is to create the conditions in which sanitation service providers can inform and then respond to user demand. In other words, **policy-makers should aim to provide the conditions that enable providers of sanitation to operate more effectively**. These 'providers' may include government agencies but they can equally be private sector firms and non-government organisations.

In order to ensure that this enabling environment is in place, policy makers must be concerned with the following:

- **Institutional structures and systems.** Do existing institutional structures and systems match responsibilities to resources and facilitate coordination between the various stakeholder organisations?
- **Legislation and procedures.** Officials working at the municipal level are guided by government legislation and procedures. If the existing legislation and procedures discourage the adoption of a strategic approach, changes will be necessary before progress can be made.
- **Incentive structures.** How can good practice be encouraged while resistance to change and improvement is discouraged?
- **Ensuring the availability of resources.** Efforts to improve sanitation will fail if the available resources are inadequate. This is true of financial resources but human and institutional resources may be equally important. Remember that available resources will go further if responsibilities are divided and devolved where appropriate, as described in Section 2.

Policy makers should be prepared to learn from the experience of other countries. They should be equally aware that lessons can be learnt from those who plan and implement schemes at the municipal and local levels within their own country.

Box 3.1 Two requirements for successful policy

Policies should encourage a more strategic approach at the municipal level. Those working at the municipal level must be encouraged to develop a more structured approach to sanitation planning that:

- recognises the potential roles to be played by the various stakeholders; and
- pays appropriate attention to the arrangements for operation and maintenance of facilities once they are in place.

Policies should be information-based Policies should always be based on sound information about the existing situation, available resources and any potential constraints. Later, information will be required to evaluate the results of policies and programmes and modify them as necessary in the light of experience. Policy makers should therefore be particularly concerned with the need to develop effective information systems. Further guidance on information systems is given in Tools 4.1 and 4.2.

At this point, you should note the importance of ensuring that:

- information is available to those in decision-making positions in a form that they can use; and
- an information-based culture is in place – in other words, decision-makers should want to make decisions on the basis of information rather than because they have always done things in a certain way or believe that this is what rules and regulations require.

3.5 The role of programme planners

Planners working at the 'centre' have an important role in ensuring that policies are translated into effective projects and programmes that conform with good strategic principles. Programmes developed at the centre but implemented through local stakeholders provide a means of introducing appropriate incentives and channelling resources.

These programmes may provide one or more of the following :

- **Finance** – in which case they should encourage sanitation providers to pay increased attention to demand;
- **Technical guidance** - in which case they should ensure that a range of technologies is available, suitable to deal with the range of conditions likely to be encountered. The assumption that 'one technology fits all' should be avoided.
- **Support to human resource development** – in which case it is imperative that the HRD programmes that are developed are responsive to organisational needs and provide sound advice on strategic planning principles.
- **Support to experimentation and innovation.** This support may be financial but it may equally require changes in existing procedures to encourage those involved in sanitation provision to experiment and innovate and share the results of their experience.

POLICY DEVELOPMENT

3.6. A framework for the development of policy

In Section 2 of the Guide, it was stated that strategic approaches to sanitation planning must be responsive to actual problems and deficiencies and must look towards the achievement of sanitation systems that are comprehensive, equitable and institutionally sustainable. We have already said that policies should be based on sound information. This means that policy-makers, in common with those working at the municipal and local levels need to seek answers to three basic questions.

1. What is the present situation or **where are we now?**
2. What are the characteristics of a comprehensive, equitable and institutionally sustainable approach to sanitation provision or **where do we want to go?** And
3. **How do we get from here to there?**

Figure 3.1 provides a theoretical framework for answering these questions.

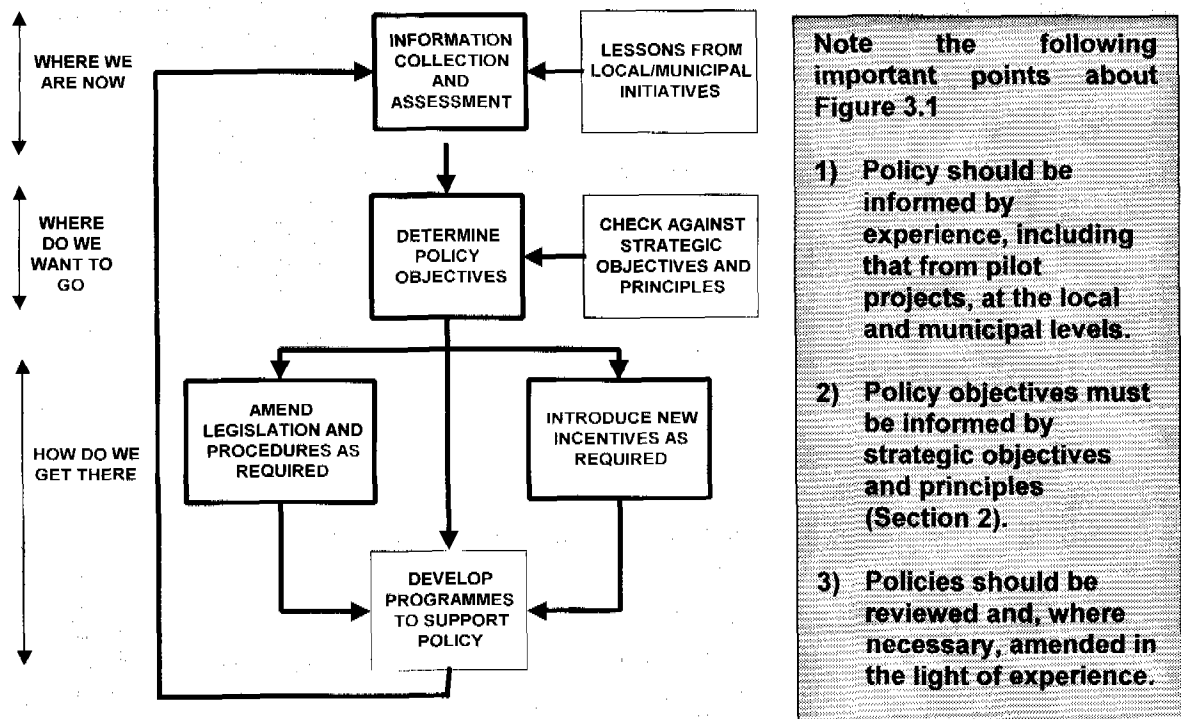


Figure 3.1 Process of policy and programme development

STEP 1 WHERE ARE WE NOW - ASSESS EXISTING SITUATION

There are two steps in the formulation of an answer to the question 'where are we now'? First, information has to be collected and then an initial assessment has to be carried out to determine what this information means. Sub-sections 3.7 and 3.8 provide information on these steps.

3.7 Information collection

The information required relates to the following :

- **Existing provision** - what facilities and services exist at present?
- **Institutional responsibilities and structures** – what organisations are responsible for the various aspects of sanitation provision and how do they inter-relate with each other.
- **Activities, projects and programmes**, including those that fall outside the government sector. Remember that you can learn from local and municipal initiatives.
- The institutional structures, legislation and procedures and incentive structures that provide the **framework** for sanitation policy;
- **Available resources**, financial, human and institutional; and
- The **support** provided to sanitation-related activities through central and state/provincial level government. This support may relate to the development of human and financial resources, opportunities for experimentation and innovation, information systems and co-ordination between the various stakeholders in sanitation improvement processes.

For each of the above, you need to decide the following.

What information is required? Remember the point made in Section 1 that sanitation services can be deficient a number of ways . So, you need to be concerned not just with the coverage of facilities but also with their quality, the way in which they are operated, their impact upon the wider environment and whether poor people have access to them.

Where can information be obtained? The answer to this question will depend on the type of information required. **Official records and statistics** should provide information on government activities and programmes and may give overall information on issues such as sanitation coverage. Remember that they will not always be accurate and may give less than adequate coverage to the activities of the non-government sector. Copies of relevant **legislation** should be readily available. **Written reports** may provide information on particular projects and programmes. NGOs may also keep written records of their work. **Special surveys** may be necessary to provide information on specific issues and should be commissioned if there are obvious important gaps in the available information.

Who should be responsible for compiling and analysing the information? Are the resources to carry out these tasks available within government or will there be a need to bring in consultants to assist in the process? If the latter, how can the information be transferred to the appropriate government departments so that it is available for future use?

Further information on answering these questions is given in Tool 4.2 in Part C.

3.8 Assessment of available information

As information becomes available, it must be arranged in a form that allows it to be used for decision-making. You might structure your assessment around some key questions, including the following :

1. **What is the nature and scale of existing problems?** The aim should be to be approximately right in answering this question. There is no need to use valuable resources obtaining precise information. Use the five types of sanitation deficiency identified in Section 1 of the guide as a framework for analysis.
2. **How do existing programmes impact upon existing problems?** Where there appear to be problems with an existing programme, you may wish to consider the option of commissioning a study to explore the working of the programme in more detail.
3. **What resources are available?** The aim here should be to analyse the available information to obtain an overview of the financial, human and institutional resources available.
4. **What constraints prevent moves towards better sanitation services?** It may be that existing legislation, institutional structures and procedures are limiting the scope for change. Institutional and human resource constraints may also inhibit change and development.

Further information on answering each of these questions is given in Tool 4.2.

One particular objective of analysis should be to explore the ways in which incentives for the adoption of good principles and practice can be strengthened. To do this, you must recognise the factors that may influence the systems and procedures through which sanitation services are provided.

The influence of legislation and institutional structures should be fairly obvious. It may be less obvious that **systems and procedures are likely to be modified by available institutional resources**.

Any organisation that is constrained by deficiencies in finances, skills and knowledge is likely to modify its systems and procedures to cope with this situation. Figure 3.2 shows the possible influences diagrammatically. Further information on this point, together with a check-list of questions on the relationships between legislation, resources and systems, is given in Note 4.2.

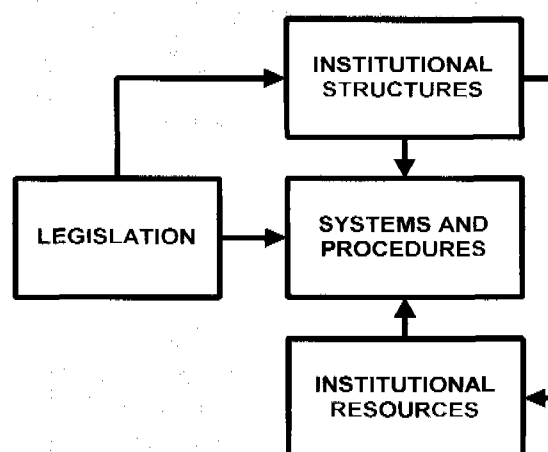


Figure 3.2 Influences on systems and procedures

STEP 2 WHERE DO WE WANT TO GO? - THE DEVELOPMENT OF POLICY OBJECTIVES

The questions to be answered when considering the development of policy objectives include who should decide them, to what should they relate, and how should they be decided? Sections 3.9 - 3.12 consider these questions. Sections 3.13 examines the important question of how to implement strategic plans at the municipal level. The need for realistic plans at the municipal level is stressed, an approach to replicating pilot initiatives is set out and structural opportunities for change are examined.

3.9 Who should decide policy objectives?

Policy objectives should reflect the ideas and concerns of the full range of stakeholders. Their development should therefore not be left to one group. Rather, you should aim to involve representatives of all the major concerned groups in the process including:

- **politicians**, particularly those with responsibilities for urban and environmental affairs;
- **senior officials** from the various departments with an interest in sanitation;
- **representatives of NGOs** with active sanitation programmes;
- **representatives of international agencies**;
- **representatives of municipal government**;
- **representatives of sanitation users** (CBOs and other community representatives).

The last group is important but it is often forgotten.

3.10 How can the various groups be involved?

There is no one answer to this question. Some possibilities are introduced below.

The views of **sanitation users** can be obtained directly through surveys, questionnaires and focus group discussions. Do not make assumptions about what different people want. In particular, do not underestimate the amount that poor people are willing to pay for improved sanitation services. (See Note 3.4 for further information on estimating willingness to pay).

A **working group** may be set up to identify problems, suggest solutions to those problems and, where necessary, propose action to obtain the information needed to clarify issues. It should include representatives of government departments and agencies, the non-government sector and, where appropriate, the private sector. It might be developed into a permanent body that provides advice and guidance to ministers and their senior advisers.

You may wish to bring selected stakeholders together in **workshops** that focus on particular policy issues, for instance that of tariffs and cost recovery. There should be some mechanism for the outputs from these workshops to be incorporated into policy.

Remember the key point that none of these initiatives are of any use unless they lead to action.

3.11 To what should policy objectives relate?

The goals of sanitation improvements have already been stated in Section 2 and again in Section 3.3. However, these are overall goals and it is necessary to establish what they might mean in more concrete terms. This task will be made easier if you remember the principles set out in Section 2. In particular remember that policies and programmes should be **grounded in the existing situation**. They should aim to be **city-wide, equitable and institutionally and environmentally sustainable** but you will normally have to approach these overall objectives in **relatively small steps**. It is important to **respond to informed demand** and in order to do this you need to **identify and remove supply-side constraints**. One aspect of this will be to respond to the principle of diversity by involving all the stakeholders in appropriate ways. This is unlikely to be enough in itself and you should consider the options available for **capacity-building**. Finally, remember the need to deal with sanitation problems in an **integrated** way.

Some specific questions relating to these overall principles and examples of the areas in which policy changes may be required are given in Box 3.2

Box 3.2 Some questions and suggestions on policy objectives

Cost recovery

A sustainable demand responsive approach requires that users pay for the sanitation services that they receive. This implies the need for a reduction in any subsidies provided through government-sponsored sanitation programmes. What is the current approach to cost recovery? What action is required to move towards policies that require sanitation users to bear the cost of providing and managing the facilities that they use. Equity requires that attempts to increase user contributions for low-cost sewerage should be accompanied by tariff increases for conventional sewerage to levels that, at the very least, cover all recurrent charges.

Devolution of responsibilities

Does official policy need to be changed to recognise the role played by various non-government stakeholders? These may include some or all of NGOs, CBOS and the private sector. What changes in legislation, structures and procedures are needed to support such changes?

Support for diversity

Policies need to recognise the need for appropriate levels of service, standards, details and procedures that cover a range of situations rather than requiring that one approach must fit all. Do existing regulations and procedures prevent the use of appropriate approaches? If so, what changes are needed to rectify the situation?

Organisational development

Is there a need to support the capacity of government and non-government organisations to respond to sanitation demand and promote sanitation improvements at the local and municipal levels? For instance, is there a need for policy objectives for learning and the development of effective training institutions and courses?

This list is by no means exhaustive and you should develop your own list in the light of your own circumstances as a first step in identifying suitable policy objectives.

The importance of setting intermediate objectives

One of the key strategic concepts identified in Section 2 is the need to move in 'small steps' that match action to available attitudes and resources. You should set intermediate objectives or milestones whenever possible for each policy proposal. These milestones will help you to ensure that policy reform and programme development are on track. These intermediate objectives can usefully be presented as the outputs in a logical framework. (See Tool 5.2).

3.12 How should objectives be decided?

A starting point for deciding objectives might be some form of 'visioning' exercise in which representatives of a broad range of stakeholder groups are encouraged to explore possible concrete objectives in the light of the overall health and environmental goals. This might lead into a workshop, or a series of workshops, at which problems and possibilities are discussed and policy objectives are agreed.

Workshops should be structured in a way that ensures that everyone present has a chance to contribute by expressing his or her views. However, you should be aware that people coming 'cold' to the workshop will have insufficient time to think through the issues to be discussed. To avoid the danger of unfocused discussions, the workshop organisers should always provide a framework for discussion, based on those principles of good practice that have already been established. They should have factual information available to inform the discussion whenever it is needed. The skill of a good organiser is to do this without introducing their own unproved assumptions.

For further information preparing for and organising a workshop, turn to Tool 5.1.

3.13 The need for realistic plans at the municipal level

One important policy objective should be to develop and implement effective strategic approaches to sanitation planning at the municipal and local levels. The steps in achieving this objective should include the following:

1. Assess current planning processes and capacities.
2. Identify possible 'model' towns and cities that can be used to test the strategic planning approach at a municipal scale.
3. Implement one or more pilot plans. (See the information on the process followed in Bharatpur in Section 4 for more detail on how this might be done).
4. Assess the resources needed for strategic planning, where those resources might be available and the action needed to strengthen them.
5. Require that all municipalities produce a strategic sanitation plan.
6. Provide the resources needed to support municipalities in producing their plan.

The stages in developing a strategic approach, piloting it in a selected municipality and replicating successful aspects of the approach are shown diagrammatically in Figure 3.3. Note the way in which information from field experience feeds back to inform the overall approach adopted.

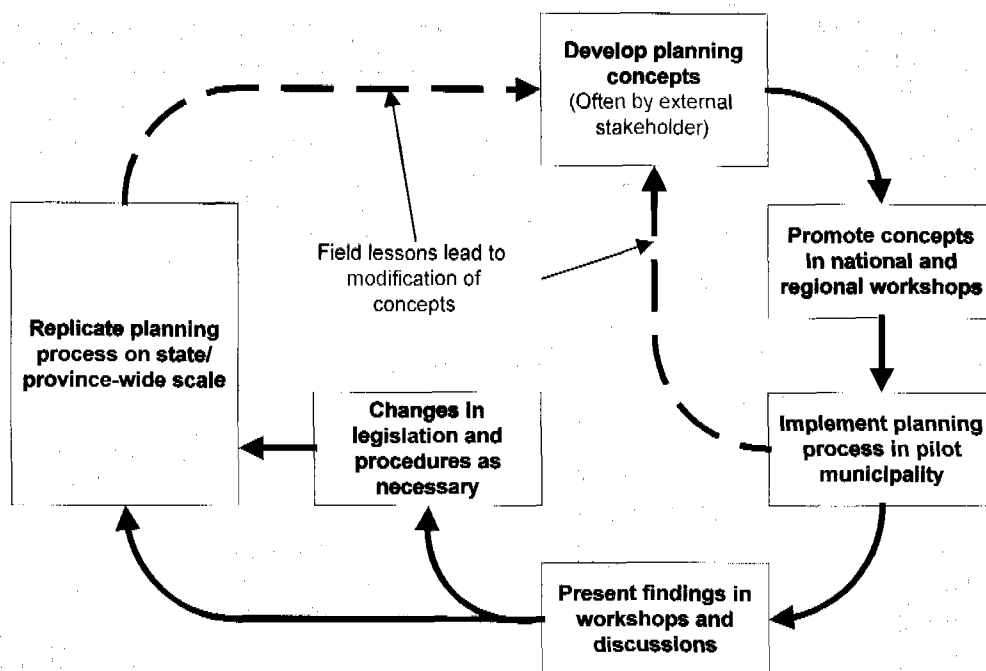


Figure 3.3 Process for developing, piloting and mainstreaming a strategic approach to sanitation provision

There are several potential constraints on the general introduction of strategic planning principles at the municipal level. These include:

1. the number of organisations with responsibility for aspects of sanitation planning and the failure to take holistic approach ;
2. the failure of those organisations to coordinate their activities ; and
3. the lack of a planning culture.

Policies should simplify and clarify sanitation planning responsibilities and provide incentives for better coordination and increased attention to planning. They should emphasise the importance of encouraging a positive approach to planning at all levels.

3.14 Structural opportunities for change

There is currently considerable interest in the possibilities for privatisation and the development of public-private partnerships. Indeed, the concepts of devolution and decentralisation of powers and responsibilities (vertical and horizontal unbundling) within the original Strategic Sanitation Approach were developed at least partly within the context of a belief in the benefits of privatisation. When developing policy, remember that **privatisation and public-private partnerships are not a panacea**. In the right circumstances, they can produce good results but attempts to privatise services will fail if the circumstances are not right.

Policies on privatisation and private-sector partnerships should proceed from strategic sanitation principles. Be aware of the possibilities for private sector involvement in sanitation provision and management but, bearing in mind the principle of diversity, do not move straight into wholesale privatisation of sanitation services. Rather, look at the opportunities for taking a small-steps approach that provides opportunities to learn from experience, as suggested in Box 3.3. In particular:

- explore existing arrangements and practices and determine whether there are opportunities to divide and devolve responsibilities rather than assuming that one organisation will be responsible for everything; and
- ensure that an effective regulatory framework for privatisation is in place.

Box 3.3 Privatisation of solid waste management in Sana'a, Yemen - a cautionary tale

Like many other rapidly growing cities, Sana'a faces severe problems with solid waste collection and disposal. In the early 1990s, the Municipality had been provided with new vehicles and workshop facilities but it was proving difficult to obtain spare parts and both vehicles and workshops were under-utilised. Solid waste collection services in the centre of the city were reasonable but less than 50% of the waste generated was collected and many areas had no regular service. The decision was made to privatise the service and a contract was duly awarded for all solid waste management services within the city. This proved disastrous. The contractor brought in workers from outside and laid off many local workers. He was either unable or unwilling to maintain vehicles and the service worsened. After a year, the municipality was forced to terminate the contract and take over a service that had deteriorated significantly during the year of privatisation.

The sequence described above was not inevitable. Yemen has introduced legislation that ensures that finance to support solid waste management operations is collected from a number of sources, most notably from a 5% surcharge on electricity bills. This means that the service has a sound financial base. There is no reason why responsibilities for collection in currently unserved areas should not be devolved to local stakeholders who can in turn contract with local private sector organisations to provide collection services. The key to success will be the development of clear contractual arrangements and the greater accountability that should be achieved through local control. Another positive example from Yemen is the Al Sinah water and sanitation scheme, which was managed by the community using inputs from the local small-scale private sector. This scheme was built without government involvement and again the key to developing such arrangements into successful partnerships with government will be reaching clear agreement on responsibilities.

3.15 How should objectives be decided?

A starting point for deciding objectives might be some form of 'visioning' exercise in which representatives of a broad range of stakeholder groups are encouraged to explore possible concrete objectives in the light of the overall health and environmental goals. This might lead into a workshop or more likely a series of workshops at which problems and possibilities are discussed and policy objectives are agreed. Further information on how to prepare for and organise a workshop are provided in Tool 5.1 in Part C.

Box 3.4 discusses a key question, the extent to which policy development workshops should be open ended. In general, the best results will be achieved if care is taken to make sure that workshop participants are provided with as much information as possible on existing problems and the options that are open to them.

Box 3.4 How open-ended should policy development workshops be?

Many people believe that workshops must be open-ended, allowing participants to bring what they want to the discussion. Their assumption is that any attempt to restrict the scope of the workshop will constrain the possible scope of the outputs. Their further, perhaps unstated, assumption is that equity requires that everyone is given an equal chance to put their views in the workshop. These are clearly strong arguments. On the other hand, people coming 'cold' to a workshop discussion will tend to have insufficient time to think through the issues to be discussed. There may therefore be a real danger that discussions will be ill-informed and unfocused and that unfocused discussions will lead to unfocused conclusions. The best results will be obtained if the workshop organisers provide a framework for discussion, based on the principles of good practice already established. In addition, they should be able to provide factual material whenever it seems that this is required to take the discussion forward. Workshop organisers must be able to feed such factual material into the discussion while minimising the extent to which their own assumptions intrude. So, a policy development workshop should emphasise the importance of information-based decision-making and organisers should not be frightened of providing that information where it may not be generally available to participants. See Tool 5.1 for further information on organising and running a workshop.

STEP 3 - HOW DO WE GET THERE, ACTIONS TO SUPPORT POLICY

At this stage, your policy objectives should be clear but they will be of limited use unless you can develop a detailed programme to achieve those objectives. In this and the following pages, we examine two essential prerequisites for the development of an effective programme - appropriate legislation and procedures and effective incentives

3.16 Amendments in legislation and procedures

Amendments in legislation and procedures must be introduced if the current arrangements do not support the identified policy objectives. The precise details of the amendments will depend on the existing situation but changes are likely to relate to the following.

Support for decentralisation, devolution and diversity

Legislation must allow different organisations to take responsibility for sanitation provision in different areas and at different levels within hierarchical service provision systems. It should recognise the possibilities that:

- different organisations can be responsible for sanitation provision in different areas;
- and
- there will be situations in which locally managed facilities and systems will need to link with centrally managed systems.

Financial arrangements should provide support for decentralised and devolved systems. Where possible, control over finances should also be decentralised and devolved. Where this is not possible, there must be very clear guidelines as to:

- the amount to which the various organisations involved in sanitation provision are entitled; and
- the ways in which finances are channelled to these organisations.

Legislation must allow flexibility in fees and tariffs so that equitable arrangements can be reached on cost sharing between the different stakeholders. There must be procedures to allow for the resolution of any disagreements between the parties and to ensure coordination between them.

It may take time to achieve changes in legislation and you should therefore start the process of change as soon as the need for changes have been identified. Aim to gather support for the required changes at an early stage and look for 'champions' who will take the lead in promoting them.

Appropriate standards and specifications

Existing standards based on conventional 'Western' approaches to sanitation can seriously constrain opportunities for developing appropriate sanitation strategies and programmes. They do this both because they assume that the only possible approach to sanitation provision is conventional sewerage and because they do not allow the possibility that different standards may be appropriate in different situations. Community members living in low-income settlements often react to this situation by ignoring 'official' standards and using their own 'informal' standards for service provision. NGOs such as the Orangi Pilot Project (OPP) in Pakistan and consultants working on externally funded projects have attempted to develop appropriate standards for use in low-income areas. However, these are rarely accepted by government engineers.

What action is possible to bridge the gap between these two groups and thus resolve the situation? A good starting point is to recognise that **standards should relate to location and function**. For instance, a sewer pipe in a narrow lane that cannot carry vehicular traffic does not have to be buried as deep as one that is laid under a main street.

Once this principle has been accepted, it should be possible to develop a programme to test a range of possible standards and demonstrate the viability of those that are found to be satisfactory (see Box 3.5 and Figure 3.4). The next stage should be to produce guidelines on the use of flexible and appropriate standards and to ensure that information on these standards is widely available to those working in both the government and the non-government sectors.



Figure 3.4
Pipe testing in Faisalabad

(Photo: Paul Dean)

Pipes from officially approved and 'informal' casting yards were tested in order to establish the facts about their relative strengths. The testing proved that the quality of both officially approved pipes and those used by local community organisations left a lot to be desired. It was used as the basis for the development of recommended standards for the pipes used in community-built sewers financed under the Faisalabad Area Upgrading Project.

The situation is similar for specifications. Again, there are often large differences between the specifications accepted in the formal and informal sectors. Each side makes the unjustified assumption that its approach must be right. Policy-makers should encourage representatives of both sides to come together to develop agreed testing programmes, leading to agreement on appropriate specifications that take account of costs, available skills and the need for operational sustainability (see Box 3.5).

Box 3.5 Providing information on an aspect of technology

Many people in unserved settlements in Pakistan have joined together to construct sewers to connect their houses to the nearest collector sewer or drain. Various NGOs have provided technical assistance to their efforts but few government departments have recognised the legitimacy of what they are doing. Most government officials believe that community-built schemes use inferior design and construction standards and substandard materials and involve poor workmanship. Supporters of community schemes argue that their standards, materials and construction methods are adequate and that they provide services at a fraction of the cost of government schemes. There is little common ground between the two sides because each asserts that its version of the facts is correct but cannot prove it to the other side.

In order to overcome at least one aspect of this impasse, a programme of sewer pipe testing was initiated in Faisalabad, as part of the DFID-funded Faisalabad Area Upgrading Programme (FAUP). The programme involved tests on pipes (Figure 3.4) from casting yards approved by the Faisalabad Water and Sanitation Agency (WASA) and those regularly used by the community organisations formed through the FAUP. It was organised and supervised by an engineering consultant working within WASA and standard pipe testing methods were used throughout. Initial tests revealed that pipes from both official and non-official casting yards regularly used concrete mixes that were much lower than those specified by WASA standards. Follow-up tests explored the strength of pipes with a range of concrete mixes and reinforcement details and led to recommendations for revisions in pipe specifications. The results of the test could be observed and provided hard evidence on which to base decisions and to take action. One of the most important findings was that it is as important to supervise quality as to specify it. This finding was an important lesson, to be imparted to both government engineers and community activists.

3.17 Creating effective incentives

The importance of effective incentives has been stressed throughout this guide. There is a danger that without these incentives, policies will be confined to paper and will have limited impact on the ground. What actions can policy makers take to ensure the existence of incentives for the implementation of policy objectives? As with legislation and procedures, the answer to this question must be framed in the light of the local situation. However, the suggestions that follow are likely to have fairly broad relevance and may provide a framework for developing effective incentives.

Rewarding organisations for good performance

Funding arrangements might be adjusted to give greater rewards to those organisations, whether governmental or non-governmental, that are most effective in delivering good quality sanitation services in accordance with strategic sanitation principles. In this approach, the level of funding provided from the centre would be adjusted, depending on past performance. Those organisations that have performed better in the past would receive more funding in the future.

There are some dangers in this approach. The first is that funding will become very skewed with certain organisations and areas receiving increased amounts while others become trapped in a vicious circle of worsening performance and diminishing funding. To overcome this danger, financial incentives for good organisational performance must be linked with support systems designed to help non-performing organisations to improve. These support systems may include provision for external organisations, both governmental and non-governmental, to provide assistance and support to non-performing municipalities and government departments.

A second danger is that funds will go to those organisations with the most effective public relations and publicity campaigns rather than those that are really performing well. In order to avoid this danger, good information systems must be in place. (See Note 4.2).

Encouragement for strategic planning

A first stage in the process suggested above could be to require that all municipalities over a certain size produce a Strategic Sanitation Plan as a precondition for funding. This approach will only be successful if the requirement for a plan is linked with assistance to enable the municipality to produce the plan. There is a danger that municipalities will produce a plan purely for the sake of receiving funding, with no real intention of implementing it. The best way to overcome this danger will be to require that planning processes involve not just government officials but also other local stakeholders with an interest in planning. Ideally, this should involve an integrated approach to planning, involving stakeholders at all levels from the local community upwards.

An example of an integrated participatory approach is provided by the Kerala People's Planning Campaign in India. An important feature of this initiative is its devolution of responsibility for a large proportion of the available funds to the local level. An example of a strategic planning process more specifically linked to sanitation is provided in Box 3.6

Box 3.6 Pilot strategic sanitation planning process in Bharatpur

A pilot planning process was carried out in the Indian town of Bharatpur, situated in the State of Rajasthan about 200km south of Delhi, between mid 1998 and early 2000. The process was supported by the Water and Sanitation Programme (South Asia) and involved not only government officials but also local and national NGOs that were working in and around the town.

The first stage of the process involved the introduction of strategic sanitation concepts and culminated in an initial planning workshop at which problems were identified, a committee to oversee the continued implementation of the process was formed and responsibilities for further investigation of those problems were agreed. A fairly lengthy process of information collection followed, including the implementation of some pilot initiatives. This, in turn, led to the development and adoption of a strategic sanitation plan for the town.

The procedure followed in Bharatpur forms the basis for the municipal planning process set out in Section 4 of this guide. The experience in Bharatpur shows the importance of providing support for pilot processes and incorporating the lessons from them into overall policies and mainstream procedures.

Plans are more likely to be followed if projects can only be funded if they have been produced in the context of an overall plan. It will be easier to ensure this for components that form part of national or state/provincial government programmes but you should also aim to achieve it for other components. Again, note the need for effective monitoring systems.

Incentives and equity

Municipal officials faced with heavy demands and limited resources have an incentive to carry out duties that are mandatory and are likely to be much less interested in optional activities. This suggests that policies should provide positive incentives for municipal officials to deal with the needs and concerns of poor people. One way of doing this will be to develop programmes, such as the Integrated Low Cost Sanitation (ILCS) Programme in India, that are aimed specifically at the needs of low-income people. However, it is important that such programmes are demand-responsive and this point is considered next.

Incentives and demand

Through the sanitation programmes that they support, central and state/provincial governments can have a significant impact upon the way in which demand-responsive approaches to sanitation provision are implemented. Bharatpur's experience with the ILCS Programme illustrates this point. Theoretically, the Government of Rajasthan advanced funds to the municipality on the understanding that part of those funds comprised a loan to be paid back once those receiving sanitation facilities through the programme had paid their share of the cost. In practice, the State Government does not insist that the funds are repaid and this in turn means that the municipality has no incentive to recover costs from users. The result is that a theoretically demand-driven programme is in fact largely supply-driven. The financial incentive that is theoretically present in the procedures is not actually being used.

How should the various stakeholders move forward from this and similar situations? Clearly, the State authorities need to insist that funds are repaid by the municipality as required by the ILCS Programme procedures. However, this needs to be combined with assistance to the municipality, and its contractors where appropriate, to develop procedures that ensure that a demand-based approach is being taken. It may be that local NGOs can assist in this process, working with those who might benefit from improved sanitation to develop effective demand for sanitation. (See Tool 1.3 of the guide for further details of how this might be done.

The next step

As appropriate legislation and procedures and effective incentive systems are introduced, they can be integrated into sanitation programmes designed to provide support to those working at the municipal and local levels. Read on for further information and guidance about implementing sanitation programmes.

IMPLEMENTING POLICIES

Policies will only have an impact if they are implemented. A policy statement that all people will have access to adequate sanitation within five years means nothing if it is not accompanied by detailed plans for the implementation of the policy. In this and the following pages, we provide guidelines on how you can make sure that policies lead to action on the ground.

3.18 Basic requirements for matching policy and practice

Policies are more likely to lead to sound practice if they are based in a sound understanding of the existing situation and the resources available. This point has been stressed throughout this Guide. We have also seen the need to ensure that policies have the necessary legal and procedural backing. The particular importance of creating effective incentives has been emphasised. Other important requirements are that:

- The key stakeholders are 'signed up' to the policy;
- Effective communication systems exist to ensure that policies and the decisions that flow from them are widely known and understood.

Programmes designed at the centre can play an important part in ensuring that policy objectives are met.

Each of these points is now considered in more detail.

3.19 Ensuring that key stakeholders support the policy

Involving representatives of the various stakeholder groups in the policy development process is the key to ensuring that these stakeholders support the policy. This involvement should be an ongoing process. Initiatives to ensure that there is general understanding and support for policy might include the following.

Hold short workshops to present and explore policy decisions. At this stage, workshops will be more about presenting and confirming what has been agreed than seeking opinions on what should be contained in policy. In order to develop consensus, those presenting the policy decisions should include representatives of groups other than central government. Municipal officials and representatives of NGOs should be involved if at all possible.

Demonstrate the implications and impacts of policy decisions. This approach can be effective where policy decisions have physical implications. For instance, a demonstration scheme including facilities constructed to appropriate standards may be used to show doubters that such standards actually do work. The impact will be greater if the users of the facilities, those who are responsible for managing them and those who have been involved in their provision are available to give their views on the facilities.

3.20 Communicating policies and their consequences

Policies can and should be communicated to government officials at the municipal and local levels through written notices and instructions. However, do not assume that this will be sufficient for them to understand the detail of how the policy is to be implemented.

You can also communicate information through the workshops and demonstration schemes already referred to above. You should consider the need to hold training events designed to communicate key points about policies and their consequences. Training should not consist only of lectures and trainees should be encouraged to engage as active participants rather than passive recipients. Where possible, formal classroom sessions should be combined with site visits so that trainees can see what the ideas that they are absorbing mean in practice. Tool 6 provides notes for trainers based on the contents of this guide.

3.21 The place of centrally sponsored programmes

The aim of national and state/provincial level plans and programmes should be to support those working at the municipal and local levels. This support will normally be in the form of finance but it may also include technical assistance.

Ongoing 'technical' programmes

Where technical line agencies, such as the Public Health Engineering Departments in India and Pakistan, have ongoing physical programmes, every effort should be made to ensure that these programmes are responsive to demand. This demand may be expressed directly by user groups themselves but the more common situation will be for it to be channelled through municipalities. Ideally, the understanding of demand should be based on a strategic sanitation planning exercise, involving all stakeholders. Failing this, programme planners working at the centre need to give engineers and other professionals clear guidelines as to what will be acceptable in a strategically planned programme. Key points to consider include the following:

1. Project proposals should include consideration of the various options. They should not assume that everywhere has to be sewered. Conversely, there may be circumstances in which the best approach will involve adaptation and use of existing facilities and this might involve the adoption of options such as small-bore sewers accessed via interceptor tanks. (See Tool 2.1 for details).
2. Engineers need to consider the ways in which their schemes can be coordinated with the efforts of other stakeholders. They need to be educated to the possibility that local facilities may be provided by organisations other than their own.
3. Sound finances require that income must be sufficient to sustain the operating costs of the chosen scheme. Ambitious schemes that depend on pumping should generally be avoided unless it is clear that it will be possible to charge users for the full cost of operation.
4. Assumptions regarding the number of users of a facility need to be realistic and the potential problems with schemes need to be explored from the outset. The two questions – 'how can this action solve the problem?' and 'how might it go wrong?' – provide a useful framework for exploring possible benefits and potential problems.

Low-cost sanitation programmes

Low-cost sanitation programmes offer a powerful option for converting policy into practice. Such programmes are commonly concerned primarily with the development of the approach to sanitation provision and the channelling of funds to local stakeholders. As has already been shown, it is possible to build effective incentives into such programmes but it is important that the application of these incentives is monitored.

Where an existing low-cost sanitation programme is already in place, the first task of programme planners should be to assess the extent to which it already complies with strategic sanitation principles as embodied in policy. Once this has been ascertained, it is possible to take the necessary action to amend and develop the programme. Where no such programme exists, programme planners should consider the possibility of establishing one. Remember the following points when planning a low-cost sanitation programme.

1. The assumption that one technology fits all should be avoided at all costs. Rather, the aim should be to provide a range of sanitation technologies that are appropriate for different circumstances, together with guidance on the circumstances in which the various technologies are likely to be appropriate.
2. Much can be learnt from what people are doing already. Consult with as wide a range of stakeholders as possible on programme options, including those working with NGOs, municipalities and external agencies.
3. Try to build your programmes around existing initiatives rather than developing them as alternatives to those initiatives.
4. Remember that you should be concerned with services rather than the mere provision of facilities. This means that attention has to be paid to the ways in which facilities will be operated and maintained once they have been installed.

3.22 Integrating externally-supported projects into the mainstream

Government officials and development agency professionals often assume that externally funded projects are separate from the government's own ongoing programmes. Greater emphasis should be placed on the links between the two and the ways in which externally supported projects can be integrated into government and other local programmes. Ideally, the development of an overall sanitation policy based on strategic principles should lead to the development of a programme into which externally supported projects can be integrated.

Externally-funded projects can provide good opportunities to test out ideas and theories but it is important to consider the ways in which any lessons learnt can be integrated into mainstream procedures.

Strategic Planning
for
Municipal Sanitation

Section 4



**GUIDE TO SANITATION PLANNING
AT THE MUNICIPAL LEVEL**

Section 4

Guide to Sanitation Planning at the Municipal Level

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GUIDE TO SANITATION PLANNING AT THE MUNICIPAL LEVEL

ABOUT THIS SECTION

This section of the guide provides practical advice for people who are involved in the delivery of sanitation services at the municipal level. It applies to everyday operations and is not intended only for special projects funded by donors or government grants.

Sanitation problems vary from place to place and this section does not try to anticipate all of them. Instead, it sets out an approach to analysing and solving problems. The need to link plans to available resources is emphasised.

The section is set out as follows. A brief introduction identifies possible readers, explains the section's purpose and establishes the context for municipal plans. You may like to discuss the need for planning with colleagues before reading further. A possible planning process is then proposed and the steps in this process are described in three stages.

The process is based on the need to understand current problems, develop solutions to those problems, incorporate those solutions into a city-wide plan and finally to implement the plan. Operation and maintenance requirements are considered where appropriate throughout the section and the last sub-section is devoted specifically to them.

KEY POINTS IN THIS SECTION

1. Municipal plans are most likely to be effective if they are supported by national and state/provincial level policies and programmes.
2. Plans should build on what is already happening. Identifying first steps towards overall goals is as important as setting the goals themselves.
3. To be effective, planning processes must involve all the stakeholders, including elected representatives. A planning committee including representatives of all those with an interest in sanitation can provide a useful focus for planning activities.
4. Plans should focus particularly on the needs of low-income communities.
5. Plans should not be only about new facilities. You should be equally concerned with the operation and maintenance of those facilities that already exist.
6. Pilot projects can provide a useful way of testing new ideas, identifying resource needs and convincing people of the benefits of particular approaches.
7. Plans should take account of available financial, human and institutional resources.
8. Plans should be updated in the light of experience. This suggests the need for effective information systems, based on simple monitoring and evaluation of plan components.

INTRODUCTION

4.1 Who should read this section of the guide?

You should read this section of the guide if you want to develop a strategic plan for sanitation services in your municipality. You may be:

- a **senior municipal official or elected representative** with direct responsibility for the municipality;
- a **staff member of a specialist government agency** operating at the municipal level;
- a **senior state/provincial level official** who wishes to put strategic sanitation policies into practice;
- an **NGO or CBO activist**, who has already been involved in a successful planning process at the local level;
- a **consultant** who has been asked to prepare a sanitation plan on behalf of the municipality, a specialist agency, a government department or some other concerned stakeholder.

Your initial approach to strategic sanitation planning will be influenced by who you are and your links with other stakeholders.

4.2 What is its purpose?

This section of the guide will help you to plan for improved sanitation service provision in a town or city as a whole, recognising that improvements will be of little value if they cannot be sustained over time. Sanitation problems and their solutions vary from place to place, and this section does not try to anticipate every one of them. Instead, it explains how to approach problems, i.e. how to analyse and resolve them. The guidelines are based on a common sense approach and are intended to be realistic in terms of the resources that are available in typical towns and cities.

Note that the **guidance provided in this section of the guide does not relate only to special projects funded by donors and government grants**. It also applies to local initiatives and ongoing programmes, funded from municipal budgets and other local sources.

4.3 What you need to know before reading this section of the guide

Throughout this section of the guide, reference is made to various sanitation components and technologies. If you are new to the subject of sanitation, you may like to read the glossary of sanitation terms provided in the introduction to this guide before proceeding further.

4.4 Why plan?

Planning enables the best use to be made of limited resources. Without planning, it will be difficult to ensure that those resources are used **where** they are most required and in a way that **coordinates** the actions of different stakeholders. The result will be ad-hoc actions that achieve limited benefits for a limited number of people.

4.5 The context for municipal sanitation planning

Responsibility for delivering sanitation services at the municipal level is usually assigned to the municipal authorities and they must therefore be at the centre of any strategic sanitation planning process. However, the power to set budgets and to determine policy, spending priorities and institutional arrangements often lies with the state or national government. Municipalities therefore have limited freedom to run their affairs in the way they think best. Nevertheless, steps taken locally can make a real difference to the quality of sanitation services. Those operating at the municipal level face some constraints, but existing laws and procedures often provide sufficient flexibility to enable committed individuals to go at least some way to overcoming these constraints.

Do not assume that you must refer everything to a higher level of government. If you are not sure whether you have the power to make a decision, take steps to find out what your powers are. They may sometimes be greater than you think. If approval from a higher level of government is necessary, you should take steps to obtain this approval as early as possible.

4.6 Planning for real change

Some people may object that planning does not work in practice. Plans often sit on shelves and gather dust. In such circumstances, people will not take plans seriously, even if they look good on paper. Experience in many countries has shown that the most successful plans are those that take account of the available resources and respond to what people want. In order to ensure that the plan that you prepare is implemented you should:

- **base the plan on realistic assessment of the available resources**
- **involve sanitation users and those who represent them in the development of the plan.**
- **involve those who are already working to improve sanitation in the planning process.**
- **tackle problems by breaking them down into achievable tasks; and**
- **update plans to include the lessons learnt from experience.**

Always check whether the plans that you prepare meet these basic conditions. Some further important points are listed and briefly discussed in Box 4.1.

Box 4.1 Some key points about municipal planning

Your plans are most likely to be successful if you remember the following points

1. There is no maintenance-free option.

All sanitation facilities need to be maintained. If the maintenance of existing facilities is inadequate, the plan must consider how this maintenance can be improved. Responsibility for carrying out maintenance is unlikely to rest entirely with government and it is important that service providers and users agree on their respective duties and are willing to fulfil them.

2. Sanitation problems are not only physical.

Very often the root causes of poor services lie in poor management, a lack of planning, and failure to generate enough revenue to provide a reasonable level of service. Sanitation services will only improve if the root causes of these problems are tackled.

3. Sanitation problems are interconnected.

Excreta disposal, drainage and solid waste management are not isolated services, but are closely linked. Failure in one area can have damaging effects in another. One example is the dumping of uncollected solid waste in drains, which leads to blockages and flooding and allows insects to breed (see Figure 4.1).

4. Agencies need to plan together

Responsibility for sanitation services is often split between several agencies. For example, the municipal council may deal with low-cost sanitation and solid waste management, the public health engineering department with sewerage and water supply, and NGO's or CBO's with small or medium-scale projects in some parts of town. At the same time there may be no agency with overall responsibility for the drainage network or for hygiene promotion. If sanitation services are to be managed effectively, these agencies need to co-ordinate their activities and workplans. They do not have to merge, but they do need to plan together through some form of co-ordinating mechanism, such as a sanitation committee under the umbrella of the municipal council.

5. Low-income areas need special attention

While problems with existing services may be acute, there may also be parts of the town where people do not have any sanitation services at all. Worst affected are the poor, many of whom live in informal, often peri-urban areas, which may be denied access to official water supplies, refuse collection services or low-cost sanitation schemes. If these areas remain outside municipal services and/or planning controls, sanitation in the town may never reach an acceptable standard.

6. Sanitation is also about behaviour

Sanitation services can do little to improve the local environment or protect health unless people use them responsibly and adopt basic standards of hygiene (see Figure 4.2). It is easy to build toilets, for example, but there is no guarantee that people will use them or empty pits safely when they are full. Latrine construction should therefore be accompanied by efforts to promote latrine use and personal hygiene, and education in latrine maintenance. Municipalities may need to look outside government to find agencies with knowledge and skills in this area.

Figures 4.1 and 4.2 illustrate two points made in Box 4.1



Figure 4.1 Sanitation problems are interconnected
Solid waste blocking storm drain in Kathmandu, Nepal

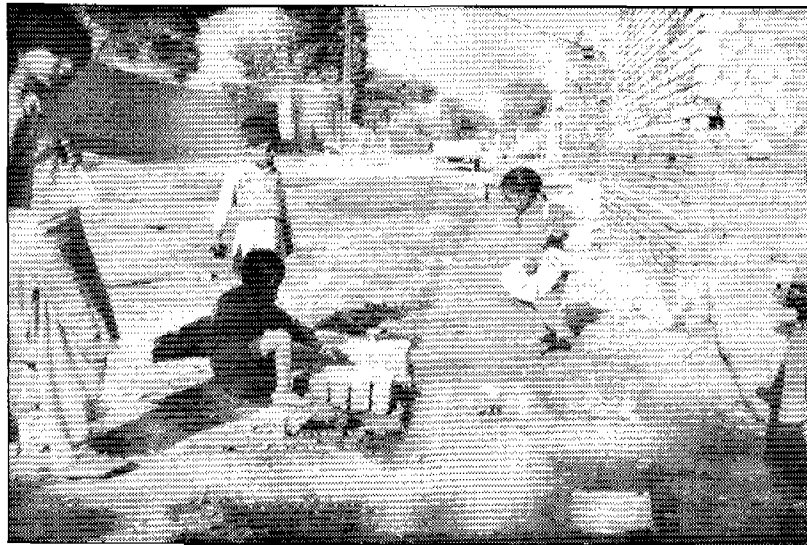


Figure 4.2 Sanitation is also about behaviour
There is a need to ensure that people, including children, are aware of the risks from contact with wastewater

THE PLANNING PROCESS

4.7 Stages in the planning process

It is important that planning activities follow a logical sequence. Figure 4.3 suggests the stages in such a sequence. It has been developed from the pilot strategic sanitation planning exercise carried out in the Indian town of Bharatpur over the period 1997-2000.

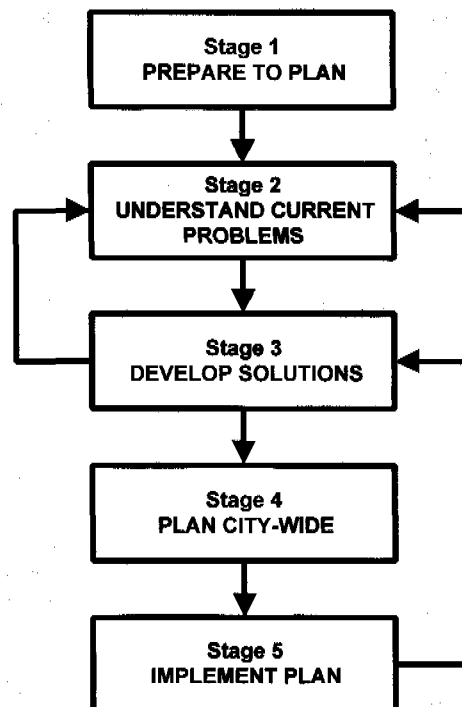


Figure 4.3 Stages in the planning process

The feed-back loops illustrate the point that **your understanding of problems and the options for solving them will be influenced by what you do**. Remember that planning should not be a one-off event. Solutions should be developed and improved and plans should be amended in the light of experience.

The various components of the plan do not have to proceed at the same rate. Some activities can be started immediately and completed quickly. Others may require a period of preparation and may take longer to implement. Remember **that you can only implement a plan component if you have the funds to do so**. This basic point should be taken into account when preparing the plan.

Each stage in the planning process is examined in greater detail in the following pages.

STAGE 1 – PREPARING TO PLAN

It will only be possible to develop a plan if there is general agreement on the need to plan. In this sub-section we consider how you might draw the various groups with an interest in sanitation into the planning process.

4.8 Developing consensus on the need to plan

No plan will work if those who will be responsible for its implementation are not convinced of the need to plan. So, your first step must be to talk to the various stakeholders and, where necessary, convince them of the benefits that they will gain from participating in the planning process.

People are more likely to agree to plan if national and/or state/provincial government legislation and procedures require that a plan be produced. Where this is not the case, planning will have to be sold to other stakeholders on its own merits. You may do this by:

- encouraging them to join you in gathering and analysing information about current problems and their causes;
- arranging for representatives of local organisations to meet their counterparts in a town in which a successful planning exercise has already been carried out.
- gaining support for planning from senior local administrators and politicians.

It will be easier to gain support if there is a possibility that the plan can be used to attract external funding, from central government, state/provincial level government and external funding agencies. However, you should always emphasise the need to fund as much of the plan as possible from local sources.

4.9 What to do about existing plans

You may find that some organisations already have their own plans. These plans should be taken into account when preparing the strategic plan, but you should not promise that they will be implemented in their entirety. The aim should be to reach agreement on the strengths and weaknesses of these plans and to incorporate what is good while rejecting or amending what is bad.

Pay particular attention to the way in which existing plans deal with the need for operation and maintenance. Remember the basic strategic principle that operation and costs should never be subsidised (Refer to Section 2.3). In particular, be aware of the need to operate and maintain centralised systems such as sewerage. Studies in India and Pakistan show that sewered systems rarely generate enough revenue to cover their costs. **If sewerage plans do not include realistic proposals for cost recovery, they are unlikely to work.** Maintenance is equally important. **Plans that do not consider responsibilities for operation and maintenance cannot be considered acceptable.**

STAGE 2 – UNDERSTANDING CURRENT PROBLEMS

The starting point for developing better sanitation services will normally be analysis of current problems and their causes. You need to understand the existing situation before you can decide your objectives and how you are going to achieve them. Remember that physical problems often result from deeper problems relating to limited institutional capacity and/or people's sanitation-related behaviour. You need to understand these underlying problems if you are to treat the causes of problems and not just their symptoms.

4.10 Explore the existing situation

As consensus on the need to plan begins to develop, you and the other concerned parties or stakeholders need to spend some time to understand current sanitation problems. You should find it helpful to explore the following basic questions:

1. Who is responsible for existing services?
2. What sanitation problems do we face?
3. What are the causes of those problems?
4. What resources are available to solve them?

As you start to answer these questions, remember that you are attempting to gain a broad understanding of *how* services currently function and to identify *where* there are problems and the *reasons* for those problems. Do not spend a lot of time gathering technical data that has no practical use and does not help you to understand the issues. Before collecting information, ask yourself '*what am I going to do with this information?*' If you cannot answer this question, there is probably no purpose in collecting the data.

Further guidance on the form that information should take is provided in Tool 4.3 of this guide.

Box 4.2 highlights the role that NGOs can play in the investigation. Some key points relating to each of the four questions are given on the following page.

Box 4.2 The role of NGOs

NGOs can play an important part in investigating the existing situation and providing inputs to the wider sanitation planning process. They may possess skills in social investigation and analysis that are not available within government. Where they are already working closely with low-income communities, they will have access to those communities that are denied to government. NGOs may be more flexible and thus more able to carry out innovative pilot activities than government departments. So, do not ignore the potential of NGOs and try to involve them in the sanitation planning process from the beginning.

This point is well illustrated by the process in Bharatpur, where two NGOs have been involved in the strategic planning process from the beginning. One of these is locally based while the other is based in Delhi, but was already working in the rural areas around Bharatpur before the start of the sanitation planning process. Both have taken a lead role in the activities leading to the production of a strategic sanitation plan.

Some key points on the four basic questions**Who is responsible for providing existing services ?**

Responsibilities may be less obvious than you assume. Different government agencies will be responsible for different aspects of sanitation provision. Sometimes, there will be duplication. Remember that government is not the only provider of sanitation services and explore what is being done by individuals, CBOs and NGOs. Look also for gaps in responsibilities for service delivery. For instance, there may be no agency with expertise in hygiene education, overall drainage planning or hygiene education.

What sanitation problems do we face ?

As you identify the organisations that provide sanitation services, encourage them to join in the planning process and try to involve them in the assessment of existing services. Remember the five ways in which sanitation services may be deficient identified in Section 1.4 and look both at the extent of existing services and the way in which they operate. Look particularly for problems in the operation and maintenance of existing services and identify any areas that are unserved or poorly served.

What are the causes of problems ?

It is not enough to identify problems. You cannot take effective action unless you also understand *why* services are not working well and *what* can be done improve their performance. Problems often arise because of poor operation and maintenance. Service providers need to be open and honest about the shortcomings of their operations if they are to get to the root of the problems with those operations. This will be difficult for some and staff may be reluctant to speak freely unless they are assured that they will not be punished for doing so. **The investigation should be promoted as a positive development** - the start of a process of making things better rather than an opportunity for apportioning blame. Ask people how they think things could be done better in the future rather than focusing entirely on what was wrong in the past.

What resources exist at present ?

In order to solve problems, you must have some idea of the resources that are available. These will include both financial and human resources - what can people and organisations afford and what knowledge and skills are available. Do not automatically assume that problems are caused solely by lack of funds and that all will be put right by greater investment. This is rarely the whole story. Some towns have a surplus of funds and many staff, yet still suffer severe sanitation problems. This suggests that there are other constraints that must also be overcome if services are to improve.

Official records will tell you what people are supposed to pay for services, but you will need to talk to service users and service providers to find out what they actually pay. For instance, there may be no official house-to-house solid waste collection service, but it may be that households are paying municipal sweepers and/or micro-entrepreneurs to collect waste from their plots. Refer to Tool 3.2 for information about evaluating willingness to pay.

Box 4.3 illustrates some of the points made above as they apply to solid waste management.

Box 4.3 Information relating to solid waste management

Your initial concern in relation to solid waste management will be with the extent and quality of existing services. A broad understanding can be gathered from interviews with service providers, cross-checked by discussions with householders. Information on the extent of services will provide you with a rough estimate of the number of households currently served and will also suggest the type of communities that currently receive no service or at best an inadequate service.

You may wish to have a rough idea of how much solid waste is being produced, in order to plan for secondary collection and disposal arrangements. In most cases, your initial planning can be based on per-capita waste production figures obtained from studies in similar towns in your region. Do not worry too much that these figures are not precise since any lack of precision is likely to be unimportant when compared with other variables and uncertainties. If necessary, you can come back to obtain more precise information later in the process.

Interviews with local service providers (sweepers and micro-entrepreneurs) can provide a qualitative understanding of the extent of private informal arrangements for solid waste collection. It is important to understand the views and concerns of these groups. Efforts to improve solid waste collection services in Ward 28 in Bharatpur ran into problems because the private sweepers who collect waste from individual households saw the proposals for an improved collection system as a threat to their livelihood. A greater initial emphasis on understanding the sweepers' concerns might have avoided these problems.

It is also important to understand existing municipal systems and procedures and any constraints on the possibilities for changing them. In Faisalabad, Pakistan, interviews with the personnel working in the municipal workshop revealed that the division of responsibilities between the municipality's health department (responsible for collection) and engineering department (responsible for vehicle maintenance) was contributing high levels of 'down-time' for solid waste collection vehicles. Major changes in responsibilities could not be achieved quickly, but the investigation did reveal the need to explore possibilities for streamlining procedures.

4.11 The need to consult service users

Government officials rarely talk to the citizens who use their services. Occasional enquiries or complaints may be received via ward councillors, but ongoing dialogue and consultation are extremely rare.

When services are not functioning well, council officials may be reluctant to talk to users because they expect complaints. However, talking with users is an important step in improving services for the following reasons.

- **Users know about their neighbourhood**, the way municipal services operate there, and the sort of improvements that might work ('demand-side' knowledge). This complements the 'supply-side' knowledge of the municipality and so helps to give a fuller understanding of the situation
- **The service provider can only find out about the services that people want and are willing to pay for by talking to them.** This can help prevent money being wasted on services that people will not use.
- **Users have responsibilities** for the proper use and maintenance of sanitation infrastructure, but you need to talk to them to agree and clarify these responsibilities.

You should certainly consult users as you investigate the existing situation. This should become part of the routine of municipal service delivery. It may be best to assign this task to a third party such as an NGO that is skilled in community liaison. Most municipal bodies lack skills in this area and it is probable that people will speak more freely if they are talking to a third party rather than to the service providers themselves.

One word of caution is needed here. Consultation raises public expectations. If the municipality is not serious about improving services, and no action follows the consultation, people may become frustrated and lose all confidence in the organisation.

So, you should always be clear about why you are consulting people and be able to tell them something about the planned follow-up action. Do not promise what you cannot deliver.

STAGE 3 – DEVELOPING SOLUTIONS

By now, you should have identified the main sanitation problems in the town and should have at least some understanding of their causes. It would be possible to move straight into the development of a sanitation plan, but it is better to first spend some time to 'develop solutions'. This stage will give you time to obtain more detailed information on specific problems and issues where this is required. It will also provide an opportunity for the various stakeholders to become really involved in the process. The more stakeholders who are involved, the better it will be. This will ensure that a wide range of experience, skills and points of view is brought to bear on the issues. It will also help to create confidence that something will really be done to develop better services.

4.12 The steps in the process

The main steps required to develop solutions to sanitation problems are shown diagrammatically in Figure 4.4. This recognises that some improvements can be made immediately. It also shows the need to:

1. Develop an improved information base, including improved maps and records where appropriate;
2. Review specific services and programmes in order to obtain more detailed information on specific problems identified in the course of the previous stage; and
3. Pilot projects to test ideas, approaches and technologies before they are introduced on a city-wide scale. Because of their relatively small scale, pilot projects can be prepared and implemented fairly quickly.

The results of both detailed surveys and pilot projects will help you to develop proposals for action, which will be incorporated into the city-wide plan.

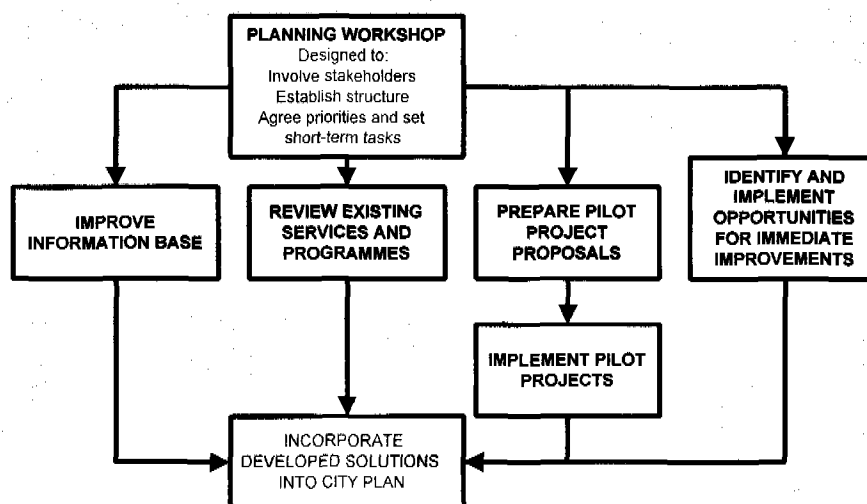


Figure 4.4 Steps in developing solutions

4.13 The planning workshop

The planning workshop is a key point in the process. It provides the opportunity to:

- involve all stakeholders in problem analysis;
- establish a structure for co-ordinated planning; and
- agree priorities and assign short-term tasks.

Some of the short-term tasks will involve further detailed investigation of specific problems while others will require the development and implementation of pilot projects.

Box 4.4 describes the planning workshop, held in Bharatpur, Rajasthan in India. This section of the guide is largely based on the experience gained in Bharatpur. Additional notes on the three main objectives of the planning workshop are given on the next page.

Box 4.4 The Bharatpur Planning Workshop

A planning workshop was held in Bharatpur in June 1998, some 2 months after the start of intensive contacts with local stakeholders.

The workshop objectives were to:

- reach agreement on current sanitation problems and their causes;
- develop a framework for the production of a comprehensive sanitation plan;
- allocate tasks and responsibilities for short term action; and
- identify support requirements for developing the plan.

The workshop lasted two days. After an introduction to the workshop and its purpose, the first sessions were devoted to problem analysis. Participants were invited to write cards on sanitation-related problems and these were then grouped to show how the problems were inter-related. The two NGOs already working in the area had each carried out a consultation exercise with low and middle-income communities in Bharatpur to assess perceptions of sanitation-related problems and each presented its findings to the workshop. This mechanism ensured that the workshop participants considered community concerns without increasing the number of participants to the extent that the workshop became unwieldy. The NGO presentations led into group discussion on questions relating to community involvement, not least which organisations should take the lead in involving communities.

The first day concluded with a presentation on the need to take a strategic approach. This compared improving sanitation to climbing a flight of stairs. We may be near the bottom with very poor sanitation and would like to be at the top and have the best facilities possible, but we cannot get there in one leap. We must proceed step by step. It also emphasised the role of cost recovery in ensuring the sustainability of services.

During the second day, this discussion of strategic principles led into the identification of resources and the formation of a Coordinating Committee. This was fairly small and included key municipal officials and representatives of the two active NGOs. The need for a number of activities was agreed and responsibilities for these activities were assigned. Finally, a timetable for the completion of tasks was agreed and arrangements were made for a follow-up meeting to bring together the outputs from these tasks and finalise a strategic sanitation plan.

Objectives of planning workshop

1) *Involving all stakeholders in problem analysis*

You should already have some idea of sanitation problems from your initial investigations. The planning workshop provides an opportunity to ensure that all the stakeholders are involved in the analysis of these problems. By analysing problems in the course of the workshop, you will ensure that problem analysis is transparent and involves a wide range of people, not only those from the municipality and government departments. This will bring a wide range of experience and skills to bear on the issues. It will also help to create confidence that something is really being done to develop better services.

A good way to carry out problem analysis is to develop a problem tree, or perhaps a series of problem trees, linking problems in terms of cause and effect. The first stage in creating a problem tree is to ask workshop participants to write down problems on cards. These cards are pinned up on a board for all to see and the participants then work together to arrange the cards and add others as necessary so that all can see links of cause and effect.

2) *Establish a structure for coordinated planning.*

The planning workshop will provide an opportunity to establish a framework for continued collaborative planning. Try to ensure that all future initiatives in water and sanitation take place under the umbrella of a single, strategic plan. A Sanitation Planning Committee can be formed, with representatives from all relevant organisations. The chairman could be from any of these organisations, but the committee should be linked to the municipal decision-making structure, for instance, by including the chief executive of the municipality. This will ensure that the recommendations of the committee can be fed into the formal planning process and become officially recognised.

3) *Agree priorities and assign short-term tasks*

Once the current problems have been analysed and understood, you need to ask what can be done to make things better? It is not possible to change everything overnight. Progress is more likely to result from a series of small steps taken over a long period of time. **It is only through a commitment to a long-term programme of improvement that sanitation services will really get better.**

But where can you start? You and the workshop participants can make the job manageable by breaking it down into clearly defined tasks, each of which leads to a next step in developing better services. For some of these it may be necessary to hire specialist expertise. This will be a worthwhile investment as long as the tasks are well-defined. The tasks identified in the course of the Bharatpur workshop are listed and briefly described in Box 4.5.

Box 4.5 Tasks undertaken in the course of the Bharatpur planning process

The initial Bharatpur planning workshop identified a number of tasks to be carried out in preparation for the development of a comprehensive municipal sanitation plan. These included the following.

Task 1 Drainage survey

Comprehensive survey of town intended to provide the basis for understanding and, if necessary, redesigning its drainage system. The lead agency for this work was the Municipal Council with assistance provided by the UNDP-World Bank Water and Sanitation Program (WSP-SA). Consultants were engaged to carry out the work.

Task 2 Drain cleaning

Thorough cleansing of main drains in order to reduce flooding problems. This task was assigned to the Municipal Council with assistance again provided by WSP-SA. This task was scheduled to start immediately, rains permitting.

Task 3 Solid Waste Management

Review of the existing solid waste management system in one ward. This work was lead by the NGO ACORD and in fact also involved a review of solid waste management services for the town as a whole. Funding was provided from the research funds and routed through WSP-SA.

Task 4 Latrine survey

Technical and social review of existing low cost sanitation initiatives in one or more wards. This work was assigned to the Municipal Council in collaboration with Sulabh International, the NGO responsible for most low-cost sanitation programme activities in the town and Lupin, the Bharatpur-based NGO.

Task 5 Sanitation promotion

In same ward as Task 4, introduce promotion of low-cost sanitation including hygiene education. This work was assigned to the Municipal Council in collaboration with Sulabh International. The need for support in providing basic sanitation training for community workers and developing the role of a Sulabh hygiene education team was recognised and WSP-SA and UNICEF were identified as possible resources to provide this support.

Task 6 Social and technical mapping of town

The aim was to identify those areas where sanitation needs were greatest. The lead agency was Lupin, with advice on methodology provided either by UNICEF and the Indian Institute of Rural Development in Jaipur.

Task 7 Community involvement

The intention here was to develop proposals for community organisation for a future comprehensive sanitation programme. Lupin was the lead agency with advice to be provided by UNICEF, WSP-SA and other agencies as appropriate.

Task 8 Financial planning

The focus was on collecting user contributions for the Integrated Low Cost Sanitation scheme, in accordance with State policy. The Municipality and Sulabh International were to be the lead agencies, but in fact very little progress was made with this task. This illustrates the point that strategic principles often entail a large move from present ways of thinking and may not be easy to introduce at the municipal level.

4.14 Immediate improvements

The planning workshop is likely to identify some improvements that are obvious and affordable and can be implemented immediately, provided that there is commitment from the parties involved. An example is drain cleaning, an essential maintenance task, but one which is often neglected. A drain-cleaning programme could begin without a big injection of funds from outside and may have the added benefit of showing citizens that the municipality is serious about improving sanitation. It should then be incorporated into municipal routines and budgets so that it becomes a standard feature of municipal operations in future.

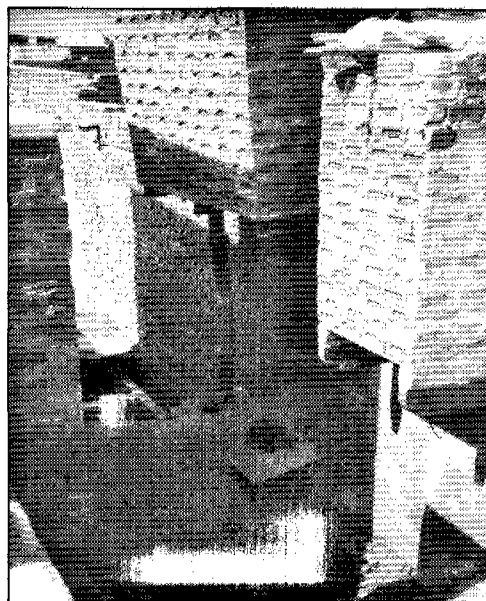
The important point at this stage is to **identify actions that have a chance of success**. In the case of drain cleaning, try to distinguish between drains that will run freely if cleaned and those in which downstream conditions limit restrict the flow, whether the drain is clean or not. Improved maintenance can improve conditions in both, but the level of ongoing effort needed to sustain improvements will be much greater in the second case.

Small-scale physical improvements can often be made to improve local conditions. This is shown in figure 4.5 which shows a narrow passage in Bharatpur running at the back of two rows of houses

Figure 4.5 Downpipes discharging to drain in a back alley in Bharatpur

Wastewater from WCs and bathrooms is discharged through downpipes to the passage and runs through it until it reaches the street drain. Plenty of fall is available and the situation could be improved by extending the down-pipes and connecting them into a shallow sewer.

This is a simple improvement that could be funded by the people themselves and implemented with a little technical help. It would lead to a definite improvement in the local situation although action would be needed later to replace or cover street drains and eventually to provide treatment



Figures 4.6, 4.7, and 4.8 illustrate the point that small-scale local improvements should be seen as the first stage in a planning process designed to improve the overall situation.

Solutions at one level can lead to problems at another level

Figure 4.6
Discharge from household
WC in Bharatpur

Efforts by householders to solve problems on plot may export them to the area around the plot

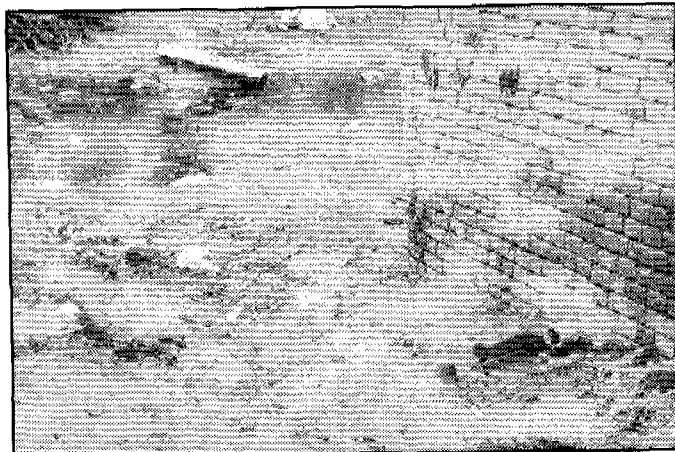


Figure 4.7
A community-built sewer
in Faisalabad

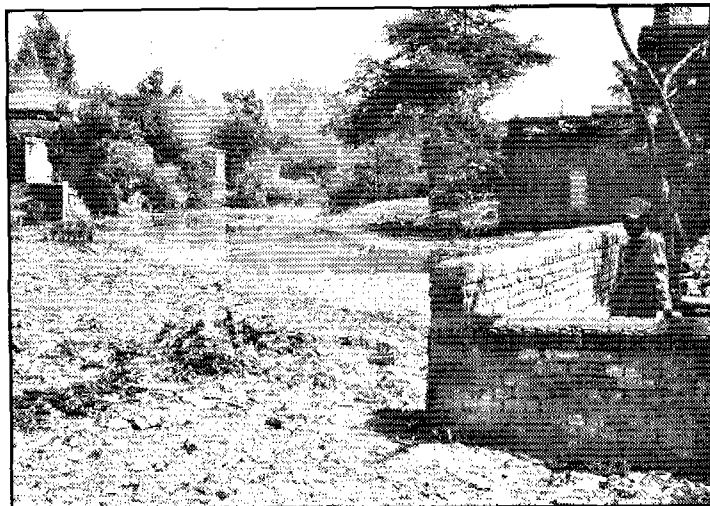
(photographed before ground filling)

This improved conditions in the street but sewage was discharged to an adjacent field (causing friction with the farmer) until a secondary sewer was built

Figure 4.8
Outer moat in Bharatpur

Once a clean moat surrounding the town, but now heavily polluted by discharges of municipal wastewater.

Drainage improvements on a larger scale than that shown above, including treatment where appropriate, are needed to solve this problem.



4.15 Developing a good information base

Your initial investigation may have revealed that some essential information is not available in a useable form.

For instance:

- accurate maps of the drainage network may not be available;
- the municipal records may not provide a detailed breakdown of revenue and expenditure for each sanitation component so that it is impossible to tell whether services are affordable;
- there may not be accurate records of the number of households liable for property tax.

Producing this information may constitute one or more of the preliminary tasks. As this information becomes available, it can be used to inform other tasks.

Linking information

Try to bring information from different sources together on a single map base whenever possible. One way to do this will be to produce one or more base maps, using the guidance on appropriate scales given in Box 4.6. Information on physical and social conditions and available services can be transferred to transparent overlays of these maps. By viewing these overlays together, you will build up a picture of the overall situation in the town. Look particularly for links between the various social and physical characteristics of the various areas. For instance, is there a link between people's tenure status and the type of sanitation facilities that are available to them.

Box 4.6 The importance of good base maps

Good base maps are necessary for a number of reasons, in particular for drainage planning, mapping existing facilities and for showing the status of various areas – are they formally planned, who owns them and so on. The scale and detail of the maps will depend on the purpose for which they are to be put. Maps of around 1 in 20,000 can be used to show sanitation zones and other general information. It may be possible to use a scale of 1 in 5000 or even 1 in 10,000 for overall drainage planning although a scale of 1 in 2,500 may be preferable. Scales of 1 in 1000 and 1 in 500 are suitable for detailed sewerage and drainage planning at the local level.

Another good way of storing information is to store it in a Geographical Information System (GIS). Some municipalities in India have introduced GIS systems. If you are interested in this, you should obtain specialist advice on the best system to use and the way in which it should be set up.

4.16 Detailed reviews of specific services

Though some improvements can be made immediately, in most cases a full review of specific services will be needed before lasting improvements can be made. For example, everyone may know that a lot of garbage remains uncollected and ends up in the drains. They will also know that management is part of the cause.

However, this does not tell us how the service could be improved. Is the problem caused by lack of staff, inadequately trained staff or poor supervision, access problems for collection vehicles, or a lack of co-operation from the public? .

A thorough review should answer these questions.

One of the two strands of activity leading up to the completion of an overall sanitation plan should involve detailed reviews of specific services. (Refer to Box 4.5 for examples of what this meant in Bharatpur).

A good way of reviewing a service is to investigate in detail how it operates in one ward or neighbourhood; this usually reveals problems and bottlenecks that are affecting the whole town. Try to identify each step in delivering the service, from start to finish. For example, if there is a scheme to provide low-cost household toilets, what is the sequence of events that takes place at each household, from first contact with the household to completion of the superstructure? How effective is this process?

If staff cannot explain exactly what they are meant to do, there is a good chance that the service is inefficient and poorly managed. Developing an effective system of work may be a priority need and could resolve many problems with that service.

4.17 Assessing options through piloting

New ideas and approaches should not be introduced city-wide until they have been tested to see if they will work, are affordable and can be managed by the staff that are available. Piloting on a small scale, typically that of one or two wards, will therefore often be advisable.

Piloting means testing a design or model in the field on a small scale and closely monitored its performance. The design or model can then be modified as necessary to make it more effective. If the outcome is successful, the model can then be recommended for wider use.

Piloting is thus a learning process, enabling mistakes to be made and overcome on a manageable scale. It enables effective solutions to be developed in a systematic way and can prevent money being wasted on large-scale programmes that are likely to fail.

Some pilot programmes may be used to test new technologies or designs, others try to find the best way of organising and delivering a service. For example, a pilot may be set up to develop a primary (i.e. house-to-house) waste collection service.

Key institutional questions should be addressed as early as possible in the pilot project process. Before moving on to widespread replication. They include which agencies will manage and deliver the service? What will be the roles and responsibilities of the community, the service providers, and the municipality? Who will pay for the service?

Pilot projects should relate to problems that are widespread and should be implemented in typical situations. Any off-site services necessary for the operation of the pilot project need to be already in place. This means that arrangements at the local level should be piloted in an area where secondary collection services are already in place.

4.18 Linking into existing schemes

Linking the various components of your plan with existing schemes will help to ensure that resources are available to implement the plan. At the same time, the analysis and new thinking developed as you prepare the plan will help to improve the quality of existing schemes. These points are illustrated in the diagram on the right

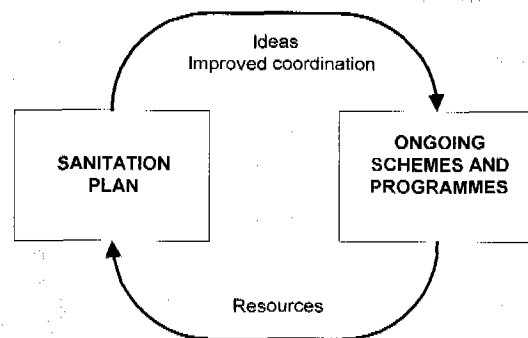


Figure 4.9 Linking plans with existing schemes

These links between the plans and ongoing schemes and programmes will only happen if local stakeholders take control of programmes and schemes, review their effectiveness and improve them where necessary. For example, there may be government-funded schemes for infrastructure development in low-income areas. Very often, such schemes focus more on the disbursement of funds than the quality of work, but there may be scope for improving their effectiveness by:

- supervising and monitoring them closely
- including them in the overall strategy for sanitation in the town, and improving their links to other services and programmes
- ensuring that resources are deployed where they are most needed
- consulting beneficiaries and responding to what they actually want
- ensuring that they include any necessary 'software' components such as hygiene education (this is especially important for latrine-building schemes). For this purpose, it may be necessary to bring in an NGO or other agency to work alongside the main implementing agency.

STAGE 4 – DEVELOP A CITY-WIDE MUNICIPAL PLAN

4.19 What should be in the municipal plan?

The timescale for research, reviewing and piloting will vary according to the size of the town and the problems being addressed. Whatever the case, the aim should be to **find approaches that work** (and to discard those that do not work). When that point has been reached, a municipal plan can be developed. This is likely to include both:

- Proposals for replicating pilot initiatives on a large scale (although the approach taken should be tailored to suit the conditions in each part of town).
- Action on issues such as overall drainage, which require a town or city-wide approach and which have already been thoroughly researched in the run-up to the plan.

The plan should include an overall goal, a statement of the rules, policies and principles underlying the plan and details of the current position, objectives, activities, responsibilities and resource requirements for each plan component. The way in which these are linked is illustrated in Figure 4.10.

As with all aspects of the planning process, producing the plan should be a collaborative effort so that the resulting document is supported by all agencies involved. An example of how a municipal sanitation plan might be structured, including the essential items to be included is provided in Boxes 4.7 and 4.8

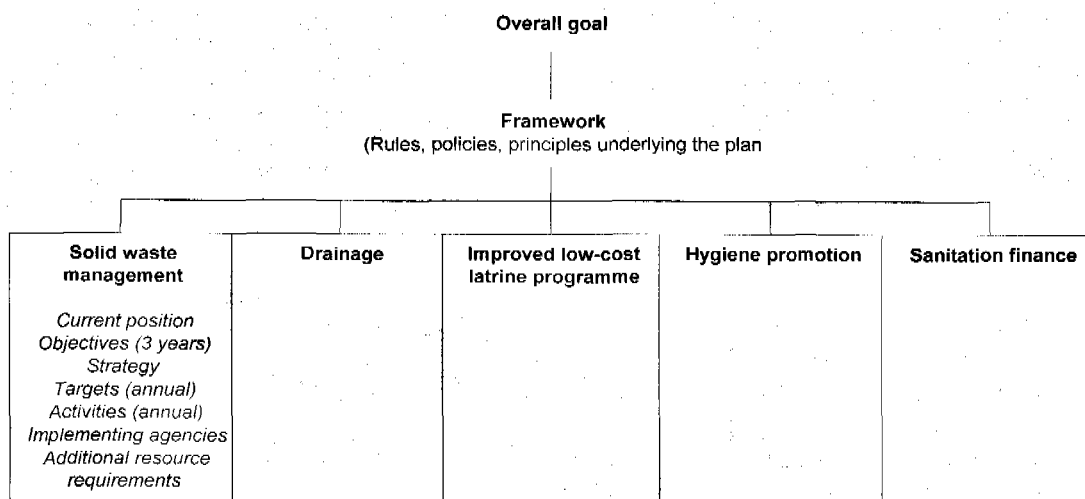


Figure 4.10 Structure and contents of a municipal sanitation plan

The plan should not only be about the provision of new facilities. For each component, it should consider any possibilities for improvements in management arrangements, particularly as they relate to operation and maintenance. Remember the role of appropriate incentives in ensuring that management systems are effective.

Box 4.7 Long-term aims of sanitation development plan**Overall Goal**

A brief statement should be provided, stating the purpose or purposes of the sanitation development plan? This should set out its expected impact - a cleaner town? a healthy living environment?

Framework (Rules, Policy and Principles underlying the Plan)

This should explain *how* the municipality is going to tackle the sanitation problems. All agencies involved in sanitation should comply with this framework. It should include information on:

1. Priorities

How will the municipality decide which activities or places to target first? How will priority wards and colonies be identified? Use social and technical mapping (Refer to Tool 4.3) to identify the areas that suffer the worst the worst sanitation problems. Before doing this, you will have to work out the criteria that you are using for comparison.

2. Roles and Responsibilities

You need to define:

- Community responsibilities. What responsibilities do community members have to provide services (mainly at the household and local levels) and pay for services)?
- Municipal responsibilities (e.g. for secondary and tertiary services such as refuse disposal, maintenance and cleansing of main drains).
- The role of other government institutions.
- The role of NGO's
- The role of the private sector

3. Communication and Mobilisation

- How will community support for the plan be achieved?
- How will the municipality communicate with service users (e.g. via ward committees or via CBO's / NGO's)

4. Management and co-ordination

- How will the inputs of different agencies (state and municipal agencies, NGO's, private contractors) be co-ordinated to achieve a common goal? If there is to be a Sanitation Co-ordination Committee, will it have formal status?
- What is the relationship between the Sanitation Development Plan and other formal plans e.g. master plan
- What is the relationship between the plan and other formal plans and programmes for infrastructure and services for the poor
- What will be the role of regulation and enforcement e.g. to control encroachments?
- Supervision and monitoring of services: who, how, why (especially for services contracted out to NGO's or private contractors)

5. Financial Arrangements

- What are the main sources of capital and recurrent funding? State the municipality's intentions regarding local taxes
- Municipal policy on subsidies and **cost recovery** e.g. for primary waste collection, household toilets, other services.

Box 4.8 Solid waste management component of municipal plan**Current Position**

A summary of the current state of the solid waste management service, key issues and problems identified from recent investigations, and priorities for improvement (e.g. increasing the quantity of waste lifted by introducing a primary collection service). Make sure that this includes information on what is done formally and what is done informally.

Objectives

For example:

- To introduce a primary collection service in X wards (eventually city-wide)
- To establish a properly managed disposal site
- To extend secondary collection services to all areas currently unserved.

Potential constraints

Are there any constraints that might prevent the achievement of objectives? For instance, workers may be resistant to efforts to change working practices, particularly when they are gaining some unofficial benefits from the existing situation. The only way to overcome such constraints is through dialogue leading to the development of solutions that can benefit all.

Strategy

This section should identify the time frame for achieving each objective and set out how it will be achieved. For example:

- By piloting a primary collection service as an enterprise based on user payment, implemented and managed by a local NGO. To be harmonised with municipal secondary storage and collection
- By purchasing land and developing a sanitary landfill operation under a competent manager
- By piloting suitable technology and systems for collecting waste from informal settlements and other locations with access problems

Targets (Year 1)

Clarify what is to be achieved, both in terms of quality and quantity

Activities (Year 1)

List the main activities to be undertaken in the first year

Implementing Agencies

Set out the roles of municipal and state agencies, NGO's, CBO's and the community

Additional Resource Requirements

What financial, technical or other resources are needed to fulfil the tasks in addition to those already available

Budget

Again, for activities not covered already by existing budgets or government schemes

The example of the solid waste management component of the municipal plan in Bharatpur described in Box 4.8 emphasises the point that, since resources are limited, it is important for the plan to:

- **set priorities** for action and investment, and explain clearly how these priorities have been established, and
- have **realistic ambitions**, in other words the targets it sets must really be achievable within the specified time frame. Achievement of the first year's objectives will build confidence amongst everyone involved. Conversely, if targets are set too high and not achieved, however, people will lose confidence in the plan and may ignore it.

It is important that both municipal and state authorities formally endorse the plan so that from now on, all concerned departments and agencies work within the framework it has established.

4.20 Linking the plan to available resources

Plans are of little value unless they are linked to available resources. This does not mean that you have to work with the resources that are currently available. It does mean that the plan must include consideration of the ways in which resources can be increased to ensure that goals can be reached. For instance, a low cost sanitation component may have to allow for action to increase the number of craftsmen with knowledge of different forms of latrine construction while at the same time placing a greater emphasis on cost recovery, so that available government funds can go further.

The plan should include consideration of the following.

- **possible sources of finance** – whether these be government, bilateral and multi-lateral agencies or others;
- **options for human resource development** – including, but not restricted to government training institutions; and
- **Organisational resources** – for instance local NGOs and consultants and, on occasion, resources such as international consultants from further afield.

A problem arises in linking actions to available finances when a municipality is dependent on funding provided from higher levels of government and the level of funding cannot be guaranteed from year to year. Where this is the case, you may need to consider a range of options matched to various possible levels of funding. However, you should also look to develop your own local funding base by whatever means are possible.

Regardless of this, do not make the mistake of thinking that the only available funding will be provided through government programmes. The plan should be based on a realistic assessment of what intended users will pay for improved sanitation services and the resources that may be available through NGOs, local businesses and other non-government sources.

4.21 Action to secure additional funding

Extra funding may be needed to implement some parts of the plan and it may therefore be necessary to write a funding proposal. This should not, however, be the top priority. It is more important first to define an overall strategy setting out how sanitation services are to be developed and improved. If this is based on successful piloting and is clearly viable it will be much easier to convince funding bodies to support it.

External funding is usually available only for the provision of new facilities. These have to be operated and maintained once they are in place. Remember that **you should never accept options that require more resources for their operation and maintenance than can realistically be made available locally.**

When you do seek external assistance for the planning, designing and financing of capital works, try to be sure that loans or grants are provided on your terms rather than those of the provider. This will not be easy, but the fact that you have a plan and know where you want to go should help you in negotiations.

4.22 Responsibility for plan components

It is important to be clear about who is going to be responsible for the different components of the plan. In general, it will be best if the organisations that have been responsible for developing solutions and carrying out pilot projects then take responsibility for the implementation of those solutions and scaling up the pilots to the city wide level.

4.23 Making the plan 'official'

The plan will only be effective if the various organisations that are expected to implement it recognise it as their plan. What does this require in practice?

- 1 If at all possible, **the plan should have an official status** and should be designated as the framework for action by higher levels of government. You may have limited power to make this happen, but you should do everything that you can to have the plan accepted as the official sanitation plan for the town.
- 2 Everything possible should be done to ensure that **the agreed actions can be formally included in the programmes and budgets produced by the various stakeholder organisations.** This will help to lock these organisations into the planning process and make it less likely that they will retreat from the commitments made in the plan

The process does not end with the production of the plan. In the next section we consider issues relating to the implementation of the plan and the continued management of plan components. Bearing in mind the fact that it is impossible to devise a perfect plan at the first attempt, we stress the fact that both the overall strategy and the plan for implementing it should be reviewed regularly and amended where necessary to improve outcomes.

STAGE 5 – IMPLEMENTING THE PLAN

At this stage, you should have an overall sanitation plan, which specifies:

- what is to be done;
- when it is to be done; and
- who is to do it.

As indicated at the beginning of this section, the plan will only be as good as the efforts to implement it. In the following stages we examine the vital issues that surround the implementation of the plan.

4.24 Implementation is part of the planning process

In one sense, implementation is the end of the plan process and you will have achieved a lot if you implement the plan. However, you should not see this as an end, but rather as a beginning. You and the other stakeholders will learn from the process of implementation and it will be important that the lessons that you learn are fed back into future initiatives.

Figure 4.11 illustrates this point diagrammatically. Note the importance that it gives to monitoring and evaluation of plan outcomes and the use of that information to review progress with the plan and evaluate its effect from time to time.

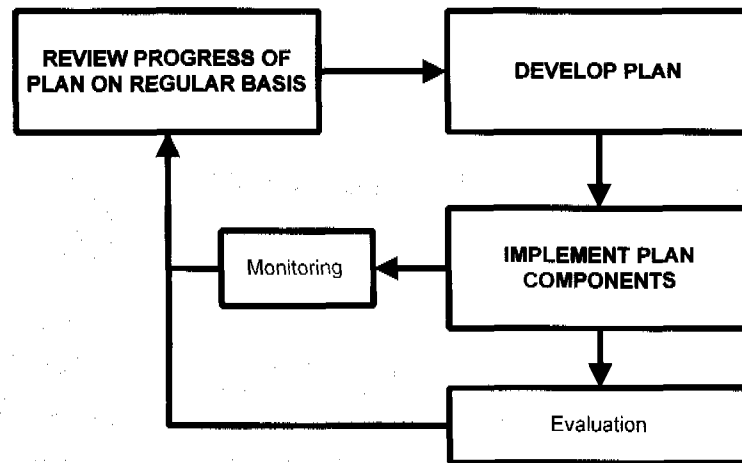


Figure 4.11 Links between planning and implementation

Remember that implementation is about municipal service delivery and not just about new facilities. There should also be efforts to implement changes and improvements in behaviour and the way in which services are operated and maintained. There may also likely to be plan components relating to training and improvements in sanitation systems, among others

4.25 Preparation of detailed proposals

Detailed proposals will have to be prepared for each component included in the plan. For physical components, these proposals should include detailed drawings, estimates and contract documentation as necessary and in accordance with local norms and procedures. Do not assume that proposals can be prepared overnight and recognise the constraints represented by government procedures. In general, the larger and more complex the scheme, the longer the time needed to prepare a proposal and have it approved. Also, the larger the scheme, the higher the level at which it has to be approved. If you are not familiar with local procurement arrangements, find out about them and plan the scheme preparation process accordingly. If you are a representative of an external agency, do not assume that local procedures can easily be changed to suit what you perceive as being a more effective approach. Changes in procedures often take time and it will often be necessary to address the need for changes at the national and state/provincial levels rather than the municipal level.

The level of detail required at the planning stage will depend upon the nature, scale and complexity of the scheme. For instance, household-level double-pit pour-flush latrines, require little more than a drawing of the standard latrine and a simple cost estimate. (Many local masons and petty contractors tend to work without drawings, but it is good to have something to show how the standard latrine is to be built. It may be that a series of simple illustrations showing key points may be more useful than a formal drawing). For more complex sewerage and drainage schemes, you should seek advice on the ways in which levels and falls can be shown. The conventional way is to prepare a plan and section of every sewer, but it may be possible to use simpler methods for local schemes – for instance showing all levels on a plan rather than producing sections for every sewer.

The information provided should be matched to the procedures that you can reasonably expect to be followed during implementation. There is no point in providing detailed instructions that cannot be followed because those responsible for implementation do not have either the equipment or the skills necessary to follow those instructions. Remember the point made earlier about learning from experience and modify the approach adopted in the light of experience in the field.

Detailed proposals for activities that are very dependent on human resource inputs, for instance hygiene education should specify who is going to do the work, how it will be financed and how it will be linked with other plan components. In developing such proposals, you will need to assess the existing availability of knowledge and skills. Where training and support are necessary, the project proposal should clearly specify who will provide them. Introductory information on developing a hygiene education programme is given in Tool 1.2 in the Part C of the Guide.

4.26 Implementation of plan components

When considering plan components, you should consider the following questions.

Who will be responsible for carrying out the work? For the larger physical components, the answer to this will often be awarded to a conventional contractor. It may also be the case that one organisation is currently responsible for implementing all the components of a 'programme' style initiative. Bharatpur provided an example of the latter in that the national NGO Sulabh International had been assigned sole responsibility for implementing the Government's Integrated Low Cost Sanitation Programme at the time of the planning exercise.

How can work be packaged ? Where it is possible, there is much to be said for dividing work into packages that can be managed by a number of smaller contractors rather than assigning it all to one large contractor. There are two main reasons for this. First, this ensures that there is an element of competition so that the few large contractors do not become too complacent. Second, it helps to build local capacity and this may be an important aspect of building the resource base. See Box 4.9 for further information about community involvement in procurement of infrastructure.

How will work be supervised? The quality of work produced by private sector organisations, particularly contractors, will only be good if it is properly supervised. If there are problems with supervision, you need to think what can be done to improve it. Training may be required, but problems sometimes arise because supervisory staff are not motivated, rather than because they do not know what should be done. Ideally, good work should be rewarded and supervisory staff and implementing organisations should be held to account if the quality of work is poor. One way of ensuring that this happens is to involve people from the benefiting communities in the supervision of work.

Box 4.9 Community involvement in procurement

In recent years, there has been considerable interest in the possibilities presented by 'community contracting'. This is a slightly misleading term that might more accurately be expressed 'community involvement in procurement'. The involvement of communities as contractors is only one aspect of this wider involvement in procurement. Experience has shown that the quality of the finished product can be higher when community members take an active role in procurement. However, this needs to be weighed against the possibility that greater management inputs will be required from government agencies and NGOs.

Community involvement in procurement may be particularly appropriate in low-income areas where it not only ensures that services are what people want but also provides opportunities for income generation and the development of management skills within the community. It will work best where people are funding at least part of the cost of the works. Otherwise, there are real dangers that influential individuals and groups will hijack the process for their own ends. Developing systems that encourage local tradesmen to develop their ability to carry out local infrastructure works may be a better option than community contracting and may need fewer changes to existing systems and procedures.

4.27 Ensuring continued integration of plan components

Continued integration of plan components will be more likely to occur if the Sanitation Planning Committee continues to meet to address problems of coordination during the implementation of the plan. The danger is that the committee will sink into inactivity as the more exciting and perhaps obvious needs of the planning stage are succeeded by the routine of implementation. How can this danger be avoided?

Ideally, the sanitation committee should continue to meet because it is required to do so by legislation and procedures handed down from higher levels of government. If such guidance does not exist, you should consider whether you have any influence to bring such legislation and procedures into place.

In the meantime, one key to success will lie in picking committee members who are both active and committed to the strategic process. Another may be the successful implementation of an integrated approach in one or more local areas. Once the various stakeholders can see that cooperation between different stakeholder groups brings benefits in one locality, they are more likely to cooperate in other localities.

4.28 Monitoring and evaluation

We have already noted that strategic planning should not be a one-off affair, but should rather be seen as a continuing process. Circumstances change, outcomes do not always occur in quite the way expected and it is therefore important that plans are adaptable. This will not be possible unless you have sound information upon which to base decisions to amend and adapt plan components. This suggests a need for effective monitoring and evaluation of plan components.

Monitoring is a management tool that is intended to provide managers with information about how an initiative or process is performing. Is it proceeding or operating as intended and are there any problems that need to be tackled? Monitoring takes place at intervals throughout the life of the initiative or process. Examples include monitoring of the quality of materials used in the implementation of a new sanitation initiative and monitoring of the effluent quality produced by a treatment facility.

Evaluation takes place after the completion of an initiative or programme. It aims to answer such questions as were the intended objectives achieved, was the expenditure as expected and did the right people benefit as intended.

In recent years, something of a mystique has grown up around monitoring and evaluation, which can sometimes seem to complicate matters requiring large amounts of resources and specialist knowledge. At the municipal level, you need to keep things simple. Remember to always think about why you need information and do not collect information just for the sake of collecting it.

Monitoring will be easier if good records are kept as a matter of course. When did work start?, what materials were on site?, what problems were encountered? and so on. If answers to these and other questions are routinely recorded, you will have a good basis for monitoring. You should aim to develop monitoring systems for simpler activities and schemes and use experience gained with these to develop systems for more complex processes. When evaluating initiatives, do not forget to ask the users what they think. They are the people most intimately affected by the success or failure of a scheme and their opinions should provide valuable information. However, do not rely solely on user comments, but cross-check using other methods.

OPERATION AND MAINTENANCE

4.29 Operation and maintenance

Operation and maintenance take place once facilities are in place and they are considered after implementation. However they need to be taken into account throughout the planning process and references to operation and maintenance have been made throughout the guide. One of the five possible reasons for deficiencies in sanitation services is that they are not operated and maintained properly (see Section 1.4). In Box 4.1, we noted that there is no maintenance-free sanitation option and that the root causes of poor service often lie in poor management. This in turn led to an emphasis on understanding the causes of existing problems and taking action to make immediate improvements wherever possible. For instance, one of the tasks identified in the Bharatpur planning process was cleaning the main drains (see Box 4.10) - an essential maintenance task that is usually neglected.

When considering a sanitation option, you should ask the following questions:

- **What are the operation and maintenance requirements of this technology?**
- **Who might be responsible for operation and maintenance?**
- **What resources will they require to undertake operation and maintenance duties?**

Remember the basic strategic principles of division, devolution and diversity and do not assume that facilities at all levels can be provided by government organisations. Households will normally be responsible for facilities within their plot boundaries, whereas government departments or their agents (such as private sector organisations) should operate and maintain city-wide facilities.

A number of options exist at the local level. Government departments can operate and maintain local facilities themselves or they can assign O&M responsibility to private sector operators. Alternatively community groups can take responsibility for operation and maintenance of their own facilities.

Responsibilities should be decided in the light of:

- what is allowed by existing rules and procedures;
- the resources available within the different groups; and
- the willingness of the different groups to take over O&M responsibilities.

These factors need to be considered at an early stage in the design process.

For each component of the sanitation system, list the standard operation and maintenance tasks to be carried out and try to estimate the resources needed to carry out those tasks.

Tool 3.3 provides outline information on common operation and maintenance tasks for various technologies. You will need to assess maintenance requirements in more detail in discussion with those who are currently responsible for the various maintenance tasks.

The best approach to maintenance is **preventative maintenance** - carrying out specific maintenance tasks on a regular basis to ensure that problems are dealt with before they become serious. The more normal approach in most developing countries is **reactive maintenance** or crisis maintenance - carrying out maintenance in reaction to problems as and when they occur. The problem with this approach is that it will generally cost more in the long-run than preventative maintenance. Poor design may make preventative maintenance almost impossible (See Figure 4.13).

There will normally be a need to move from reactive maintenance to preventative maintenance, but this is easier said than done. Where resources are limited, organisations are under considerable pressure to respond to problems as they occur and this means that they are often forced to neglect the need for preventative maintenance. There is no point in stipulating a move towards preventative maintenance if these very real problems are not taken into account. The best approach will often be to explore maintenance requirements with those who are or who will be responsible for the various aspects of maintenance. This might be done through key informant interviews and focus group discussions. Aim to identify those maintenance activities for which a preventative approach is likely to result in the greatest saving in resources overall and concentrate on developing preventative routines for these activities. Do not forget to monitor the results of any changes in maintenance procedures and use the results of monitoring to convince your colleagues of the benefits of maintenance.

The importance of consulting those who actually carry out maintenance tasks cannot be overstated. It is easy for outsiders to come in and make general recommendations, but these will not be implemented unless they are grounded in a good understanding of the existing situation and the people who know most about this situation are the people who work in it. It is important to understand existing incentives, which may sometimes be perverse. Where this is the case, efforts will have to be made to change the incentive structure to encourage good operation and maintenance practice. You may wish to call a small workshop or meeting with key stakeholders to consider the options for doing this.

Box 4.10 Aspects of routine maintenance - drain cleaning in Bharatpur

One of the tasks identified in the course of the first workshop in Bharatpur was drain cleaning, to remove the silt that had accumulated over many years. The proposal was that this would be carried out in one ward with the municipality taking responsibility for cleaning main drains and the NGO Lupin mobilising community members to clean tertiary drains. In practice, this has proved difficult to achieve, mainly because neither the municipality nor the community have shown much interest in becoming involved. What are the lessons from this situation?

One obvious lesson is that people will only undertake maintenance tasks if they believe that those tasks will really lead to beneficial change. Bharatpur's drainage system is complicated and the overall situation could not be determined until a full survey was available. The municipality appeared to be reluctant to start a drain cleaning programme in the absence of clear guidelines as to the likely impacts of that programme. It seemed that they were concerned that some drains would quickly fill with silt because the downstream conditions would restrict flow and cause backing up. For similar reasons, local communities were not prepared to take action at the tertiary level until the secondary drains were functioning properly. This example illustrates the need to analyse the situation and to prioritise the maintenance interventions that are likely to have the biggest impact.

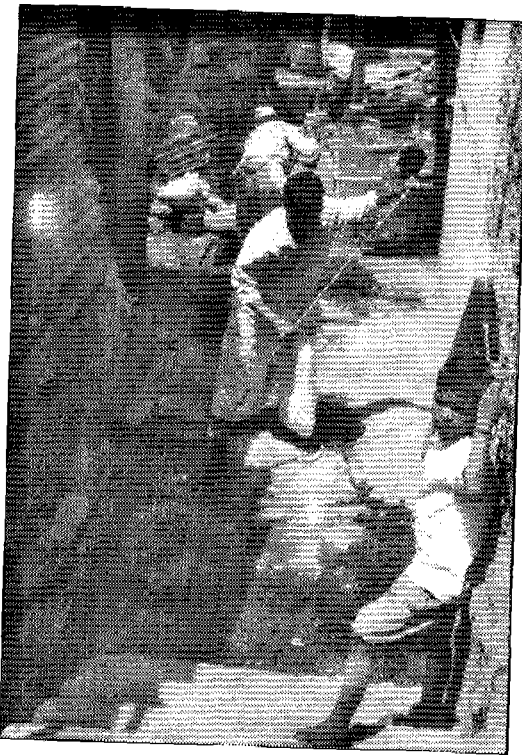


Figure 4.12

Drain Cleaning in Pune, India

Cleaning open drains is easier than cleaning sewers. The equipment available for cleaning is often rudimentary and it may be appropriate to experiment with improved equipment. It is very important to consult with the concerned workers about any changes in practice that may affect their job.

Solids removed from drains are often left uncollected alongside the drain. These often get washed back into the drain and pose a serious health hazard. Cleaning must include disposal of solids off site.

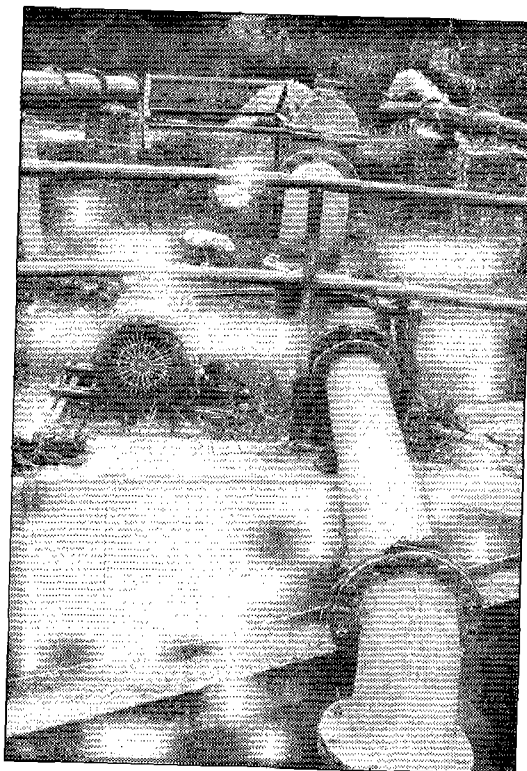


Figure 4.13

Sewage pumping station in Faisalabad, Pakistan - design, construction and operations and maintenance are linked

This pumping station is typical of many found in South Asia. It is poorly designed in that the pump layout is ad-hoc and the pumps are located above the wet well so that there is a high suction head, leading to cavitation and rapid wear of impellers.

Poor layout and lack of proper fixing arrangements increases the possibility of misalignment of pumps and motors and this will also lead to wear. The operators have no experience of operating a well-designed pumping station. The result is that good operation and maintenance is almost impossible.

**Strategic Planning
for
Municipal Sanitation**

Section 5



**GUIDE TO SANITATION PLANNING
AT THE LOCAL LEVEL**

Section 5

Guide to Sanitation Planning at the Local Level

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GUIDE TO SANITATION PLANNING AT THE LOCAL LEVEL

ABOUT THIS SECTION

This section of the guide will tell you how to plan for improved sanitation services at the local level. It is built round the idea of **demand** – in other words what people want and are willing to pay for. If you provide sanitation facilities for which there is no demand, they will not be used. So sanitation planning processes must respond to demand. However, people's initial demand may not be **informed**. It is important to work with them to ensure that they understand their situation and are fully aware of the options open to them. Once demand has been established and informed, you must be able to **respond** to it in a constructive planned way. The development of a demand-responsive local sanitation plan is described, as are the steps required to implement that plan. Finally, ways to sustain results once they have been achieved are suggested.

KEY POINTS IN THIS SECTION

- 1 There is no point in trying to improve sanitation services unless the intended users have expressed a demand for those improvements.
- 2 Demand is something more than a simple desire for improvements, it also involves a willingness to pay something towards their cost. Be realistic about the financial contributions you can expect from outside the community.
- 3 Demand needs to be informed and this requires that you and intended users work together to understand the existing situation, the possibilities for action and how actions might meet sanitation needs.
- 4 People's immediate reasons for wanting improved sanitation are likely to relate to their own convenience and improvements in their local environment. As you work to inform demand, you should introduce discussion of health issues and the possible impact of different sanitation options on the wider environment.
- 5 A local sanitation plan will provide the context within which decisions can be made and action can be taken. The outline plan may be developed in a participatory workshop.
- 6 The plan should not be restricted to physical improvements. It should also consider the need for changes in sanitation-related behaviour and the way in which services are organised, operated and maintained.
- 7 Decide as early as possible on what the community can do and what government departments and other external stakeholders should do. Responsibilities need to be negotiated and agreed as you develop your plan.

INTRODUCTION

5.1 Who should read this section of the Guide?

You should read this section of the guide if you are interested in improving local sanitation services. You may be:

- a **municipal official** or **local councillor** wishing to promote effective community-based approaches to sanitation provision;
- a **representative of a non-government organisation (NGO)** working with local communities;
- a **member of a community-based organisation (CBO)** or a **private individual** with an interest in improving sanitation at the local level.

5.2 How will it help you?

This section of the guide will tell you how to plan for improved sanitation provision in your own local area. It will tell you how to prepare to plan, how to establish demand for improved sanitation, how to work with local people to inform that demand, how to develop and implement a local sanitation plan and how to sustain improvements once they have been made.

5.3 Why plan at the local level?

A local plan provides a focus for the activities of individuals, groups and organisations living and working in an area. It will help to make sure that:

- people think about their objectives and how to achieve them; and
- people and organisations work together rather than separately.

This will help you to make sure that the best use is made of limited resources. It will also help to make sure that everyone's needs are taken into account. Local plans can provide inputs to municipal plans so local planning can be part of a city-wide effort.

You will need to be aware of the overall context and in particular of the need to consider the impacts of your actions on the wider environment. Look for opportunities to integrate your activities with those of the people and organisations who are working in adjacent areas and the authorities who are responsible for city-wide services.

5.4 What should you know before reading this section of the guide?

Throughout this section of the guide, reference is made to various sanitation components and technologies. A summary of commonly used sanitation terms is given in the introduction to the guide.

DEVELOPING A LOCAL SANITATION PROGRAMME

THE OVERALL PROCESS

5.5 Stages in a demand-responsive process

In order to improve sanitation you must first establish and inform demand. You must then respond to demand. A good way to do this is to develop and implement a sanitation plan together with the people living in the project area. Improvements are no good if they do not last. You must therefore ensure that they are sustained, once they have been achieved. These tasks are linked as shown in Figure 5.1.

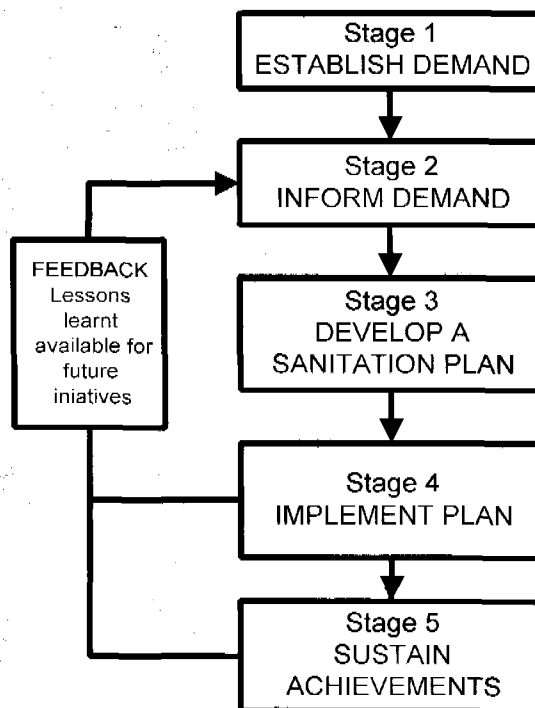


Figure 5.1 Stages in a local demand-based process

Note the feedback loops shown in Figure 5.1. Experience gained during the implementation of schemes and their ongoing operation and maintenance should provide inputs into later attempts to inform demand. Always remember that actions should lead to reflection, which should in turn inform later actions.

Key points about each stage are set out on the following page

Establish demand

If there is no desire for change, sanitation improvements will not last. The first stage in the planning process must therefore be to assess whether people want improved sanitation, in other words is there a demand for improved sanitation. Where people do not show by their words or actions that they want improved sanitation, there may be a need to develop demand through various forms of sanitation promotion.

Inform demand

The demand, once established, may not be informed in the sense that people may:

- have an incomplete understanding of the present situation, the options open to them, the costs of the options and the benefits that they may bring; and/or
- assume, unrealistically, that others will pay for whatever improved services they desire.

Informing demand means developing people's knowledge of the available sanitation options, their potential benefits and their likely costs. In the process, you are also likely to find that your views on what is possible and desirable will change.

Develop a sanitation plan

It is not enough to develop informed demand. You must also aim to respond to that demand in a way that satisfies it. This can be done in a piecemeal fashion but it is better if you join with all the people who are likely to be involved in improving sanitation services to produce a sanitation plan.

Implement the plan

The plan may identify the need to:

- provide new or improved sanitation facilities;
- improve management arrangements for facilities that already exist;
- help people to save for sanitation improvements;
- help people to obtain legal connections to government facilities.

Each component of the plan must be developed in detail and implemented. Planning without action achieves nothing.

Sustain achievements

Temporary improvements will not lead to lasting change and may even lead to a long-term deterioration in conditions. For instance, a sewer that becomes blocked because of lack of maintenance will overflow and may create a greater environmental nuisance than the open drain that it replaced. Improvements must be sustained over time if they are to have lasting benefits and this implies the need for management arrangements for operation and maintenance that are workable and acceptable to all the concerned parties.

PREPARING TO PLAN

5.6 Who should be involved?

The potential partners in sanitation improvement processes include:

1. **those who will benefit from the proposed sanitation improvements** – mostly the people living in the proposed project area.
2. **those who can help with the planning process.** These may include some or all of the following:
 - government officials and NGO representatives;
 - local politicians and those around them, including ward committee members and political activists, who may have either access to funds or influence in getting funds assigned to your area.
 - community members with relevant knowledge and skills.

By definition, community members living in the planned project area must be involved in a demand-responsive approach to sanitation provision. Remember that they have local knowledge, covering local conditions, what has been done in the past. Most important, they also know what they want.

5.7 How can outsiders approach the community?

If you are an outsider and you have not previously worked with people in the target area, you need to think about how you will approach the community. Your initial contact may be through **community leaders**. Another way to approach local residents will be through **community-based organisations (CBOs)**. Some CBOs may already have a development focus and will be interested in doing things with people. Others will be primarily concerned with welfare activities - providing support to the sick and poor, organising community outings and so on. They are likely to assume that their role is to do things for people. There should be few problems in involving development-orientated CBOs in sanitation programmes. Welfare-orientated CBOs can be used if they are willing and able to move towards a more development-orientated approach.

5.8 Establishing the core team

You cannot start a sanitation improvement process on your own. Before starting, you must assemble a core team to lead that process. This team should include some or all of the following:

- **Local activists** – people who are already involved in action to change their community for the better;
- **Local people with specialist skills and knowledge**, particularly knowledge of previous attempts to improve sanitation in the area. These people might include masons who have constructed sanitation systems, health workers and those with experience of managing small projects.
- **Outsiders with specialist skills and knowledge**, particularly those that are not available in your organisation and the community with which you are working.

How do you find people in the last category? One way will be to ask people whether they know about existing sanitation initiatives and programmes in your area. Once you know about an initiative, arrange to visit it and talk to the people involved. If they are not able to help you themselves, they may know others who can. Read the newspapers. Sometimes these contain articles about development initiatives and these may provide you with leads.

Following some initial discussions, you might call an initial meeting to explore interest in improving sanitation conditions in your area. At this meeting, you might:

- establish that there are some people with an interest in improved sanitation;
- identify those who will form your core team;
- explain how they will receive basic orientation and training; and
- agree an outline plan of action to work through the stages set out in Figure 5.1.

Aim to be flexible in developing the team. Some people who appear to be keen to be involved at the start may later lose interest. Conversely, some very good team members may only emerge once the process has started.

5.9 Providing basic orientation and training for the team

Basic orientation and training for members of the core team should be provided as early as possible and should include the following:

- **Introduction to basic concepts**, in particular to the need to develop, inform and respond to demand.
- **Information on participatory appraisal methods** and the way in which these can be used to assess sanitation conditions. Note 4.4 in the Tools section provides further information on selected participatory methods.
- **Guidance on conducting participatory meetings.**
- **Simple guidelines for recording and analysing information.**

You will probably need assistance in developing and implementing a training plan. You may use this guide as a tool to discuss orientation and training options with training providers. These might include government training institutions and local, national and international NGOs.

Once you have formed the core team and have arranged to provide it with some basic orientation and training, you will be in a position to proceed to implementation of the planning process. The next sections of the guide will lead you through the stages of the process.

STAGE 1 - ESTABLISH DEMAND

5.10 What do you need to do?

The first stage in developing a local sanitation programme should be to establish demand, in other words to ensure that:

- people would like to see some improvement in their sanitation services; and
- they understand the need to pay for the improved services.

Start by conducting a **rapid appraisal** of the existing situation. This may reveal that people want improved sanitation services. If not, you will have to consider a more detailed exercise to **investigate demand** and, if necessary, **develop interest** in improved sanitation. As you carry out these tasks, you should discuss the need to pay for sanitation services with people.

5.11 Rapid appraisal

Rapid appraisal involves going into the community and looking for evidence that people want improved sanitation. You may find this evidence in the following ways:

- 1 **By looking at what people do.** Is there evidence that people have built, are building or are trying to build new or improved sanitation facilities? Are there septic tanks in streets or connections to drains that look as if they may be from WCs?
- 2 **Through what people say.** Conversations with community members and interviews with key informants (for instance local masons and suppliers of sanitary fittings and, not least, typical householders) may provide information on activities and initiatives that might not be obvious through casual observation from the street.
- 3 **Through requests for action to improve sanitation.** Local councillors and other people and organisations with access to funds will know if people are coming to them with requests for help with improved sanitation, drainage or both.

Where some people show an interest in sanitation improvement, they can provide a starting point for the development of more general demand within the community. Where appropriate, you may wish to consider the possibility of working with these people to pilot and demonstrate improved approaches to sanitation in your area.

If you already have a core team including people from the community, they may be involved in observation and conversations with people. Alternatively, you may be able to use these activities as the first step in building a local core team.

If there is clearly a desire for either improved sanitation or better drainage, you can proceed directly to establish willingness to pay for improved services. If not read on through sections 5.12 and 5.13.

Evidence of the existing situation

Figure 5.2 Latrine built for thika tenancy plot in Howrah, Calcutta



There are two WC's each discharging to a chamber immediately below the latrine. Maintenance is a problem and inspection suggests that the chamber is rarely desludged. The proximity of the latrine to the hand-pump suggests a need to investigate the possible danger to health from groundwater contamination.

Figure 5.3 Modification to traditional sanitation system-Shibam, Yemen



The traditional long-drop dry system still appears to be in use since the deposit area is curtained off. However, the pipe on the right suggests that modifications have been made. Further investigation is needed inside the house.

5.12 Investigate demand for improved sanitation

If rapid appraisal does not reveal a clear desire for improved sanitation and drainage facilities, there are two possibilities:

1. people genuinely do not perceive improved sanitation as a high priority; or
2. there is a desire for improved facilities but it is unexpressed or '**latent**'.

Start to investigate these possibilities through discussions with small groups that represent different sections of the community. One group might be comprised of women, one of young men and another of children. A person from outside the group (possibly an activist from within the community) should facilitate the discussion. He or she should ask people to talk about the problems that they face in relation to sanitation and drainage and then encourage them to think about how those problems might be solved. It may be that people do not talk about change because it does not seem possible to them. If you have access to an organisation or individuals with skills in participatory appraisal, you might consider the use of participatory appraisal methods to develop a shared understanding of people's attitude to sanitation. More details on these methods are given in Note 4.4 in the Tools section

If investigations reveal that there is a desire for improved sanitation, the discussion should be widened to include consideration of the options for paying for those improvements.

5.13 Developing interest in improved sanitation

If it seems that sanitation is not a high priority for potential users, you will need to consider the options for sanitation promotion. You may:

- talk to people about the possible benefits of improved sanitation; or
- use a more 'formal' sanitation promotion approach.

Talking to people is simple but is only likely to achieve results if they already have some interest in improved sanitation. In most cases, it will be better to consider a more structured approach.

Efforts to promote sanitation **should start from what seems most important to the intended users**. If their main reason for wanting improvements is to make their life easier and more convenient, you should start by focusing on this. If they are concerned with the cost of existing arrangements, explore the ways in which improved services could reduce costs. Do not assume that health will be the entry point for convincing people of the need for better services, although you should not ignore health messages in the longer term. Rather, use people's primary concerns as an entry point for developing interest in health-related aspects of sanitation. Emphasise the fact that people will be better off if they are healthier.

An introduction to sanitation promotion is given in Tool 1.3. Tool 1.2 covers the related subject of hygiene promotion.

5.14 Establishing that people are willing to pay for improved facilities

External organisations can provide some funding for sanitation improvements but you cannot rely on their inputs. If sanitation users pay for their own facilities and services, they will be less dependent on outsiders and the sanitation programme will have more chance of success. So, you should ensure from an early stage that people are aware of the need to pay for improved sanitation services. Key questions to be asked include the following:

How much should people pay? Ideally, people should pay the full cost of providing, operating and maintaining sanitation facilities. Poor people may require some subsidy but remember that the higher the subsidy, the less you will be able to do with the available funds. Ask people to identify the poor families within their communities and explore ways of providing support to them from within the community itself.

For what should users pay? Outside organisations may provide some funding for sanitation improvements but users should always pay at least part of the cost of new or improved facilities. **Subsidies on running costs should be avoided.** They make people dependent on external sources of finance and this means that local people have little or no control over what happens. This point is illustrated by the example in Box 5.1

How should users pay? In general, users should pay the costs of on-plot facilities directly, whether these facilities are self-contained or connected to a sewer or drain. Users may join together to pay the capital and operating costs of local or tertiary facilities directly. Encourage people to consider ways in which they can save towards the cost of on-plot and local facilities. If local facilities are connected to higher order 'external' facilities, users should expect to pay something towards the cost of those facilities. The payment may be through connection charges and tariffs or it may be through taxation.

Your role at this stage is to ensure that people are aware that they will have to pay for improved sanitation facilities. Some aspects of the amounts to be paid may already be clear. For instance, charges for connections to sewers are likely to be standardised as are the subsequent monthly tariffs to be paid. Tool 3.3 provides information on the way in which costs for other services and facilities can be estimated.

Box 5.1 Sukkur, Pakistan –the consequences of ignoring running costs.

The Urban Basic Services Program in the town of Sukkur, Pakistan involved efforts to improve sanitation and drainage in an area called Gole Takri and adjacent areas. These settlements are located in low lying excavated land and any drainage scheme for the area must involve pumping. The scheme as developed required community members to pay the full cost of lane sewers within the settlements themselves. Government and UNICEF paid the capital cost of collector sewers, a pumping station to lift sewage and a rising main to convey it to the Indus River. In effect, there was a generous subsidy on the higher order 'external' facilities while people paid the full cost of local facilities themselves. This division of responsibilities was based on the approach advocated by the Karachi-based Orangi Pilot Project (OPP). After only six months, the Sukkur Municipal Corporation (SMC) stopped operating the pumping station and the scheme started to fail. SMC's action seems to have been largely due to the fact that they were receiving no revenue from users to pay for the running costs of the pumping station. Insufficient attention had been paid at the planning stage to the question of who would pay for this critical ongoing cost. The OPP has since made efforts to revive the scheme but with the sewer users themselves taking financial responsibility for the operation of the pumping station.

STAGE 2 - INFORM DEMAND

Before proceeding with this stage of the process, you should be sure that people have shown interest in improved sanitation and/or drainage facilities, are aware of the ways in which they will have to pay for those improvements and are happy, in principle at least, to make the required payments. In other words, you should have established that there is demand for improved sanitation.

5.15 Why inform demand?

Why do people need information in order to tackle sanitation problems effectively? The answer should be fairly obvious. Without information the whole process will be based on guess-work and hunches rather than sound planning.

Informing demand means working with local people to help them to gather and use the information that will enable them to make sensible decisions about sanitation. Do not expect that this process will not affect you. Rather, recognise that your approach to sanitation provision will also be informed as the process proceeds.

5.16 The three basic questions

The framework for informing demand should be the three questions stressed throughout this guide, 'where are we now?', 'where do we want to go?' and 'what options are open to us?'. Your role throughout should not be to give people answers to these questions but to stimulate them to find answers for themselves wherever possible.

When considering the second question, you may need to encourage people to think about the wider impacts of their action. Consideration of the third question should benefit from inputs from outsiders. However, the knowledge of outsiders will always be most useful when it is combined with that of local people.

5.17 How to start

A good way to start will be to bring people together in a workshop or meeting to discuss how they are going to inform themselves so as to understand the options that are open to them. This workshop will provide the model for future workshops so you should plan for it carefully. Further information on organising and running a workshop is included in Tool 5.1. You should emphasise that **our concern is with sanitation** (unless sanitation planning is to be part of a wider plan or programme) and that **we are going to find out about sanitation together**.

Try to ensure that all groups in the target area are represented in the workshop and that it is not monopolised by dominant individuals and/or interest groups. At the beginning of the workshop, explain the efforts that have already been made to establish demand for sanitation improvements. Explain why it is important to proceed from a good understanding of the existing situation and then encourage people to think about the information that is required.

For small areas, it may be possible to investigate the existing situation and identify objectives within the workshop itself. For larger areas, you will need to allow some time to understand the reasons for the existing situation before deciding your objectives.

A member of the core team should keep a written record of the agreements reached in the meeting and this should be read out and accepted as a true record at the end of the workshop. If possible, it should then be displayed in a public place, such as a community centre, a school, a mosque or a church, so that it is accessible to all.

The meeting should also agree arrangements for managing the process. A small management group should be established and dates for follow-up meetings to monitor progress and take decisions on future action should be agreed.

5.18 Investigating the existing situation - where are we now?

The question 'where are we now?' can be further divided into four questions as follows.

- **What problems are people facing and what are their causes?** This question is important because we cannot suggest responses to problems unless we know what they are and what causes them. You should already have a good idea of the problems that people are facing from your efforts to establish demand. The aim now should be to explore these problems in more detail in order to develop an understanding of what causes them. **Failure to understand the causes of problems may lead to inappropriate action**
- **What facilities already exist?** The answer to this question will influence the options for action by helping to define what is desirable and possible. You need to consider facilities within the project area and those that might be available to serve it. You must also look at both public facilities and those that are found within houses and on private plots.
- **What resources are available to deal with the problems?** Without knowledge of these resources, it will be impossible to plan realistically for the way forward. The most important resources for dealing with sanitation problems are those of the people themselves but they cannot do everything by themselves and you and they need to be aware of the external resources upon which they can call.
- **How do people live and how might social and physical conditions influence the approach to sanitation improvement.** Existing conditions may well set limits on what is possible. For instance, tenants may be reluctant to pay for on-plot facilities if they have little security of tenure. Similarly, if the ground beneath a settlement is fine-grained silt, technologies that rely on infiltration of waste water may not be possible.

Box 5.2 provides additional information on finding out the problems that people face and their causes, existing services and facilities and the availability of resources. Following this, Box 5.3 lists points to be considered and questions to be asked in relation to social and physical conditions. Further information on methods for finding out about the local situation is given in Note 4.4 in Tool 4. Try to **triangulate** information, that is confirm it from more than one source, using different methods whenever possible. If possible, seek guidance from other people and organisations with practical experience of sanitation provision.

Box 5.2 Notes on information on existing problems, services and resources***What problems are people facing and what are their causes?***

Always consider the extent to which problems are caused by **poor or non-existent maintenance**. For instance, drainage problems are often the result of a failure to clear blocked or silted drains. Before deciding to spend a lot of money to build new facilities, make sure that existing problems are not the result of inadequate maintenance. If they are, you may well be throwing money away as the new facilities will in time come to suffer from the same problems as the old ones.

Also, remember that problems may have external causes. Again drainage provides an example. Local flooding may well have local causes – for instance the fact that a particular area is low-lying or that solid waste is blocking drains. However, more widespread flooding is likely to have more fundamental causes, perhaps that the area is low-lying, or that a downstream drain has insufficient capacity or is regularly surcharged so that it is not possible for stormwater to drain away.

What existing services and facilities are available?

These include both services and facilities within the project area and those external facilities and services that might be available to it. Consider both public facilities and services and those that are found within houses and private plots.

Information on **public facilities and services** may be available from official records but this information should always be checked on the ground. For local facilities, the best source of information may be the people who actually provided them or now operate them. These are likely to include workers employed by government agencies. Information on facilities and services within houses can be obtained from residents themselves, first through informal discussions and later through more formal surveys.

What resources are available?

Ask NGO representatives and government officials whether they have any information on **sanitation programmes** that might provide funding and/or technical assistance for work in your area. (But always remember that operating costs should not be subsidised).

Local people can identify those from within their community with technical and organisational skills and knowledge. If there are existing sanitation facilities, ask who was responsible for them.

Talk to other organisations and individuals with similar interests to find out about people with specialist skills and knowledge that may not be available within your own community.

You should already have some idea of the ability and willingness of local people to pay for improved services from your efforts to establish demand during Stage 1 of the process.

Information on other sources of funding can be obtained by approaching potential funders – including government, NGOs and even international organisations. Write to representatives of such organisations and, even better, try to meet them although this is probably best done when you have concrete proposals for action. Where one organisation is unable to help, ask them whether they can suggest another organisation that may be better placed to provide funds.

Box 5.3 Social and physical considerations**(a) Social considerations**

How secure is people's tenure? Where people rent their houses, it is possible that rents will be increased if sanitation conditions are improved. This could lead to poor people being squeezed out and replaced by people on higher incomes. If tenants believe that this will be a problem, it may be better to provide shared sanitation facilities rather than individual household facilities, even where land is available for individual facilities.

Do social norms affect the possibility of working together to provide the facilities? It may be that the community is divided on religious, caste or ethnic lines. If so, plans will have to be adjusted accordingly. (Perhaps by allowing different groups to work separately from each other or by making extra efforts to overcome divisions at an early stage).

Will the project design involve an ongoing need for community management and if so, is the community willing to cooperate to take on this role? It is much easier to get people to cooperate for a one-off effort to build new facilities than it is to involve them in the ongoing management of facilities. You and the community need to be aware of the broad range of possible management options before you move on to more detailed planning.

Are community members willing to cover some or all of the sanitation-related costs incurred by the poorest? It is quite common for other community members to pay all or part of the costs incurred by poor families. This can be a positive factor but you need to be aware of the possibility that richer members of the community may claim ownership of facilities on the basis that they have paid for them. Could this lead to poorer people being excluded?

Will culture affect technical choices? For instance, culture and tradition may dictate the use of water, hard materials such as stones, sticks and corncobs or sand for anal cleansing. All of these have implications for the technical design of a sanitation system.

(b) Physical conditions

The **ground permeability** will influence the feasibility of on-plot disposal of waste water via leach pits and drainage fields.

A **High water table** (in other words groundwater close to the surface) may restrict the possibility of using on-plot sanitation, particularly if shallow ground water is used for drinking. It may also restrict the scope for using sewers.

Flat areas often create problems for sewerage. Sewage has to be pumped and this increases running costs and the likelihood of system failure. In such areas, most people tend to lay sewers with very little slope. There will then be a tendency for silt to settle in the sewer and this can cause long-term maintenance problems. It may be difficult to provide individual household sanitation facilities on the plot where the space available to each household is very limited. This is likely to be the case where:

- **plots are very small** – although sanitation facilities can successfully be provided on plots of 20 square metres and less; or
- **each plot is occupied by a number of households** – in which case it may be better to provide shared facilities for all the households on the plot.

(c) Other services

The level and quality of other services will influence the operation of sanitation facilities.

- pour-flush latrines are likely to be a better option than pit latrines if there is a reliable source of water on or close to the plot;
- the better the water supply, the smaller the possibility that all waste water can be dealt with by on-plot leachpits or soakaways;
- sewers are less likely to work well when solid waste disposal arrangements are inadequate.

5.19 Agreeing objectives - where do we want to go?

Overall objectives

Once you have a reasonable understanding of the existing situation, you can meet to decide your objectives. Remember that different people may have different objectives. Local people are likely to be mainly concerned with their own health, convenience and perhaps the improved social status that comes with better drainage and good sanitation. However, you should bear in mind the need to limit damage to the wider environment. With regard to the latter, it will normally be best to encourage people to think just a little more widely than they do at present. For example, people may be interested in constructing a sewer to the end of their lane or the edge of their settlement. Ask them to consider whether the outflow from the sewer will cause problems for people in adjacent areas and whether they would be happy if someone discharged sewage into their own area. Questions such as these can be raised in group discussions designed to encourage people to take a wider view of what they are proposing to do and to set their objectives accordingly.

Setting immediate objectives?

You need to set immediate objectives that help you to move towards your overall objectives. Immediate objectives are likely to relate to:

- **physical improvements**, including on-plot and local improvements aimed at the needs of local people and those, such as the provision of local treatment facilities, designed to protect the wider environment;
- **management improvements**, for instance improved arrangements for solid waste collection and disposal and new or improved arrangements for operating and maintaining sewers and /or shared sanitation facilities; and
- **changes in behaviour**, in particular hand-washing after defecation and changes in the way in which facilities are used. (For instance ceasing to dump solid waste in the nearest sewer, drain or open plot).

Management improvements may involve both increased community involvement in the management of local facilities and improvements in existing government management arrangements. In the case of the latter, think how you and the local community might exert pressure in order to bring about improved performance by government agencies.

The need for negotiation

You and the people with whom you are working will rarely be able to do everything on your own and you may well want to call upon the resources of outside organisations, particularly government departments. You may well have to **negotiate** with these external organisations on the inputs to be provided and outputs to be achieved. Discuss possible objectives with any concerned external organisations as early as possible in the planning process. Further information on negotiation is given later.

5.20 What are the available options ?

People need information on technologies and approaches if they are to make informed choices about the options that are open to them. They will certainly have ideas about what they want to do but these ideas will be strongly influenced by what they have seen and heard. Where a sanitation technology is already widely adopted, people will assume that it is the best available because they lack information on alternatives. Box 5.4 provides some examples of what this can mean in practice.

Box 5.4 Limitations of local knowledge

In many cities and towns in Pakistan, people install WCs which discharge via septic tanks to open drains. While this approach is better than some, for instance discharging the WC contents directly to the drains, there are potentially better options that people might adopt if they were aware of them. An obvious possibility is that of using shallow sewers but more general environmental benefits might result if on-plot sanitation facilities were to be provided for WC wastes with sullage water discharged separately to drains or sewers.

Another example comes from the peripheral areas of Calcutta where on-plot water-flushed sanitation facilities discharging to leach-pits constructed from fired clay rings are common. In some settlements, faeces are flushed into the pit through a crude chute without a water seal. In others, a conventional pour-flush WC fitting is used. It seems that people in settlements where the first arrangement is used are not aware of the possibility of using the superior WC arrangement despite the fact that it can be found in other settlements located within a kilometre of them. The problem is unlikely to be one of affordability since the WC pans are not expensive and there are no obvious socio-economic differences between the settlements where the two approaches are found.

Some important points to be considered when deciding which technical options to consider in more detail are summarised below.

- 1 **One sanitation technology is not necessarily better than another.** For instance, a WC discharging to a sewer will not be a better option than a pit latrine when there is no reliable water supply close to peoples houses.
- 2 There may however be **different levels of a specific technology.** For instance, a ventilated improved pit latrine is likely to provide a higher level of service than a simple unvented latrine.
- 3 **People in project areas may perceive some technologies as being better than others.** Where there are good reasons for thinking that the people's choice is not the best one, their perceptions need to be explored with them and other options need to be introduced. This may be done by taking people to see what people similar to themselves have done in areas like their own and/or by implementing small demonstration projects within the project area.
- 4 **The costs of the various options are likely to influence choice** The implication of this is that you need to have at least a broad idea of the relative costs of feasible sanitation options. Guidance on procedures for estimating the cost of sanitation options is included in Note 3.3 in the Tools section.

Where to seek advice on sanitation options

Where can you find out about sanitation options, their advantages and disadvantages, costs and potential benefits? Basic information on the various options and the procedures to be followed in choosing between them are contained in Tools 2.1, 3.1 and 3.2. However, whenever possible, you should seek out those who have practical experience of the implementation of sanitation programmes on the ground. Beware of engineers who cannot see beyond inappropriate technologies based on standard western practice. (Remember that a good engineer is not one who is governed by rules and regulations but rather one who understands why those rules and regulations were formulated in the first place and therefore where it is possible to modify them). Exchange visits with people with improved sanitation facilities may provide useful information on what does and what does not work.

When to start considering sanitation options

You should start to collect information on available sanitation options as early as possible in the planning process. The relevance of those options should then be evaluated in relation to the agreed objectives. Thus, for instance, if one of the agreed objectives is to prevent further pollution of the watercourses, treatment must be considered as an integral part of sewerage options.

Once you have a sound understanding of the existing situation, a clear vision of what you want to achieve and at least a general understanding of the available options, you are in a position to start to respond to demand. The first stage in this process should be to develop some form of sanitation plan. The steps that are involved in the development of such a plan are considered in the next sub-section.

STAGE 3 - DEVELOP A SANITATION PLAN

Once you have sufficient information about the existing situation, possible objectives and the available options to make informed decisions, you can start to develop a sanitation plan. For small areas, it may be possible to combine information collection and analysis and planning in one workshop extended over 2-3 days. In most cases, it will be better if plan preparation follows the information collection process.

5.21 Questions to frame the plan

In section 5.3, we saw that a local sanitation plan can provide a focus for action to improve sanitation facilities and services in an area. When preparing the plan, you should keep three basic questions in mind:

- what are we going to do?
- when are we going to do it? and
- who is going to do what?

This will help you to focus your efforts and should help to ensure that the plan is implemented and does not remain just a paper exercise.

Each of these broad questions should be broken down into more detailed questions. Some ideas on more detailed questions to ask are given in Box 5.5 This is intended as a guide and you may like to join with other people to make your own list of questions.

Box 5.5 A more detailed breakdown of the three basic questions

1. Relating to **what are we going to do?**
 - Should we be concerned only with household sanitation or do we need to consider issues such as drainage, solid waste collection and other related factors?
 - How should our efforts link with those of outsiders – both those living in adjacent communities and government officials and organisations with an interest in sanitation?
 - Is training required and if so where might we locate suitable training opportunities and how should people be chosen to attend the training?
2. Relating to **when are we going to do it?**
 - What factors might influence decisions about when to implement planned work? (For instance, can local sewers be implemented in the absence of collector sewers?)
 - How can planned work be divided so that it can be implemented in manageable steps? In particular:
 - Is there a need to test ideas and approaches on a small scale before introducing them more generally? (The answer will usually be yes if they have not been used locally in the past).
3. Relating to **who is going to do what?**
 - Are there people within the community with the skills necessary to bring about the desired sanitation improvements?
 - Do we need external help and, if so, what form should it take and who might provide it?
 - Who will be responsible for action at the household, neighbourhood and settlement-wide levels?

5.22 Answering the basic questions in a planning workshop

It is best if the answers to the various questions are considered together and by representatives of all the groups that are likely to be affected by the plan. One way to make sure that this happens is to attempt to answer them in the course of some sort of planning 'workshop' or 'event'. The participants in the workshop should include:

1. **Community members.** If the area is small, everyone can be invited. For larger areas, you may have to ask local people to select representatives - at least one man and one woman from every street, lane or cluster of houses within the area. Community members with specialist knowledge, for instance masons and health workers should also be asked to participate.
2. **Selected specialists** - those from outside the community who provide or could be called upon to provide services to the community. To avoid the possibility that outside professionals will dominate proceedings, their role should be restricted to presenting information and clarifying it where necessary. In doing so, they should draw upon the results of the Stage 2 investigations, which have already been described.
3. **Representatives of adjacent communities** that might be affected by the activities to be included in the plan.

5.23 Before the workshop

Before the start of the workshop, the available information should be prepared in a form that can be easily understood by the intended workshop participants. Some ideas on the ways in which information can be presented are given in Box 5.6.

Box 5.6 Some suggestions on how information can be presented

A map or maps of the settlement, showing people's houses, the location of facilities and the location of problems such as flooding will provide an overall summary of the findings of previous investigations. Further detail might be provided by photographs and/or videos. If plans and maps can be based on those prepared by people themselves in community mapping exercises, it will increase the sense of ownership.

Simple graphs and tables may be used to present information on household-level facilities and conditions. The important word here is simple. Do not try to put too much information into one graph or table and concentrate on the overall picture rather than trying to show every last piece of information.

Information on possible technical options might be presented in the form of diagrams and drawings. However, you need to be aware that not everyone at the workshop will be able to understand these diagrams and drawings. Photographs (in the form of slides) and models should be used wherever possible to illustrate points about technical options.

If examples of problems and possible solutions to those problems are locally available, it may be useful to take people to see them. However, remember the practical factors. Will transport be available, if required, and will it be possible for all participants in the workshop to see what has to be seen?

5.24 The workshop itself

Make sure that it is held at a location that is accessible to the project area where local people feel comfortable. This might be a local school, a community centre or even, if the weather is suitable, an open space.

Ensure that responsibilities for leading the workshop and presenting information are clear and that the workshop is structured so as to lead to conclusions and agreements on what to do next. At the beginning of the workshop, you should explain its objective, to prepare a plan that will lead to the introduction of improved sanitation facilities and services. The people who have been involved in the collection and analysis of information should then present their findings and this can lead into discussion of the options.

Do not make the workshop too long. If necessary, spread it over two or more weekends so that working community members can attend.

Fuller details on how to organise and hold a planning workshop are provided Tool 5.1.

5.25 Workshop outputs

The main output of the workshop should be a prioritised list of proposed activities. These may relate to the following:

Physical improvements, including new sanitation and drainage facilities and improvements to existing facilities.

Changes in behaviour, for instance hand-washing after defecation and ensuring that children use latrines.

Improvements in the way that services are organised, for instance increased community involvement in the management of local sewer systems.

The introduction of new services, for instance solid waste collection services.

For each activity, you should aim to list:

- when the activity should be started;
- where the resources to implement it might be found; and
- who should be responsible for it.

You may wish to start by addressing one priority problem. The advantage of this approach is that you will concentrate your energies on one subject. On the other hand, problems are often linked and should be addressed together. For instance, where solid waste collection services are poor, the construction of sewers should be accompanied by action to improve solid waste collection. In such circumstances, consider the option of improving solid waste collection before moving on to sewer improvements or alternatively using sanitation systems other than sewerage.

5.26 Funding arrangements

Make sure that the workshop includes consideration of the options for funding the various proposed activities.

Households should normally pay for on-plot facilities. If an exception is made to this general rule, for instance to cater for the needs of low-income households in rented accommodation, you should still ensure that the household pays some part of the cost of the facilities.

Your initial investigations may have shown that external funding is available for local shared facilities, for instance latrine blocks and tertiary sewers. The workshop should assign a person or group to follow up on any such possibilities. However, workshop participants should be made aware that services are rarely if ever free. They may have to pay a part of the cost of the new facilities and services directly or they may have to pay a connection charge.

Avoid loans for sanitation facilities since they are difficult to recover. Where people cannot afford to pay the full cost of improvements at one time, encourage them to start a savings scheme to put aside money to pay for their share of the proposed improvements.

Whatever arrangements are made to cover the capital cost of improved sanitation facilities, the operational costs must be covered. As already noted, subsidies on operating costs should be avoided in all but the most exceptional cases.

5.27 Follow-up activities

Effective follow-up is required to turn the plan components into reality. This follow up is likely to include:

- **follow-up negotiations** with outside stakeholders such as government departments to agree on responsibilities and outputs; and
- investigations of **sources of funding** where extra funds are needed to supplement the resources available through the community itself;

There may be a need for **pilot** and **demonstration** projects to test new approaches and/or convince people of their benefits.

Responsibilities for negotiating, seeking sources of funding and managing pilot and demonstration projects must be agreed at the workshop. You must also agree arrangements for managing the whole process and for reporting back to the community on the progress made and any problems encountered. At the end of the meeting, the immediate steps to be taken should be listed and responsibilities for taking them should be agreed. It may be appropriate to appoint a small team to follow up on progress and report back to the community. Arrangements for liaising between the community and external organisations need to be agreed. A date for a follow-up event, at which progress will be reported, should be agreed.

Box 5.7 Follow-up negotiations

Where action is required from outside organisations, particularly government departments, follow-up negotiations will be required to ensure that these actions will indeed be taken. Points to remember when planning for such negotiations include the following:

- 1 Make sure that you know who has the power to make decisions on behalf of government departments and other external organisations and work out the best way to reach them.
- 2 Be clear about who is to represent the community in meetings and negotiations and do not change your people in the course of the process.
- 3 Be clear about what you want from those with whom you are negotiating and present what you want simply and unambiguously.
- 4 Whenever possible, get one of your people to write down what is said in the meeting, focusing especially on any agreements and promises that may be made verbally.
- 5 Send a record of your understanding of the agreements reached in each meeting to the other people in the meeting as soon as possible after the meeting. (You should not concentrate only on what other people have agreed to do but also on the actions to which your group has committed itself).

Ideally, the negotiations should lead to a written agreement or memorandum of understanding that sets out what has to be done to both implement and manage sanitation improvements and defines the roles of the various parties to the agreement.

5.28 Testing and spreading ideas through pilot and demonstration projects

It may be useful to test ideas at a small scale before introducing them more widely. Small pilots can be agreed in the planning workshop and implemented as soon as responsibilities have been agreed, provided that funding is available. The results of the pilots will then help to inform the later stages of implementation. When planning a pilot project, the following basic principles should be borne in mind.

1. The situation addressed by the pilot should be representative of those found in the area in which you plan to work,
2. The pilot should, if possible, be self-contained. If the facility or service to be provided is to connect to a higher-order facility or service, make sure that this is available.

It may also be necessary to demonstrate ideas that are new to the community. The pilot may serve as a demonstration. In other cases, you may want to develop a project or facility purely for demonstration purposes, using an approach that has already been developed and proved under similar conditions elsewhere.

Figures 5.4 and 5.5 illustrate examples of pilot sanitation initiatives.

Examples of pilot activities :

Figure 5.4 Pilot sewered interceptor tank system in Chennai, India

This pilot was constructed as part of the World Bank-funded Tamil Nadu Urban Development Project. The photograph shows a latrine, the interceptor tank in front of it and a connection chamber on the 100mm diameter sewer to which the tank effluent was connected.

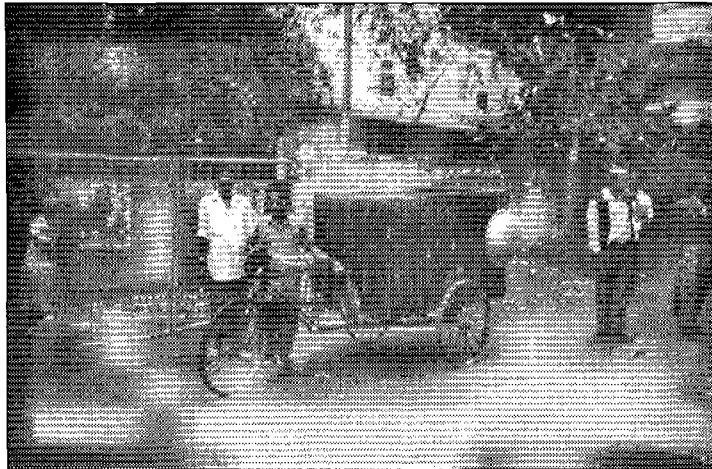


Figure 5.5 Local solid waste collection system in Dhaka, Bangladesh

The design of the tricycle had been modified in the light of operating experience, for instance to include ball bearings for the wheels. Despite these improvements, the operators usually pushed the cart rather than attempting to pedal it.

Fig 5.5 One of many small initiatives to pilot innovative collection systems at the local level.

Fig 5.4 It does not seem to have led to any changes in standard procedures, illustrating the point that you need to think about the institutional issues and how a pilot will be replicated from the outset.

Neither of these examples has been widely replicated - illustrating the fact that pilots on themselves are not enough. There must be a strategic vision of how successful practice can be replicated elsewhere.

Demonstration projects must be 'visible' to those whom they are intended to influence. This can sometimes be achieved by ensuring that they are located in a public place. (For example demonstration latrines have sometimes been located in a school or health centre). Where demonstration facilities are located on-plot, make sure that the owners of these facilities are aware that people will want to look at the facilities once they have been completed. Experience suggests that people are usually very keen to show positive achievements and this should not normally be a problem.

Pilot and demonstration projects must lead on to more widespread action.

Once a project is complete and has been operational for some time, you should aim to:

- **evaluate its performance** and identify any changes that may be necessary before introducing the approach more widely; and
- **communicate your findings** in a way that encourages other people to adopt the approach (always assuming that it has produced good results).

5.29 Finalising the plan

Once negotiations have been completed, pilot and demonstration projects have been initiated and funding options have been agreed, the plan should be finalised. This should be done at a general meeting or workshop, to which all community members, or at the very least their representatives, have been invited.

Those who have been responsible for negotiating responsibilities, exploring funding options and managing pilot and demonstration projects should briefly report on their activities. They should present material as simply as possible, bearing in mind that not all people in the community will be literate. It may be appropriate to walk round the area included in the plan with community members and to talk about individual plan components at the locations where they are to be implemented.

The agreed plan should be produced in a form that is accessible to the community. Physical components should be shown on a plan of the area, which should be exhibited in a public place such as a community centre or school. Copies of the plan should be made available to government departments, local elected representatives and other concerned parties.

STAGE 4 – IMPLEMENT THE PLAN

You should now have a sanitation plan containing a number of proposals to improve sanitation and related services in the project area. You should also have agreement on who is to implement the various plan components and when they should be implemented. This is not the end of the process. Even the best of plans is of little use if it is not implemented. In the following pages, we introduce some of the important points to be considered when implementing the plan.

5.30 The need to coordinate plan components

Until now, we have been concerned with the overall plan. Implementation may involve a number of separate activities, carried out by different organisations and groups. The key questions to consider when implementing the plan are:

- what action needs to be taken to implement each plan component? and
- what can be done to coordinate the various activities?

The second question is important because, as we have already seen, some activities are linked so that their outcomes are dependent on one another. In the following sub-sections, the steps in implementing each plan component are explained. The subject of coordination is then considered.

5.31 Preparation of detailed proposals

For physical schemes, the level of detail required at the detailed planning stage will depend on the nature, scale and complexity of the scheme.

On-plot facilities such as double-pit pour-flush latrines will require only a drawing of the standard latrine and a simple cost estimate. Many local masons and petty contractors tend to work without drawings but it is good to have something to show how the standard latrine is to be built. It may be that a series of simple illustrations showing the work to be carried out will be more useful than a formal drawing.

For more complex sewerage and drainage schemes, you should seek advice on the ways in which levels and falls can be shown. The conventional way is to prepare a plan and section of every sewer but it may be possible to use simpler methods for local schemes – for instance showing all levels on a plan rather than producing sections for every sewer. The information provided should relate to the procedures that you can reasonably expect to be followed during implementation.

For activities such as hygiene education, you need to consider who is going to do the work, what methods they will use and how they will be organised. You may like to explore the possibility of using people from within the community. If so, you will need to consider where they might receive training. Talk to local training institutions, NGOs and other people who are already involved in sanitation provision to find out how this might be done.

Further information on costing proposals is given in Tool 3.4.

5.32 Implementing plan components

Before you implement each plan component, you need to ask a number of questions.

Who will organise and supervise the work?

The answer to this question will depend on the scale of the work and whether it is to be carried out by community members themselves or an external organisation such as a government department. When the work is to be carried out by an external organisation, the most important question will be how to ensure that the community has a voice in what is being done. One option will be to appoint a small liaison committee to act on behalf of the community. Another will be to appoint people from the community to act as work supervisors. The danger with both of these approaches is that government engineers will ignore community concerns but this danger can be reduced if both parties to the agreement are involved in the planning process from the outset.

Turning to work managed by the community itself, the following general points can be made.

1. Householders should manage and supervise work relating to household facilities;
2. For local schemes such as branch sewers, serving one road, or cluster of houses, residents may be happy to appoint a manager to act for them. (This is the 'lane manager' model promoted by the Orangi Pilot Project in Karachi). Alternatively, they may prefer to appoint a small implementation committee to represent them.
3. The implementation committee model will be the preferred option for slightly larger projects. It may be formed specifically to manage sanitation works. Alternatively, where an existing Community Development Association or the like already exists, it may be formed as a sub-committee of this association. The implementation committee or sanitation committee may also take responsibility for monitoring hygiene promotion efforts although there is a danger that this arrangement will not give enough prominence to non-physical activities.

Who should be responsible for carrying out the work?

In answering this question, you need to draw upon the information already gathered about the resources available within and to the community. The following broad guidelines will provide additional guidance.

1. Simple household-level tasks may be carried out and should certainly be managed by householders themselves although you may need to arrange for them to receive some guidance on unfamiliar tasks.
2. Construction of shared latrines, local sewers and drains might be assigned to local masons or 'petty' contractors.
3. Higher order facilities such as collector sewers will probably need specialist contractors who are in any case likely to be employed directly by the appropriate government department or agency.
4. 'Soft' tasks such as hygiene education may be given to NGOs with specialist skills although government organisations should not be ruled out if they have the requisite skills. You may like to consider the possibility of arranging for people within the community to be trained to undertake such tasks.

What contractual arrangements are appropriate?

Contractual arrangements for work inside the plot boundary should generally be kept simple. In some cases, all that will be required is a simple verbal arrangement between the householder and the specialist tradesmen (and/or women) who are working for him or her. You should consider whether you want to provide guidance as to how this relationship might be made slightly more formal.

Contracts for local shared facilities should also be simple. A number of arrangements are possible but the most likely are as follows:

1. The contractor provides labour and tools only with all materials being provided by or through the community. Often, the contractor will quote a lump sum for such labour-only contracts.
2. The contractor quotes a lump sum for the provision of labour, tools and materials. This approach reduces the amount that the community has to do for itself but at the same time introduces the need to check that the materials provided are satisfactory. There may be problems in arriving at a fair price if alterations to the agreed scheme are made in the course of implementation.
3. The contractor quotes prices against a schedule of standard items such as trench excavation, laying sewers and constructing manholes and chambers. This type of contract needs more preparation but is better able to deal with variations than a lump-sum contract.

It is also possible for the community to carry out the work itself, hiring specialist labour as and when required.

For further information on contractual arrangements for small works, see the publications 'Community Initiatives in Urban Infrastructure, by A.P. Cotton, M. Sohail and W.K. Tayler, published by WEDC at Loughborough University.

5.33 Monitoring

The progress of plan components should be monitored in order to ensure that the work is being carried out:

- at an acceptable speed;
- to the required quality;
- for the budgeted cost; and
- in a way that ensures that everyone in the community benefits

You will only be able to monitor effectively if you:

- set out clearly from the start what you intend to do;
- provide clear guidance on the quality required; and
- keep records of the work, particularly of the costs incurred;

These records do not have to be complex and do not even have to be written. For instance, one way of recording the quality that you require is to construct a facility to the required standard at the beginning of the project, agree with all concerned that this is the required quality and then use it as the standard against which all subsequent work is measured. Poor quality workmanship is a common problem on many small-scale schemes and you should pay particular attention to ensuring that work is done to a good standard. If this is not done, facilities may not last as long as you had planned. It is better to spend slightly more money at the beginning to get things right than to have to spend a lot of money later because the quality was not monitored.

People from the community can be very effective in monitoring the quality of work. After all, the facilities will serve them and it is often their money that is being spent. However, it is important that they are given guidance on the quality of work required. Where a contractor is being employed, a small number of people from the community should be nominated to be responsible for monitoring duties and they should be given appropriate training. It is not good if everyone is telling the contractor how to do his job

STAGE 5 - SUSTAINING RESULTS

5.34 The importance of good operation and maintenance

There is no point in providing sanitation facilities if they fail after a few weeks, months or years because they are not operated and maintained properly. Plan for sustained operation and maintenance from the beginning of the project and make sure that the question of who will be responsible for operation and maintenance is addressed in the planning workshop. Can the community manage the scheme themselves or would they prefer to rely on services provided by a government agency? If the latter, is it realistic to expect that the government agency will provide the inputs that are required of it. When considering these questions, you should bear in mind the following:

- On-plot facilities should normally be the sole responsibility of the household.
- Local shared facilities are best managed locally where government departments have limited capacity.
- Higher order facilities are best managed by central service providers, usually located within government.

The exact boundary between what is managed locally and what is managed by the government or some other central organisation needs to be decided in the light of the local situation. In general, the stronger the central provider, the greater its ability to take on O&M responsibilities.

It is often recommended that responsibilities for the operation and maintenance of locally-managed shared facilities should be given to a specially created committee. However, experience suggests that such committees are usually dependent on the efforts of a few dedicated members. This does not necessarily matter but you should be aware that the committee approach will not automatically give good results. You may also like to explore the possibilities for private operation of local facilities. It may be that this provides an income for a number of people from within the community.

5.35 The need for formal agreements

Where locally managed facilities are dependent on higher order facilities provided by others, it is important that there is agreement as to who does what and who pays for what. This will normally require some form of formal agreement that sets out the rights and responsibilities of the partners. Take, for example, the case of a locally constructed and managed sewer connected to a collector sewer provided and managed by a central authority. The central authority has to bear the cost of operating the downstream system, including any sewage pumping and treatment that is required. It will not want to accept the connection from a community-managed sewer unless it receives some revenue from community members to cover these downstream operating costs. At the same time, the community can argue that they should not pay the full tariff because they are managing the local part of the system and thus reducing the cost to the central authority. In such a situation, there should ideally be a standard agreement that the tariff will be reduced by an amount to allow for the fact that the community is managing its own local facilities.

The situation is often complicated by the fact that existing sewer tariffs do not cover anything like the real operating costs. Where this is the case, it will still be desirable to reach some sort of agreement on a reduced tariff so that the principle has been established for future reference. Where this cannot be achieved, the community should be prepared to pay the full tariff since it is only by doing so that they can reasonably ask the authority to operate the downstream facilities regularly and efficiently.

5.36 Evaluation

Once an initiative has been completed and has been operating for some time, it should be evaluated. Evaluation is not strictly about sustaining achievements but it is included here because it takes place after the work has finished. Evaluation does not have to be a long-drawn out process. You need to know the answers to the following questions.

- How much did the initiative actually cost and was the cost any different from that originally estimated?
- Is it operating as intended and what effort is required to manage its operation?
- Has it brought about the expected benefits – in other words, what impact has it had?
- Are people happy with what has been done or would they do some things differently if they were to be done again?

Answers to these questions can be obtained from various sources. Information on costs incurred should be available from the records kept by the individual or organisation responsible for managing implementation. You can find out whether a facility is operating as intended by observation and by talking to the people who use it and/or are responsible for its operation. It will be harder to assess the wider benefits, particularly those that relate to health. You may wish to take advice on this aspect of evaluation. It may well be that you learn some important lessons by asking people whether they are happy with what has been done and what they would do differently next time.

Remember that an evaluation is not carried out for its own sake. Rather, the aim should be to gain knowledge that will help you and others to plan and develop better sanitation schemes in the future. Make sure that the results of evaluation are made available to those who are working for further improvements to sanitation and related services.

**Guide for Strategic Planning for
Municipal Sanitation**

Part C

**TOOLS FOR
STRATEGIC PLANNING**

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PART C

Tools for Strategic Planning

Using the tools

Part C of the Guide provides detailed information on a number of issues related to strategic planning which have been referred to in Part B guide.

Part C is divided into six sections, each containing a set of planning tools which are intended to be used by the reader assist them in understanding important concepts and methods such as the links between sanitation and health and types of technology that may be employed for sanitation and wastewater treatment.

Part C also contains tools for gathering, analysing and sharing information management as well as planning and management tools which provide guidance for preparing and holding a participatory planning workshop. Where possible, guidance is given on where to find more detailed sources information and this is developed further in the Appendix which contains references, recommended text and sources of further information.

We recommend that you add relevant information to Part C as it becomes available in order for you to develop your own set of 'tools'. If you have access to material that you believe to be particularly useful to this section of the guide, please contact GHK Research and Training and we will explore the possibility of including it in a revised and improved version of the Tools Section. Information of how to access these revisions will be posted on the GHK Research and Training web-site at <www.ghkint.com>.

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ABOUT THESE TOOLS

One of the reasons for improving sanitation services is to improve the health of people within the community. The tools in this section are about the way in which improvements in sanitation and related services can bring about improvements in health.

This section consists of three tools :

Tool 1.1 provides an introduction to the links between sanitation, drainage, solid waste disposal and health. It will help you to understand what sanitation improvements can and cannot do to improve health and to suggest where complementary actions such as vaccination, the use of de-worming medicines and chemical spraying of insect-breeding sites may be appropriate.

Many studies have shown that sanitation provision will not lead to health improvements unless it is accompanied by improved hygiene practices, in particular hand washing after defecation. **Tool 1.2** therefore provides a brief introduction to the subject of hygiene education. It emphasises the importance of starting from an understanding of the existing situation and taking into account people's existing knowledge and hygiene practices rather than assuming that you are working with a blank sheet. The steps in developing and implementing a hygiene education programme are briefly described. **Tool 1.2** is partly based, in very reduced form, on a set of four booklets 'Happy, healthy and hygienic: how to set up a hygiene promotion programme' (United Nations Childrens Fund in New York).

Tool 1.3 provides guidance on what to do if initial contacts with potential users of improved sanitation services reveal that there is little or no interest in those improvements. If you are working at the local level, it will provide you with ideas on how you can create demand for improvements. If you are concerned with either national/state programmes or planning for improvements at the municipal level, the tool will inform you on what might be included in a sanitation promotion programme

TOOL 1.1 SANITATION AND HEALTH

What this tool will tell you

This tool provides an introduction to the links between sanitation, solid waste disposal, drainage and health. The tool will tell you how various diseases are transmitted from one person to another and will explain how improvements in sanitation and related services can break these transmission routes. It emphasises that improvements in physical facilities on their own will not lead to improved health. There is also a need for good maintenance and hygienic behaviour.

The first and longest part of the tool deals with sanitation-related diseases. The second and third parts of the tool deal with infections that can be encouraged by the conditions created by poor drainage and solid waste collection respectively.

Some definitions

Most sanitation-related infections are **faecal-oral**. This means that their transmission route is from the faeces of an infected person into the mouth of another person.

Pathogens are the infective organisms excreted by an already infected person, which can then enter the body of another person and infect him or her. Pathogens may be viruses, bacteria or small worms

Some sanitation-related infections are **latent**. In other words, they are not infectious immediately after the disease causing organism leaves an infected person's body. Many latent infections require an intermediate host, sometimes a snail or a fish. Other infections are spread by pathogens that can live for long periods outside a person if they find the right environment, for instance a cool damp area such as might be found on a poorly maintained latrine floor.

A **vector** is the organism by which a disease is transmitted from one person to another. Mosquitoes are vectors of malaria and filariasis.

Helminths are small parasitical worms that live in the body, usually in the gut, and make people feel tired and listless.

Some key points

New sanitation facilities do not automatically lead to improvements in health. Poorly maintained facilities can actually make the situation worse and lead to deterioration in health. (Think, for example, of a badly maintained public latrine at which there is no water supply. This concentrates sanitation problems that were previously dispersed wherever people defecated).

The effect of sanitation improvements on health will be limited unless they are accompanied by efforts to improve hygiene. Good hygiene requires water so there should be a source of water close to every sanitation facility so that people can wash their hands after defecating.

Young people are more susceptible to many sanitation-related diseases than older people. This is because the latter have built up immunity over time. It is important to ensure that all, including children, use sanitation facilities.

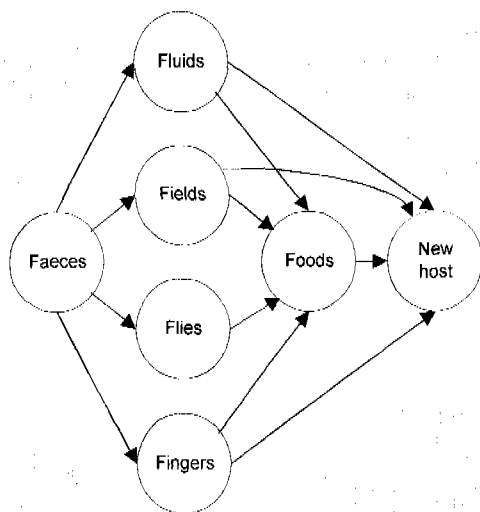
The faeces of children are as infective as those of adults. Hygiene promotion materials should emphasise this point since many people believe that the faeces of children are harmless.

The most significant impacts on health are likely to come from improvements at the household level where people spend most of their time and are most likely to encounter pathogens. Improvements in public facilities will have little impact unless they are linked with improvements within the household.

Improvements in sanitation will have the greatest effect in densely populated urban areas where the amount of faecal material produced is the greatest and the difficulties in removing it are greatest.

Sanitation-related infections

Most sanitation-related infections are faecal-oral in nature although at least one, schistosomiasis or bilharzia, can be spread in an infected person's urine. The routes by which they can be transmitted from one person to another can be represented by the f diagram, which is reproduced below.



Note the following points about the f-diagram.

Fluids means water. Pathogens may reach a new host because he or she drinks contaminated water. The route through foods shows that there is also a risk if contaminated water is used in cooking. Some pathogens require an intermediate water-based host.

Pathogens may reach a new host via fields if either people defecate in them or untreated sewage is used to irrigate crops.

Flies can transmit pathogens from uncovered faeces onto food.

Good hygiene is essential if transmission via fingers is to be prevented.

Sanitation-related infections can be divided into the following categories.

Non-latent faecal-oral infections, formally known as water-borne diseases in that they can be transmitted when someone drinks water which has been polluted by the faeces from an infected person. (the fluids route in the 'f' diagram).

All other sanitation-related infections are latent. Many but not all require an intermediate host. All involve infection with some form of worm and the degree of sickness depends on the number of adult worms infesting the patient. This means that the intensity of infection must be assessed in terms of average levels of infestation as well as the number of people infected. These infections include

- **water-based helminth infections**, which are transmitted via an intermediate water-based host;
- **soil-transmitted helminth infections**, which are spread by pathogens that require a suitable environment, typically a dark moist soil, for part of their life cycle; and
- **beef and pork tapeworms**, which are spread by pathogens that need either a cow or a pig as the host for part of their life cycle.

Further details on each of these are now given.

Non-latent faecal-oral infections

Diseases in this category can be transmitted by all the routes shown in the 'f' diagram. The objective of sanitation and sanitation-related activities such as hand-washing is to break the transmission routes so that pathogens from an infected person cannot be transmitted to another person

It is not sufficient to break one route if the others are still open. This means that you must approach questions of sanitation and hygiene in an integrated way. We will see what this means in practice as we examine specific diseases and their transmission routes in more detail.

Transmission via fields is likely to be a particular problem when certain places are generally accepted as defecation areas, as is often the case in peri-urban areas without sanitation

Non-latent faecal-oral diseases can be divided into the following categories

- **Those with a low infective dose** – including poliomyelitis, hepatitis A, rotavirus diarrhoea, amoebic dysentery and giardiasis.
- **Those with a high infective dose** – including cholera, typhoid, salmonellosis and shigallosis, a form of bacterial dysentery. The pathogens for all these diseases are bacteria.

Diseases with a low infective dose are likely to be transmitted by a direct contact route, via fingers and food. Good hygiene can reduce the risk of infection although in some cases, for instance poliomyelitis, the best barrier against disease transmission is vaccination.

Sanitation improvements are unlikely to have a significant impact upon the transmission of these infections unless they are accompanied by action to improve hygiene behaviour.

Sanitation plans should emphasise the need to provide a source of water close to each latrine so that people can wash their hands after defecating.

Infections with a high infective dose may be transmitted by direct contact routes so good hygiene behaviour can help to reduce transmission of these diseases. However, they can also be transmitted through contaminated drinking water. It is therefore necessary to protect water supplies from faecal contamination or remove that contamination before people drink the water.

In theory, water from lowland surface sources should be treated before it is drunk or used in cooking. Unfortunately, treatment is not always available and is not always reliable even where it is available. In such circumstances, good sanitation can reduce the risk of disease transmission by preventing excreted water from contaminating drinking water sources. However, do not expect to eliminate the problem by improving sanitation. It is very difficult to remove all pathogens from lowland surface water sources and action to treat water will still be desirable. The only exception to this rule is when the water is taken from upstream of all human habitations so that there is no chance that faecal contamination will occur. This situation is, however, rare.

Groundwater is rarely treated before use and so sanitation should be designed to prevent faecal pollution of groundwater. Common examples of unsatisfactory arrangements include pit latrines that penetrate the groundwater table and are located close to drinking water wells and leach pits located in fissured rock that allows rapid transport of pathogens down to the water table.

Properly designed and maintained sanitation facilities will prevent fly breeding in excreta and thus reduce transmission via flies. Poorly designed and maintained sanitation facilities may actually become a focus for insect breeding and thus increase the danger of infection.

Water-based helminth infections

These require an intermediate water-based host, usually an aquatic snail, for part of their life cycle. For some diseases, plants or fish can form a link in the transmission route. Sickness is caused by parasitic worms that live in the infected person, usually in the intestines. These do not kill people directly but weaken them and reduce their ability to work.

The most important infection in this group is **schistosomiasis**, also known as **bilharzia**, which is caused by worms living in an infected person's veins. Eggs from the worms may be excreted or passed in the urine. They hatch in water and the larvae penetrate any suitable snail that they encounter. Once inside a snail, the larvae develop further and aquatic larvae known as *cercariae* emerge into the water after a period of 1-3 months. These live for a period of up to 48 hours in water and will penetrate any human skin that they encounter, subsequently developing into adult worms and starting the cycle again. Schistosomiasis can be a particular problem in irrigated areas where people are frequently in contact with water but does not occur elsewhere.

On-plot sanitation systems that retain faeces and prevent it from reaching watercourses in which people wade or from which they take water can break the transmission route of schistosomiasis. The same is true of sewage treatment systems with a long retention time, for instance waste stabilisation ponds. However, infection will continue unless all faeces are prevented from reaching the watercourses. Sanitation improvements will rarely be sufficient on their own to deal with schistosomiasis. If schistosomiasis exists in your area, you should take advice on developing an integrated strategy, combining improved sanitation with measures designed to control snail populations and reduce people's exposure to contaminated water.

Beef and pork tapeworms

In both these infections, the adult worms attach themselves to the small intestines of humans. Eggs are excreted and eaten by cows or pigs. The larvae develop in the animal and can infect people who eat uncooked meat. They do not usually have severe effects in themselves but there is a danger that cysticercosis may occur in areas where the pork tapeworm is endemic. This is a severe disease that is contracted when a person ingests the eggs of the pork tapeworm.

Problems with beef and pork tapeworms are likely to arise when untreated or inadequately treated sewage is discharged onto land where cows or pigs are grazing or which is being used to produce fodder crops. Transmission can also occur when animals eat solid waste that includes human faeces removed from dry toilets. Improved on-plot sanitation can break the transmission route, as can sewage treatment processes, such as waste stabilisation ponds, with a long retention time. The other important control measure is the complete cooking of food and this should be emphasised in public health programmes where tapeworm infection is endemic.

Soil transmitted helminth infections

Diseases in this category are caused by parasitical worms living in the intestines. The most serious infections are ascaris (roundworm) and hookworm. Infection results in general sickness and weakness rather than particular acute symptoms and for this reason may be widespread in the community without people being aware of it. Surveys have revealed infection rates of over 50% in poor communities in countries as diverse as Venezuela, Bangladesh and Malaysia. Those in occupational groups such as refuse collectors and sanitary workers are particularly exposed to infection. For example, a study of a community of refuse collectors in Nepal showed that 95% of the 467 people tested had roundworms and other parasites. Despite this, people said that they were healthy when questioned in the course of the study. This illustrates the point that people are often unaware that they are infected.

The first stage in transmission occurs when eggs produced by the infecting worms are excreted by an infected person. The eggs hatch if they encounter a suitable environment, typically a moist shaded soil. The larvae can survive for long periods outside the body in suitable conditions and this increases the chance of infection. For ascaris, the infective cycle is completed when larvae are ingested from hands, food and utensils. One form of hookworm (*A. duodenale*) can be transmitted in the same way via unwashed vegetables but all hookworm infections are spread by larvae penetrating the skin, usually round the feet and ankles. The danger of transmission is greatest where some or all of the following occur:

- People defecate on the ground, particularly where certain areas are commonly used for defecation.
- Latrine floors become soiled and are not cleaned properly, particularly where the floor is earth.
- Raw sewage is used to irrigate crops.
- Small children are allowed to defecate in yards and compounds, particularly where there is no hard surface.

The most immediate effects on helminth infections can be achieved by chemotherapy, i.e. the use of de-worming medicines. However, for lasting effect, chemotherapy must be combined with longer-term measures. The provision of good sanitation is important since it can prevent eggs from reaching the ground. It will only do this if all, including young children, use the facilities and this must be emphasised in the programme. The effect of improved hygiene will be less than for more directly transmitted infections although it must have some effect where larvae are ingested from hands and food.

The likelihood of infection via food is high when sewage is used to irrigate crops. Sewage treatment methods such as waste stabilisation ponds, that have a long retention time, can be effective in breaking the transmission route. Undigested sewage sludge should not be used as a fertilizer since the pathogens will settle during the treatment process and be concentrated in the sludge.

Infections associated with poor drainage

Poor drainage results in pools of dirty water. These provide breeding sites for mosquitoes that are responsible for the spread of a number of diseases. These include **bancroftian filariasis**, which is spread by mosquitoes of the type *Culex pipiens* and is the main nocturnal mosquito in urban areas throughout the world.

Chemical spraying can be used as a short-term measure against mosquitoes. However the best long-term approach to control is to drastically reduce the number of mosquitoes by eliminating breeding sites. Drainage improvements, designed to remove standing water, can play an important role in this. However physical improvements in themselves are not enough. **Unless drainage facilities are maintained, there is a danger that no long-term improvement will be achieved.**

Flooding can occur because of inadequate drainage. The risk of disease transmission will increase if floodwater becomes mixed with water from sewers, septic tanks and leach pits so that disease pathogens are spread more widely in the environment. When designing facilities, do everything you can to prevent this mixing from occurring. Ensure that pit latrines and leach-pits are raised above the natural ground level to prevent the entry of storm water. Think about how drainage systems can be designed to allow storm water to run on the surface rather than entering drains and sewers and causing them to overflow. Flooding is more likely to occur if drains are not cleaned regularly and/or solid waste is allowed to accumulate in them.

Open drains carrying sewage or sullage water are potential sources of infection. Pathogen concentrations in sullage are likely to be a lot less than those in sewage. This means that the risk of contracting faecal-oral diseases as a result of coming into contact with drain water is much reduced. Nevertheless, the risk cannot be eliminated entirely unless people, particularly children, are prevented from coming into contact with the drain water.

The health impacts of improvements in solid waste management

Poor solid waste collection encourage disease transmission. Uncollected solid waste in streets or at dump-sites can provide a habitat for rats and flies and thus contribute to the spread of a number of diseases. Rats are the major vectors of plague, leptospirosis and other infections while flies provide a possible transmission route for faecal-oral disease. Discarded tin cans and tyres can collect relatively clean water and thus provide a breeding ground for *Aedes* mosquitoes, which transmit dengue and yellow fever.

Solid waste is also linked to faecal-oral transmission routes in other ways. As already indicated, in areas with primitive dry sanitation systems, faecal material is often mixed with other solid wastes and can pose a health threat to sanitary workers and, if used as a fertilizer or eaten by animals, can lead to disease transmission via food. Uncollected solid waste often finds its way into surface drains and sewers, causing blockages, contributing to flooding and helping to create insect breeding sites.

All these impacts can be reduced by improvements in solid waste management. However, note that localised improvements will not eliminate problems. If waste is collected in some streets but not in the surrounding areas, there is nothing to stop insects and rats crossing from one area to another and carrying diseases with them. This reinforces the point that strategic approaches to sanitation improvement need to be city-wide.

TOOL 1.2 HYGIENE EDUCATION

What this tool will tell you

Good hygiene breaks the direct contact routes by which pathogens are transmitted and the full impact of sanitation improvements will only be achieved if they are accompanied by efforts to improve hygiene. This tool will give you some basic information on how to organise and implement a hygiene education programme. For further information, see the section 'further information' at the end of this tool.

Good hygiene and water availability

Good hygiene is dependent on the availability of water so hygiene promotion messages should be framed in relation to the likely availability of water. If current water sources are so far away or so unreliable that they restrict opportunities for improved hygiene practices, action to improve water availability should be a priority. One point to consider in siting sanitation facilities is the availability of water. Ideally, sanitation facilities should be close to a source of water so that people can clean their hands after defecating.

An overall approach to hygiene promotion

The approach to hygiene promotion recommended here is based on the three basic questions found throughout this guide – where are we now, where do we want to go and how do we get from here to there?

Where are we now? This question implies a need to understand the existing situation and the health problems that result from it.

Where do we want to go? The objective of sanitation promotion must clearly be good hygiene practice. Health and hygiene workers will have a good overall idea of what is required but remember that it is hard to absorb too many ideas at the same time. You need to prioritise objectives.

How do we get from here to there? This is the question at the heart of sanitation promotion. You need to ask the questions what is my message, who is it for and how do I deliver it in a way that ensures that they understand it?

Each of the three questions is considered in more detail in the following pages.

Where are we now? - Understanding the existing situation

Hygiene promotion should be grounded in an understanding of the existing situation. You should ask the following questions.

- **What are the likely risk practices?** An example would be failing to wash hands after defecation.
- **Who carries out those practices?** Think, for instance, about the groups within the family and society whose members are least likely to wash hands after defecation.
- **How do people communicate?** The answer to this question will influence your approach to spreading information on good hygiene practices.
- **What prevents change?** There are two aspects to this question. First, as already indicated, it may be that people cannot practice improved hygiene because of the lack of basic water supply and sanitation services. People's beliefs and attitudes may also be barriers to change.

Who can provide answer these questions?

Professional hygiene workers can provide information on likely risk practices and their likely consequences. Local people will also have ideas and information, some of which will not be available to outsiders. For instance, they will know about how and where people relieve themselves and the beliefs and attitudes that are common in the community.

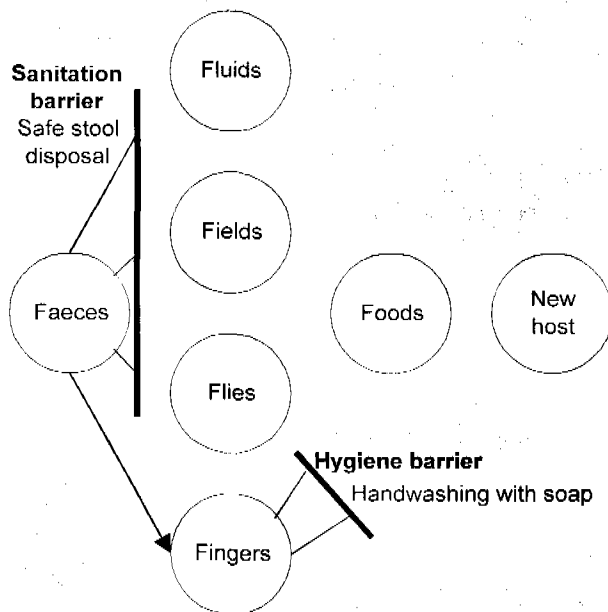
How can answers be obtained?

Some of the participatory methods outlined in Section 4.4 can be used to investigate current hygiene practices and people's attitudes to them. Transect walks and structured observation can give an initial idea of what people do. Participatory mapping methods can be used to find out where people go to defecate. Structured interviews and focus group discussions will provide information on what people think and how they perceive problems.

Card sorting techniques in which people are asked to sort sets of three picture cards showing various practices in terms of their possible impacts upon health, can provide a useful way of determining what people think and introducing discussion of key hygiene-related issues.

Where do we want to go? – Identifying good hygiene practice

A starting point for identifying good sanitation practice is provided by the **f-diagram**, which has already been introduced in Tool 5.1. The key to disease prevention is to create barriers that prevent disease transmission. These barriers can be introduced at various points. In general, the earlier in the barrier can be placed on the transmission route, the better. If we can prevent faecal material getting into the environment in the first place, we do not have to worry about purifying water, storing food correctly or keeping away flies. The ways in which this might be done are shown in the diagram below. Note the following points about this diagram.



The **sanitation barrier** prevents faecal material getting into the wider environment and thus creating a hazard for other people. Sanitation systems must be designed to ensure **safe stool disposal**, which prevents pathogens reaching water or fields and which keeps flies away from faeces.

The **hygiene barrier** prevents pathogens finding their way from an infected person's hands via food or another person's hands, to the mouth of another person. The key to good hygiene is **handwashing with soap after stool contact**.

Unless fieldwork shows otherwise, the most effective actions you can take to prevent disease transmission are to:

- Ensure **safe stool disposal** – this requires improved sanitation;
- Ensure that people wash their hands with soap after defecation or otherwise coming into contact with stools.

Other high-risk practices may be locally important. For instance, there may be danger of hookworm transmission where many people do not wear shoes and it is common to either irrigate fields with sewage or to defecate in fields. Similarly, eating uncooked or partially cooked meat may lead to infection with tapeworms when animals graze on grass irrigated with untreated wastewater. Dumping solid waste in open drains may lead to local flooding and create ideal breeding grounds for mosquitoes. The improved practices to be promoted should be based on the analysis of the existing situation already carried out.

How to get from here to there – the process of hygiene promotion

In this section, some of the main points about developing and implementing a hygiene promotion programme are introduced and briefly discussed. For further information, see the various references given at the end of this tool.

Defining the target area

Before you start a hygiene education programme, you must **define its target area**. If you are working on a local sanitation programme, the hygiene education programme should cover the same area. In fact, it will be important to ensure that the sanitation and hygiene education programmes are integrated.

Deciding the message

As indicated at the start of this tool, the possibilities for change may be restricted by factors such as limited water availability. Hygiene promotion must be grounded in an understanding of the existing situation and should not tell people to do things that are desirable but impossible. Where there are real barriers to improved hygiene, hygiene promotion personnel should discuss these barriers with people and encourage them to look at ways in which they might be overcome.

Apart from this, it is important to identify and concentrate on the high-risk practices. Washing hands after defecation is an obvious example, which should always be stressed. Professional hygiene workers will have ideas on other issues, as will local people. If possible, identify risk practices in the course of sanitation planning workshops.

Do not make your messages too technical. You may know about germs and how they are transmitted but do not assume that local people understand disease and its transmission in the same way.

Deciding on appropriate media

You also need to consider the ways in which hygiene messages will be communicated to people. Messages may be communicated:

- **one to one**, which can be very effective but might also be expensive;
- To **groups** of your target audience at meetings, video showings and other special events; or
- Through **mass-media** such as radio and television

Policy makers, programme planners and those working in large cities should consider all three options, balancing coverage and cost effectiveness and considering the factors that will influence people's take up of hygiene messages. If, for instance, an initial survey shows that most people listen to the radio, a radio-based campaign may be appropriate as it can achieve wide coverage for relatively limited input. On the other hand, house to house visits may be necessary in societies in which women are discouraged from attending meetings outside the home.

People working at the local level are unlikely to have access to mass-media outlets and will therefore be restricted to the one-to-one and group options. Use focus group discussions (See Tool 4.4) to find out what your target group thinks about the various communication options. Try to find out how people obtain information on subjects that are important to them, how they work together in groups and who they think might be the best people to promote hygiene.

Considering the logistics

Hygiene promotion requires people, transport and materials. These will almost always cost money so you need to think about how the programme is going to be financed. Funds will be required to carry out any formative research – designed to find out more about existing attitudes and practices – and later to finance the main programme. If possible, arrange for funding for hygiene promotion to be included with that for the wider sanitation programme.

The number of people required will depend on the scale of the proposed programme. A local programme might require a team leader and 4-5 field workers. It should be possible to train community members in typical target areas to act as field workers. The advantages of this approach are that they will know the local situation and should be better placed to communicate with local people than outsiders. You will, of course need to arrange training for the field workers. The team leader should have knowledge of good hygiene practices and the ability to plan and organise. He or she may be able to provide the training required. However, it will be unwise to rely on one person. If possible, develop a link with a local agency, NGO or university with experience of hygiene promotion and arrange to use their knowledge and resources

Preparing for action

Once you have formed a team and have decided where you intend to work, you can start to prepare for action. If you have not already done so, you need to meet with local leaders, administrators, women's groups and other local organisations to discuss the proposed programme. (If the hygiene promotion programme is part of a wider sanitation programme, you may be able to use existing contacts). Local media may be used to let people know what is happening.

It may be useful to hold a planning workshop at which the hygiene promotion team and local people share what they already know about hygiene practices in the target area. Remember the need to listen and learn from local people. If the programme is new, you should aim to pilot your approach in a number of representative sites. The planning workshop can be used to choose representative sites and to develop a detailed workplan together with local people.

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Linking with other aspects of the sanitation planning programme

Hygiene promotion should always be included in sanitation improvement programmes. Some hygiene messages should be included alongside sanitation promotion messages so that people think of good hygiene and good sanitation together. It will usually be good to follow up with further information on good hygiene as soon as possible after new sanitation facilities have been introduced and people have started to use them.

Implementing the programme

If you have prepared carefully, the actual implementation of the programme should be fairly straightforward. The approach should be piloted in one or more typical areas before it is introduced more widely. This will allow the team to sort out any problems that may not have been foreseen in the programme design.

Hygiene promotion staff should be required to keep simple records of their activities so that you can identify which areas have been covered and can determine whether any particular problems have arisen. These can be used to monitor progress.

Regular team meetings should be held in order to discuss progress and address any problems that may have arisen in the course of fieldwork. Encourage promotion staff to talk about any such problems and share their experiences with their fellow workers.

The need for follow-up

Do not assume that people will change their behaviour just because they have new theoretical knowledge. They may not relate new knowledge to their daily lives. This will be particularly true if they are constrained by lack of money or time from changing their routines and practices. There will be a need for follow up to determine whether people are changing their behaviour in the light of hygiene promotion messages. There are two aspects to this:

- Do people remember hygiene promotion messages?
- Do they respond to them by changing behaviour?

If your investigations show that people do not remember messages, there is a need to review the approach to sanitation promotion. If people do remember messages but have not changed their behaviour, you need to explore the reasons. It may be that there are barriers to changed behaviour that are not obvious to outsiders. Where this is the case, there is a need to consider what parallel action can be taken to remove those barriers.

TOOL 1.3 SANITATION PROMOTION

Establishing interest in improved sanitation

What this tool will tell you

The first part of the tool is concerned with the questions that need to be asked when planning for sanitation promotion, starting with the key question 'Why do we need to promote sanitation?'

It stresses the need for advocates for sanitation promotion and goes on to discuss the issue of responsibility for sanitation promotion and the arrangements for paying for sanitation promotion. The last is important because there can be no sanitation promotion if there are no funds to pay for it. Despite this, it is often overlooked.

The latter part of the tool briefly examines the questions what should be promoted and how should it be promoted? Finally, references are provided for further information on sanitation promotion.

Why do we need to promote sanitation?

Sanitation projects and programmes have often failed because the project/programme designers did not ask intended users whether they wanted the proposed sanitation improvements. If users do not have an interest in improved sanitation, in other words if there is no demand for improvements, the improvements are unlikely to be sustainable. In such circumstances, sanitation promotion is required to develop demand for improved sanitation

Even when people want improvements in their own sanitation facilities, they may not be aware of all the options that are open to them. They may also have little concern for the wider consequences of sanitation improvements. In such circumstances, sanitation promotion may be required to make people aware of the options that are open to them and the consequences of those choices.

The need for advocates for sanitation promotion

While the need for sanitation promotion is clear, it will not happen unless:

1. decision-makers are aware of its importance;
2. responsibility for sanitation promotion is clearly defined; and
3. funds are available to pay for it.

The first will only happen if an organisation or group is prepared to act as an advocate of sanitation promotion. In order to do this, they must be able to produce sound arguments for sanitation promotion in a way that convinces those who make decisions on sanitation programmes and their funding.

International agencies and NGOs often take the lead in calling for an increased emphasis on sanitation promotion. While their efforts are welcome, sanitation programmes will only be sustained if they have advocates within government. Bearing this point in mind, we now turn to the question of who should be responsible for sanitation promotion.

Who should be responsible for sanitation promotion?

It is possible for an organisation with responsibility for aspects of sanitation provision to promote improved sanitation. However, these organisations often have a strong technical focus and may not have either the desire or the capacity to promote improved sanitation. It may be better to identify an organisation that has experience of working in a more people-centred way. This does not negate the need for an organisation within government or with close links to government to take a pivotal role in advocating sanitation promotion.

A useful first step in deciding who should be responsible for sanitation promotion will be check whether any organisation is already working to promote improved sanitation and drainage. If so, it may be possible to involve them in your project or programme. Failing this, look for organisations that are concerned with general hygiene promotion. It may be possible for them to adapt or extend their approach to give more specific consideration to sanitation promotion. The other alternative will be to look for organisations that have experience of working with communities in a participatory way and provide them with appropriate training. These are likely to include NGOs but units of government, for instance municipality community development cells, might also be trained to promote sanitation.

If you are starting a sanitation promotion programme at the municipal or local level, you may well decide to train your own sanitation promotion staff. The notes that follow provide an introduction to what they will need to know but you should take specialist advice and engage an experienced trainer whenever possible.

Paying for sanitation promotion

Who should pay for sanitation promotion? One of the reasons why sanitation promotion is not more widespread is the failure to address this question. The options include the following.

- **External agencies.** (including multi-lateral and bi-lateral agencies and international NGOs). External resources can be useful for testing approaches and providing a demonstration of the benefits of sanitation promotion. However, they are not sustainable in the long term and will eventually have to be replaced by internal sources of funding.
- **Central or state/provincial government.** State funding must be guaranteed over a reasonably long period if there is to be continuity leading to sustainable systems and results.
- **The agency with responsibility for sanitation provision at the municipal level.** (This may be a state or provincial level agency). The agency does not have to carry out the sanitation promotion work itself but should ideally set aside some of its funds for sanitation promotion and user education.
- **A national NGO.** There are examples of NGOs using their own funds to support sanitation promotion efforts but the more common situation is that they rely on funding from government or some other source. (Often an international agency or NGO).
- **a Community Based Organisation (CBO).** CBOs may be able to develop capacity for sanitation promotion, for instance by training people from the community as hygiene and sanitation promoters. You need to think about whether these people are to be paid and if so at what rate. Can you raise the money from within the community or will you need to seek external funding.

What should be promoted ?

Clearly sanitation promotion must be concerned with the **product**, the facility or service that will be provided through a sanitation initiative. At its most basic, this is likely to be an improved form of sanitation, for instance an improved pit latrine or a pour-flush WC. Remember that the facility is only a means of providing a service and promotion needs to emphasise how the facility is to be used and make people aware of its potential benefits. Hygiene promotion messages can and should be included in the sanitation promotion process.

Promotion also needs to help people to see individual sanitation facilities in their overall context. For example, if pour-flush WCs are the preferred form of sanitation, what provision needs to be made for promoting improved methods of wastewater disposal? Indeed, it may be that people are already installing WCs and the real objective of promotion should be to ensure that they take an overall view of the environmental consequences of their actions.

Sanitation promotion should not offer only one sanitation option, to be used whatever the circumstances. Rather, **a range of options should be available**, suitable for use in different situations. Sanitation promoters and local people can then work together to identify the most suitable sanitation option for the local situation. Refer to Tools 2.1,3.1 and 3.2 for more details of sanitation options and how choices between them might be made.

The **price** of the different options will obviously affect people's choices and may mean that some options are not viable in any given situation. It is therefore necessary to provide potential users with information on the prices of different sanitation options. These should include both the likely capital costs and the ongoing operation and maintenance costs of feasible options. Users should be made aware that they will almost certainly have to pay the full operation and maintenance costs of the services they use, either directly or through user charges.

Finally, sanitation promotion efforts need to be concerned with the **way** in which people use sanitation facilities. It is not sufficient to make sure everyone has access to a latrine. It is also important to ensure that:

- everyone in the family, including children, uses the latrine;
- essential operation and maintenance tasks are carried out; and
- latrine use is accompanied by good hygiene behaviour, in particular washing hands after defecating.

With regard to the second, it is important to fully explain the operation and maintenance requirements of each sanitation technology at an early stage in the planning process. There are many examples of sanitation facilities that have failed because their intended users were unaware of the need for essential tasks. (Double pit latrines provide a good example of this. Many users are unaware of the need to use the pits alternately and to empty each pit once the other is almost full).

How should it be promoted?

Sanitation promotion works best if it allows people space to present their own views and discover the benefits of improved sanitation for themselves rather than telling people what is good for them. The remainder of this tool is intended to provide some examples of what this principle might mean in practice.

Establishing the need for improved sanitation

Sanitation promotion is likely to be more effective if at least some people in the community have already begun to think about the problems created by inadequate sanitation. It will therefore be good if you can mobilise community members to establish the facts about the existing situation. Which people have sanitation already? What drainage facilities are available? What arrangements are made for solid waste disposal?

While exploring the existing situation, local people should be encouraged to look at their existing knowledge and concerns in a more structured way.

In Faisalabad, Pakistan, the NGO Community Action Programme (CAP) used community-mapping to promote interest in education in communities that have previously had little interest in sending children to school. Local people were encouraged to produce a map of their community showing the location of all houses. A small version of this was then produced by a draftsman and people were asked to add symbols to this map to indicate the number of children attending school from each house. This could then be used as the basis for further discussion on the potential benefits of education and the potential barriers to greater school attendance. A similar approach could be used to develop awareness of present sanitation conditions and lead to discussion of the need for sanitation improvement.

While exploring the existing situation, local people will undoubtedly express opinions about what is good and what is bad about their current situation. The aim should now be to explore these opinions and ideas in a more systematic manner, making particular reference to sanitation and drainage. Some ways in which this might be done are briefly described below.

In one settlement in Faisalabad, Pakistan, small groups of project employees and local people were asked to walk round the area with a video and make a short video film describing the problems that they saw. The videos used by various groups were then used as the basis of group discussion of problems and possible responses to them.

The Orangi Pilot Project in Karachi uses slides rather than video. It shows people a number of slides illustrating the situations that can arise because of poor sanitation and drainage and encourages people to consider the reasons for problems and the actions that can be taken to overcome them.

The important point with all these approaches is not to tell people what the problems are but rather to help them to come to their own conclusions from the evidence that is available to them.

What options are open to people?

There is no point in increasing demand for improved sanitation if you cannot then provide people with ideas on how that demand might be met. Sanitation promotion should lead into consideration of the available sanitation options and how they might relate to the local situation.

Exchange visits, in which people are taken to see sanitation improvements successfully carried out by people like themselves, can be very effective.

In the Strategic Sanitation Project in Ouagadougou, Burkino Faso, implemented in the early 1990s, arrangements were made for people without adequate sanitation to visit households that had already installed on-plot facilities. These potential participants in the project were able to find out more about these facilities, including their cost, repayment schedules, operational requirements and their concerns about perceived problems such as lack of space and smells from the latrine. All of the 100 prospective participants in the project who were involved in these exchange visits subsequently went on to invest in the programme. When the sanitation method under consideration requires communal effort, it will be better if a group of people visit the community with the improved facilities. Where only a few people can take part in the visit, you should ensure that they have an opportunity to present what they have seen to the wider community when they return.

Videos and **slides** can also be used to introduce people to the possibilities for improved sanitation. These should be accompanied by a commentary and ideally by guidance on the key questions that people need to ask themselves in order to make decisions on what they should do in their own situation.

How can behavioural change be promoted?

Sanitation promotion should not just be about improved facilities. It must also cover the need for changes in behaviour required to ensure that better sanitation really does lead to health improvements

Methods based on 'popular' culture can be effective in promoting various aspects of sanitation improvement but can be particularly useful in promoting behavioural change. These methods might include short plays and sketches, songs and dance. For instance, a short play might be written and performed with the objective of showing that a person with diarrhoea can pass the disease on to other people if they do not wash their hands after defecation. Where possible, encourage local people to develop their own stories to illustrate specific points since these are more likely to convince people like themselves than stories developed by professionals. However, do not forget that you are likely to need some professional input into the process to ensure that the main promotion messages are transmitted.

Children can be effective promoters of behavioural change. They have energy and enthusiasm and are likely to be less bound than adults by traditional assumptions and long-held beliefs and less inhibited about 'mentioning the unmentionable'. Older children often care for younger children and can influence them to change their habits and beliefs. It will be well worth while to investigate the possibilities for using child to child methods for encouraging improved hygiene practices. If this is a possibility, seek out those in the health sector who are already using such methods and work with them to develop child to child methods specifically aimed at behavioural change for sanitation.

PART C - 2**TOOLS ON SANITATION TECHNOLOGIES
AND SEWAGE TREATMENT****Contents**

Tool 2.1	Summaries of Sanitation Technologies	C2 - 3
Tool 2.2	Sewage Treatment Options	C2 - 15

ABOUT THESE TOOLS

This section contains tools which provide the reader with guidance on available technologies for sanitation and sewage treatment

Tool 2.1 presents a system for categorising sanitation technologies and moves on to provide a one-page introduction to each possible technology. Each note in Tool 5 provides an introduction to the key features of a technology, discusses its advantages and disadvantages and provides examples of good practice. More detailed sources of information are referenced at the end of the note.

Tool 2.2 contains a brief introduction to sewage treatment processes and this leads into consideration of the options for local treatment.

TOOL 2.1 SANITATION TECHNOLOGIES

A system for categorising sanitation technologies

Sanitation systems may be divided into those that are 'wet' and those that are 'dry' - in other words those that use water to transport excreta and those that do not require water.

They can also be divided into the following categories, relating to whether wastes are retained locally or transported away.

- **On-plot** systems that retain liquid and solids on or near the plot. Most on-plot options deal only with excreta and separate arrangements may have to be made for the removal of sullage water.
- **Partially on-plot** systems that retain solids on or near the plot but remove waste water. They can be used either for WC wastes alone or for all waste flows.
- **Off-plot** systems that remove both excreta and sullage water from the vicinity of the plot for disposal elsewhere.

The table below shows how various sanitation technologies fit into these categories.

—————→ Increase in water supply

	DRY SYSTEMS	WET SYSTEMS
ON-PLOT	Various forms of pit latrine, composting latrines, dry box and dehydrating latrines,	WCs connected to leach pits and via septic tanks to soakaways
PARTIALLY ON-PLOT (Hybrid systems)		Cess pits and tanks WCs connected via septic tanks to drains and sewers.
OFF-PLOT	Bucket latrines and their variations. Generally considered unacceptable on health grounds)	WCs connected to sewers.

↑ Increase in population density

You will see from the table that all existing acceptable dry sanitation systems are on-plot.

One-page summaries of the various sanitation technologies are given in the pages that follow. They are grouped in accordance with the categories already given

DRY ON-PLOT SYSTEMS : 1) simple pit latrine 2) ventilated improved pit latrine (VIP) 3) twin-pit VIP 4) composting latrine 5) Dry box and dehydrating latrines

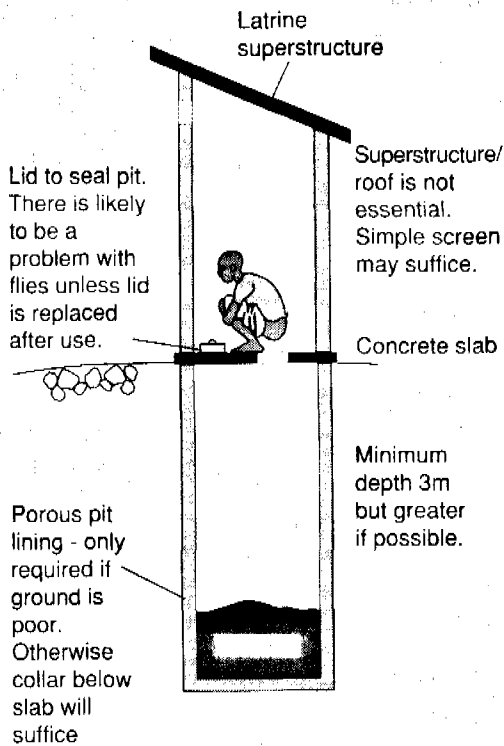
WET ON-PLOT SYSTEMS 1) Single leach pit disposal 2) Twin leach-pit disposal 3) Septic tank discharging to a soakaway or drainfield

HYBRID SYSTEMS : 1) Household septic tanks and leach pits used in association with open drains and 2) sewerred interceptor tank systems

WET OFF-PLOT SYSTEMS : Sewerage

DRY ON-PLOT SYSTEMS – THE SIMPLE PIT LATRINE

The simple pit latrine is the simplest form of dry on-plot sanitation. Its main components are :



The superstructure. All that is strictly required is an enclosure to ensure privacy . Most pit latrines include a roof and a door but these are not essential. Discuss the superstructure design with the intended users, taking particular account of the need to comply with local social norms and to minimise costs.

A pit cover slab with a hole for defecation
This will normally be a concrete slab covering the pit or a smaller slab (sanplat) that is supported by a cover made from locally obtainable materials (mud and wood). The important point is that it should be possible to clean the slab. The cover slab should be raised 150mm-300mm above the surrounding ground level to ensure that flood water does not enter the pit. A removable cover should be provided and placed over the defecation hole whenever the latrine is not in use in order to prevent flies and other insects from entering and leaving the pit.

The pit. The larger the horizontal dimensions, the greater the cost of covering the pit. Greater volume can be achieved without unduly increasing covering costs by making the pit longer than it is wide. A high water table or hard rock may limit the depth of the pit but the greater the depth achieved the longer the pit will last. In poor ground, the whole depth of the pit may have to be lined. The lining should be porous to let water escape. In many cases, it will only be necessary to provide a collar round the top of the pit.

When to use a simple pit latrine - When the amount of water available on-plot is less than about 25 litres per person per day and there are financial or cultural reasons why a ventilated improved pit latrine cannot be used.

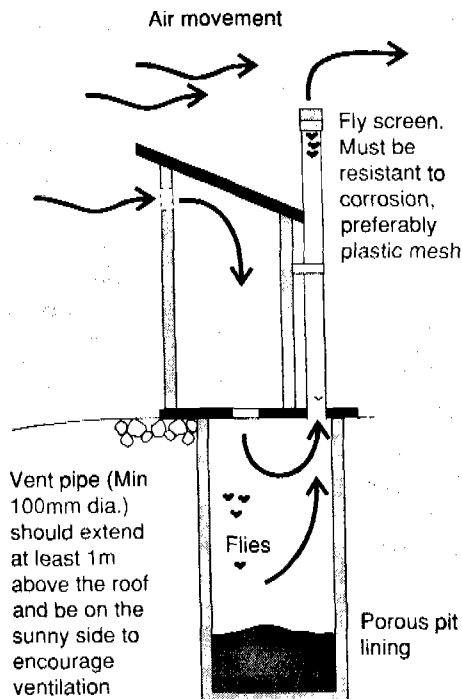
Advantages. The main advantage of the simple pit latrine is its low cost.

Disadvantages. Insects, particularly flies will create problems and a possible health hazard unless the removal cover over the hole is replaced after each use of the latrine. There may also be problems with smells.

Examples of good practice. A simple design of concrete cover slab has been developed and extensively used in Mozambique. The slab is very slightly domed to avoid the need for reinforcement and incorporates a tightly-fitting cover for the hole. Slabs are produced at local casting yards and sold to sanitation users at a subsidised price.

DRY ON-PLOT SYSTEMS – THE VENTILATED IMPROVED PIT LATRINE

The Ventilated Improved Pit Latrine or VIP is a development of the simple pit latrine, designed to eliminate fly problems and reduce bad smells. It does this by drawing flies and smells from the pit into a vent, where a screen traps the flies so that they eventually die.



The points made about the design of the slab and the pit for simple pit latrines also apply to VIPs. Other key points are as follows.

The **vent pipe** should extend well above the roof of the latrine superstructure as this will ensure a good draft of air up the pipe. (Ideally, it should be at least 150mm in diameter, painted black and located on the sunny side of the superstructure to increase convection). The **screen**, must be made of a material that is resistant to corrosion.

The **interior of the superstructure must be dark** so that flies are attracted to the light at the top of the vent pipe.

VIPs arguably represent a higher level of service than a simple pit latrine although improved designs of simple pit latrines have also been developed.

Access to the pit to remove the contents may be gained via removal slabs located outside the superstructure. Alternatively, a hole can be provided in the superstructure wall through which a tanker suction pipe can be introduced. This arrangement is more likely to be effective if the pit contents are wet.

When to use a VIP When the amount of water available is less than about 25 litres per person per day, it is possible to dig a fairly deep pit (at least 5 metres deep), people are prepared to use a latrine with a dark interior and non-corrosive material is available to make the fly screen at the top of the vent.

Advantages – Relatively low cost (but higher than simple pit latrine) and reduction in fly and smell problems when compared with most simple pit latrines.

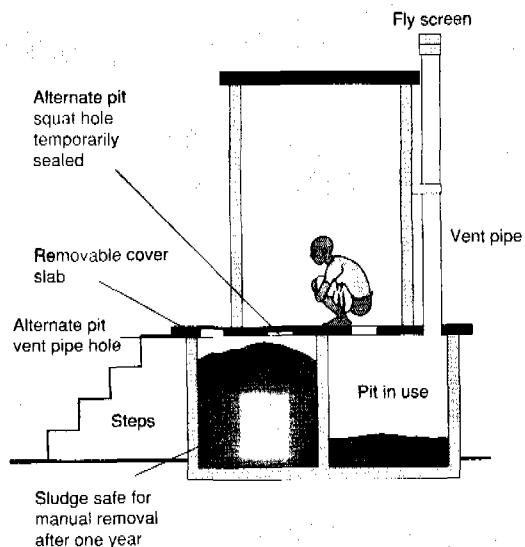
Disadvantages –Users may not appreciate the need for a dark interior and may modify the superstructure to provide more light, thus undermining the basic rationale behind the design. The design is very dependent on a durable fly screen and health and convenience benefits will be undermined if screen fails for any reason.

Examples of good practice The Blair Research Laboratory in Zimbabwe has developed a range of VIP designs suitable for different conditions. See reference to Peter Morgan text at end of note).

DRY ON-PLOT SYSTEMS – TWIN PIT VIPs

The design provides two pits or chambers with the intention that only one pit is used at any time. Once a pit is full, the contents are left to decompose while the other pit is being used. By the time the second pit is full, the contents of the first pit should have decomposed so that they are odourless and free of harmful organisms. They can then be removed without any danger to health.

The basic features of the twin-pit VIP are similar to those of the standard VIP, except of course that there are two pits, each with its own defecation hole, vent pipe and flyscreen. (The diagram shows the opening for the vent pipe for the pit that is not in use blocked off on the assumption that the vent pipe can be moved from one side to the other when required. In practice, it is more normal to provide two vent pipes).



The superstructure is shared between the two pits with the entrance to the pit that is not currently in use being covered by a slab or stopper.

It is not uncommon for the pits to be replaced by chambers located partly or wholly above ground level. Pits are normally designed to contain the excreta collected over a period of around 2 years.

The internal dimensions of each pit should be about 0.9 metres square by 0.9 metres deep.

Advantages : the design reduces the need to handle fresh faecal material and this has potential health benefits. It requires little water, which can be an important consideration where water resources are limited. Little depth is required so that the design is more suitable than conventional VIPs for areas with a high water table or very hard sub-surface rock.

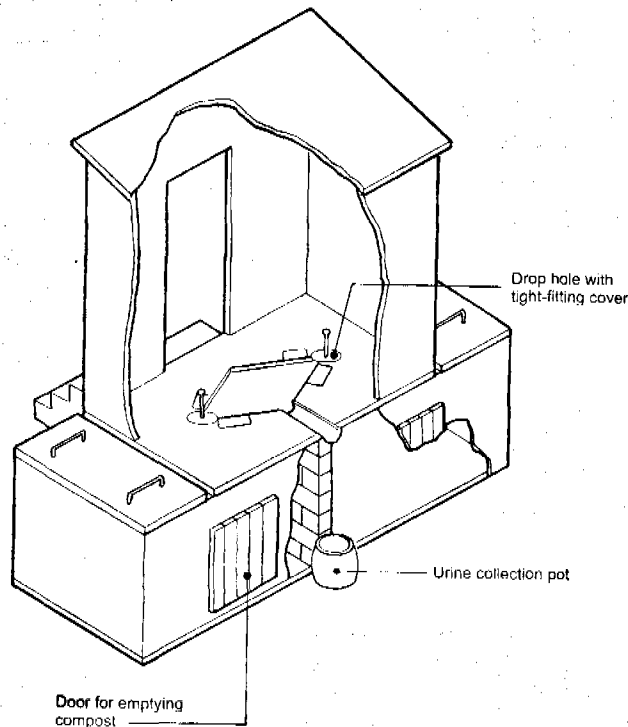
Disadvantages : The twin pit VIP is rather more expensive than the conventional single pit design. However, the biggest practical problems usually stem from difficulties in ensuring that the latrine is used as designed and in emptying the pits once they are full. When considering twin pit VIPs, make sure that potential users understand the technology, accept it and are prepared to use it as intended. Also, make sure that the arrangements for emptying pits are generally understood and agreed and, if possible, have been tested.

Examples of good practice

Twin pits were used in a World Bank-funded project in Botswana in the early 1980s. They appear to have been reasonable successful in the short term but the users wanted piped sewerage and it seems that many have now been replaced. This illustrates the point that users often perceive on-plot dry systems as inferior to other forms of sanitation, whether or not this is objectively the case. When introducing such systems, be sure to thoroughly explore their advantages and disadvantages with potential users.

DRY ON-PLOT SYSTEMS – COMPOSTING LATRINES

The theory of composting latrines is that the rate of decomposition of faecal material can be increased if it is combined with other waste materials, such as straw and vegetable waste so that the ration of carbon to nitrogen in the waste is optimised.



Most composting latrines used in developing countries use the same two chamber approach as that adopted for double pit VIPs. Some designs, for instance that for the Vietnamese double vault system, are designed to keep urine and faeces separate on the basis that this makes the process more efficient, speeds decomposition and minimises unpleasant smells.

Advantages : It is not uncommon for the latrine to be built entirely above ground level. As for the double pit VIP, this makes the design suitable for place with a high groundwater table or hard sub-surface rock.

Disadvantages : There are two obvious problems with the use of composting latrines in urban areas, first that suitable organic matter may be hard to find in densely populated urban areas and second that there may be no obvious use for the waste removed from the chambers. Another significant disadvantage is the fact that the design requires the users to add organic material regularly. Experience suggests that it will be very hard to guarantee that this is done.

Examples of good practice

The best known composting latrine design from a developing country is that used in Vietnam. This appears to have been used mainly in rural areas but it seems that its use is gradually reducing as people demand more 'modern' forms of sanitation.

On the whole, it does not seem that composting latrines will be suitable for use in urban areas. Only consider them if combined disposal of human and vegetable wastes is already practiced by local people.

DRY ON-PLOT SYSTEMS – DRY-BOX AND DEHYDRATING LATRINES

The Vietnamese double chamber composting latrine is one example of a wider category of 'dry' toilets that are designed on the assumption that faeces and urine should be kept separate. The same principle was used for the traditional 'long-drop' latrines used in multi-storey buildings in Sana'a and other Yemeni towns. (In Sana'a at least, most of these traditional latrines have now been replaced by more conventional sewered sanitation).

Advantages : some researchers argue that 'dry-box systems involving urine separation achieve more rapid breakdown of organic wastes than composting systems, at the same time achieving the rapid removal of harmful pathogens. Advocates of the systems claim that rapid pathogen destruction occurs and there is no smell or fly breeding at moisture contents below 20%. Some latrine designs use solar heating to encourage dehydration of the pit or chamber contents. Another claimed advantage of dry-box latrines is that they allow nutrients to be recycled and are thus more environmentally sustainable

Disadvantages : the obvious disadvantage of dry box and dehydrating latrine designs is that their operation will be adversely affected if users do not use them as intended. They would appear to be more sensitive to misuse and neglect than conventional pit latrines. It is important that users are fully involved in the decision to adopt dry-box latrines and understand how the latrines are to be used. This is, of course, something that should happen in any properly conducted strategic approach. More critically, there is a need for follow-up monitoring and support to ensure that the latrines are being used properly and this may be more difficult to guarantee.

In practice, there seem to be real barriers to the use of dry-box latrines in urban areas in developing countries, not least the fact that many users are likely to be resistant to their use. Consider them only in areas where either there is already a strong tradition of the re-use of human excreta and/or there is an obvious potential to use wastes in agriculture. Always ask yourself the question, what does this system offer in addition to that which is offered by a simpler pit latrine system.

Examples of good practice

The greatest advances in composting and dry-box latrine technology have taken place in Sweden. This is a developed country and many of the reported technologies would appear to be too expensive for general adoption in low-income urban areas in developing countries. There are reports of the successful use of dry box toilets in El Salvador, Ecuador and Mexico but further information is required on the performance of these systems.

WET ON-PLOT SYSTEMS – SINGLE LEACH PIT DESIGNS

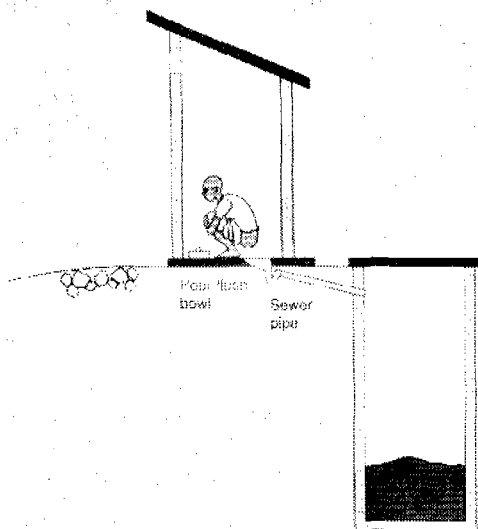
Leach pits hold faecal material in the same way as the pit of a pit latrine. The pit lining should provide openings so that the flush water can percolate into the ground. The pit may be located under the latrine superstructure, as in a standard pit latrine design. However, it is easier to arrange for emptying the contents of the pit if it is off-set. Leach pits are not normally designed to cater for sullage water. If they are, flooding problems can arise as water use increases.

The key components of a single pit leach-pit design are as follows.

The **superstructure** (See notes for pit latrines).

A **WC pan incorporating a water seal**. There are examples of pour-flush latrines that use a simple shute arrangement rather than a WC pan and water seal but the WC pan arrangement will **always** be worth the slight extra cost

The **connecting pipe** (for off-set designs). This should be 90mm or 100mm diameter and laid at a gradient of at least 1 in 20 (100mm in 2 metres).



The **pit**. This should have as much capacity as possible but the plan dimensions should not generally be greater than about 1.25 metres. A cylindrical pit will be the most economic arrangement in most circumstances and can be built with a single brick (112mm) wall. Small gaps should be left in between each brick in the lower brick or blockwork courses to allow water to leach away from the pit. The cover slab should be removable. It may be advantageous to leave a small hole in the cover slab through which a rod can be inserted to check the level of sludge in the pit. Once the pit is full, it must be desludged.

When to use single leach pits

when per-capita water use is at least 25 litres per day and typically in the range 30-50 litres per day. Equipment for emptying pits once they are full should be available.

Advantages : the main advantage of the single leach-pit design is that the latrines are simple and relatively inexpensive.

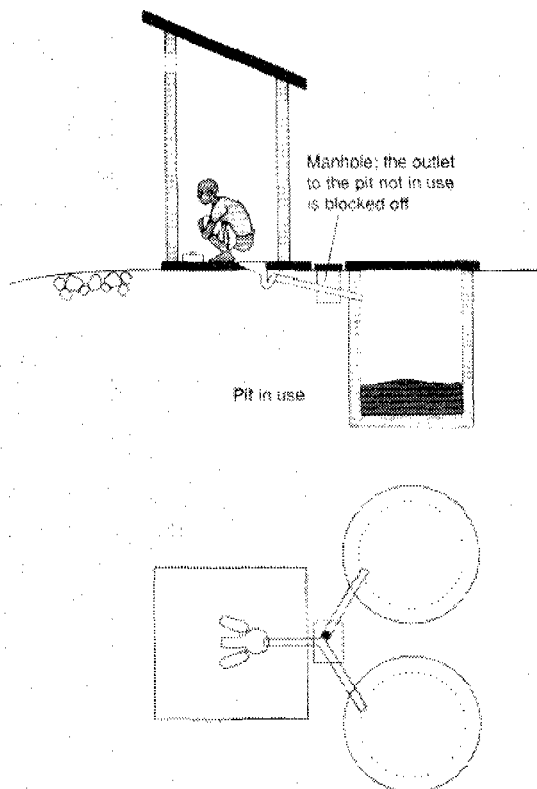
Disadvantages : the main disadvantage of the single pit design is that there is a danger to health if the pit has to be desludged by manual methods. Another potential disadvantage is that separate allowance will normally have to be made for sullage drainage as water use rises.

Examples of successful use

The Baldia project in Karachi used single leach pits. (See IRC Technical Paper 31, From Sanitation to Development, The case of the Baldia soakpit pilot project). The pits worked well initially but problems have been reported as water use increased and sewers have replaced at least some of them.

WET ON-PLOT SYSTEMS – DOUBLE PIT OR TWIN LEACH PITS

The principle of twin leach pits is the same as that of twin pit VIPs. The two pits are used alternately with the contents of each being removed only after they have been left to decompose, typically over a period of perhaps 2 years.



Key design features include the following :

- **WC pan and superstructure** as for standard single leach pit design
- **Connecting pipe**, incorporating small **flow-division chamber** with two outlet channels, one to each pit. The cover of the chamber should be removable so that the flow can be diverted into the 'working chamber'. The other channel can be blocked off with a simple mud 'dam' or a more sophisticated stopper.
- The **twin pits**. The design of these should be as for a standard single pit design except that they will normally be smaller. Allow about 2 years sludge storage, which for a family of six will require a pit around 0.8 metre in diameter by a little over 1 metre deep.
- The pits may be located on the plot or in the road immediately outside it. Where possible, ensure that they can be easily reached from the public right of way as this will reduce inconvenience during emptying operations.

When to use ? Use the twin pit design when water use is at least 25 litres per person per day. It can be used where there is no official tanker desludging service since the contents are safe to remove by hand.

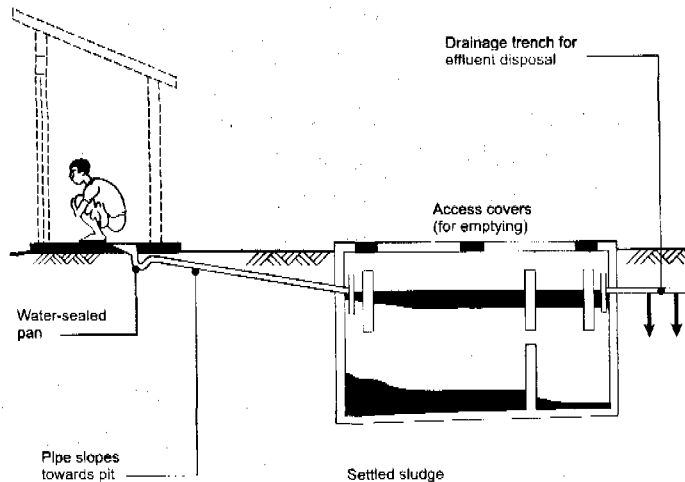
Advantages : Twin pit latrines are theoretically attractive because they eliminate the need to handle recently deposited faeces containing large numbers of pathogens (disease-causing organisms).

Disadvantages and problems : Twin pits only work well if the users know how they are meant to be used and are motivated to ensure that they are used as intended. In particular, people must be aware of the reasons why the pits should be used alternately and must be prepared to either empty pits themselves or pay to have them emptied.

Examples of good practice The twin pit design is extensively used by a number of agencies and programmes. UNICEF sanitation programmes in urban and peri-urban areas are based on the use of the twin-pit design and information should be sought from the nearest UNICEF office. Note, however, that some twin-pit programmes have failed because users were not sufficiently informed on how they were meant to be operated.

WET ON-PLOT SYSTEMS - SEPTIC TANK DISCHARGING TO A SOAKAWAY OR DRAINFIELD

Unlike leach-pits, septic tanks are designed to be water-tight. Solids settle in the tank and the liquid effluent from the tank is allowed to percolate into the ground from a soakaway or drainfield. The solids stored in the tank digest anaerobically over time, reducing in volume in the process. Conventional septic tank systems are designed to take both WC and sullage wastes.



The standard septic tank design is rectangular in shape with two compartments, as shown in the illustration. The intention is that most solids will settle out in the first chamber. The division into two chambers reduces the possibility of solids being carried through the septic tank as most settle out in the first chamber. Providing tees at the inlet and outlet from the tank further reduces the possibility of carry-through of solids.

The other key components of a septic tank system are as follows :

Septic tanks have to be sized to provide space for settlement of solids, for digesting solids and for storage of digested solids. Various formulae are available for calculating the size of septic tanks. In general, household septic tanks should be designed for 24 hours retention plus the volume required for sludge storage.

The **soakaway** or **drainfield** consists of a hole or trenches in the ground filled with stones or broken bricks. An open-jointed pipe should be provided in the bottom of each drainfield trench to ensure that wastewater is evenly distributed.

Advantages Because solids are removed in a separate sealed compartment, septic tanks should be hydraulically more efficient than leach pits. In other words, there should be less problems with ensuring that wastewater leaches away into the ground.

Disadvantages The biggest disadvantage of septic tank systems is their cost, which will normally be greater than that of an equivalent leach-pit design. A fair amount of space is required if the soakaway or drainfield is to deal with all household waste water.

In practice, few septic tanks in low-income areas in developing cities discharge to soakaways or drainfields. The more common practice is to discharge effluent to an open drain. (See next note).

HYBRID SYSTEMS – HOUSEHOLD SEPTIC TANKS AND LEACH PITS USED IN ASSOCIATION WITH OPEN DRAINS

(a) Septic tank discharging effluent to open drains

In many cities, people living in unsewered low and lower middle income settlements solve their immediate sanitation and waste disposal problems by installing a WC and connecting it to a household septic tank. The effluent from the septic tank is discharged to an open drain running along the side of the street. The septic tank may be located just inside the plot or outside the plot in the public street. The normal practice is for the septic tank to deal only with WC wastes with sullage wastes being discharged directly to the drain.

Most professionals condemn this system on the basis that it allows septic tank effluent containing a high concentration of dangerous pathogens to run in the street, where people may come into contact with it. While this system is better than the alternative of having no sanitation at all, there are better alternatives. These include:

- replacing the open drains with shallow small-bore sewers and
- installing leach pits, designed to deal only with WC wastes, rather than septic tanks and leaving open drains to deal with sullage water.

The first option is considered in the note on the next page while the second option is briefly examined below.

(b) Septic tank discharging to leach-pit with separate sullage disposal

This option has the advantage that the sullage water carried in the open drain has much lower pathogen levels than wastewater that includes discharges from WCs. The system can be used when water use is relatively high.

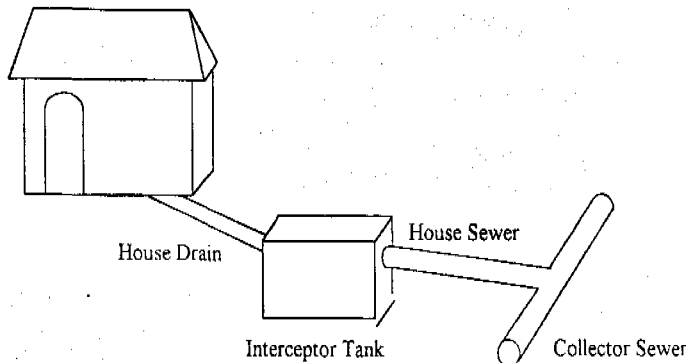
The advantage over conventional sewerage is that treatment requirements are much reduced because of the relatively low strength of sullage wastes.

The danger that the water leaching from the pits will contaminate the groundwater underneath the city needs to be considered. Micro-biological pollution contamination should not be a problem (except in gravel and fissured limestone) if there is a depth of at least 2 metres between the bottom of the leach pit and the highest ground water level. Chemical pollution of groundwater may occur where population densities are fairly high, but this arguably presents less danger to health than most alternative disposal options.

A variation on this approach would be to discharge WC wastes direct to a leach pit with sullage water discharged separately. This approach has been used in some DFID-funded urban upgrading schemes in Calcutta, India.

HYBRID SYSTEMS –SEWERED INTERCEPTOR TANK SYSTEMS

The defining feature of sewered interceptor tank systems (SITS) is that solids are retained in an interceptor tank on each house connection.



Existing interceptor tank to open drain systems can be upgraded to SITS at relatively small expense if the existing septic tanks can be retained and improved (see Figure 2.1)

Where falls are limited, it is possible that the use of SITS will allow discharge to an existing disposal point by gravity where conventional sewerage would require the inclusion of a pumping station.

This has three potential benefits:

- It allows flatter sewer gradients than those required for conventional sewers (Some systems have been laid with gradients as low as 1 in 500 as opposed to the 1 in 150 that is required at the head of a conventional sewer.
- Attenuation of flow in the interceptor tanks reduces peak flows and allows the use of smaller sewer diameters, particularly near the head of the system. (SITS have been installed with sewer diameters as small as 50mm, compared with a minimum diameter of 100mm for conventional sewers.
- The possibility of blockages in the sewers is reduced because gross solids are removed in the interceptor tanks.

The last benefit will only be realised if solids are prevented from entering sewers directly through manholes and chambers. It is possible to reduce the number of manholes and chambers since the removal of solids in the interceptor tanks reduces the danger of blockages. This will reduce both the cost and the danger that solids will enter the sewer after the interceptor tanks.

Disadvantages SITS remove wastewater from the plot but the need for disposal remains. In most cases, this will involve some form of treatment. Theoretically, the interceptor tanks will remove floating solids and grit and reduce the strength of the sewage by at least 30% and probably more in hot climates but this will rarely be enough to remove the need for treatment.

The other potential disadvantage of SITS is that the interceptor tanks will have to be desludged from time to time. Normally, hygienic desludging will be dependent on the use of appropriate equipment, ideally some form of tanker incorporating a suction pump. There are few places at present where such equipment is available.

WET OFF-PLOT SYSTEMS - SEWERAGE

The high cost of 'conventional' sewerage is likely to make it unaffordable to low-income people and thus inappropriate for use in the areas where they live. In practice, many people living in low-income areas do use simple forms of sewerage to deal with their liquid wastes. The cost of these is often comparable with that of other sanitation systems. For instance, tertiary sewers and house connections have been built in Pakistan and Indonesia for less than the equivalent of US\$40 per household.

When to use Consider sewerage when water use is greater than at least 60 litres per person per day and housing densities make it difficult to dispose of waste water on or near plots. (Typically at population densities greater than about 200 people per hectare). If possible, sewerage should be avoided where limited ground slopes mean that pumping is necessary. There are two reasons for this. Pumps use energy, which can be expensive and they require maintenance, which may be difficult to arrange. If pumping is unavoidable, make sure that available financial and management arrangements can deal with it.

Advantages Sewerage is an attractive option for users because it removes problems from their doorsteps, at least as long as it is operating satisfactorily. It deals with both faecal wastes and sullage water and can also be used to deal with storm water.

Disadvantages Sewerage does not solve waste disposal problems. It only moves them to another place, further removed from the households that created them. There will usually be a need for treatment to prevent deterioration of the environment. Experience suggests that sewers in low-income areas often require high levels of maintenance. There are several reasons for this, not least the use of sewers as receptacles for solid waste in areas where solid waste collection is deficient or non-existent.

Key design features (intended to reduce costs and improve operation)

1. Limit the sewer depth where possible. To make this possible, route sewers through gardens and yards, beneath sidewalks and/or in narrow lanes, thus avoiding heavy traffic.
2. For shallow sewers, use small inspection chambers rather than large manholes. The purpose of manholes and chambers is to gain access to the sewer and this can be done from ground level if the sewer depth is less than about 1.25 metres). Provide benching up to the crown level of the pipe in manholes and chambers
3. Use appropriate locally-available materials. Spun concrete pipes can be appropriate in some circumstances but may suffer corrosion if slow-moving sewage results in the production of hydrogen sulphide.
4. Pay particular attention to the design of manhole covers and make sure that covers can be replaced if they break. A lot of rubbish can enter sewers through broken manhole covers.

Seek advice when contemplating the use of sewers. Look at what others have done but look for the weaknesses as well as the advantages of their schemes.

TOOL 2.2 SEWAGE TREATMENT OPTIONS

Introduction to sewage treatment

In Section 2 of the guide, we saw that there is scope for local management of decentralised systems. Indeed, lack of capacity in existing municipal services may mean that a decentralised approach is the only viable option for some areas, particularly recently developed areas on the urban fringe.

Where decentralised schemes are based on the use of sewerage, sewage must be treated if environmental damage is to be avoided. This note provides an introduction to the options for sewage treatment, with particular reference to their suitability for use at the local level. It first asks the two questions 'why treat sewage?' and 'why localised treatment?'

This tool stresses the point that local treatment options will normally have to be simple to operate and maintain and this excludes some of the more technically sophisticated treatment methods. The factors that will influence choice are introduced and some simple rules for choosing a suitable treatment technology are given.

Why treat sewage?

Sewers transport wastes, they do not eliminate them. There are two potential dangers if sewage is not treated in some way before it is discharged to the environment.

1. The organic material in the sewage will cause harm to the environment.
2. The pathogens (health-threatening organisms) in the sewage will infect people who come into contact with the sewage.

Most 'conventional' sewage treatment systems are concerned with the first. They are intended to ensure that wastes do not deplete oxygen levels in natural water courses and/or cause unpleasant sights and smells. The box on the next page provides more detail on the reasons why untreated wastes can cause environmental problems.

Where people drink untreated or unreliably treated surface water, wastewater treatment processes should ideally aim to minimise pathogen levels in the treated sewage so as to reduce the danger to public health. However, note that it is very difficult to completely remove pathogens from surface water sources. This means that good water treatment is generally more effective than wastewater treatment in protecting health.

When sewage is treated, it may emerge as a resource. For instance, digested sewage sludge may be used as a soil conditioner while treated waste water may be used to treat certain crops. This may provide a financial incentive for sewage treatment although the revenue will rarely cover the full cost of treatment. It may be worthwhile to allow treatment plant operators to retain any money raised by selling treated waste products. This will provide them with an incentive to operate their plant properly.

Why do untreated wastes cause environmental problems

The decomposition of organic materials, including faecal solids results from the activity of bacteria that feed on the waste and in the process break it down into something less potentially harmful. Some bacteria are **aerobic** – in other words they draw oxygen from the air, which may be dissolved in water. Others are **anaerobic** – in other words they can work in the absence of air. Where wastes are reasonably dispersed, aerobic processes dominate and waste decomposition has no significant impact upon the environment. When large quantities of waste collect in one place, the demand for oxygen increases. When untreated wastes are discharged to a water course, the demand for oxygen eventually exceeds that which can be supplied by the air which is dissolved in the receiving water. This leads to a fall in the level of dissolved oxygen in the receiving water. The first visible impact of such a fall will be that fish start to die. As oxygen levels fall further, all aquatic life will eventually be killed. Anaerobic bacteria take over the decomposition process once all the dissolved oxygen has been used up. They reduce sulphates to sulphides and thus causing bad smells. If the water in a stream or drain is black with gas bubbles breaking the surface and there is a smell of rotten eggs, you can be sure that anaerobic processes are at work, either in the water itself or in the mud that lies below it.

Why local treatment?

In western industrialised countries, sewage disposal systems are becoming more centralised. Local treatment works are abandoned and new sewers are laid to connect the systems to a central treatment works. The driving force for this process is usually a desire to reduce operating costs. In western countries, labour is expensive, decentralised sewage treatment systems require more labour than centralised ones and so cost savings can be achieved by centralising treatment. Centralisation can also lead to some reductions in capital cost but this is not normally the prime reason for abandoning local treatment facilities in western countries.

Many engineers assume that the same process is valid in less developed countries. This is not necessarily the case for one very simple economic reason. In less developed countries, labour is usually relatively cheap and so the operating costs of local treatment systems are likely to be correspondingly low.

Bearing this point in mind, why and where should decentralised treatment be used in less developed countries? Possible answers to these questions are suggested below.

- Decentralised treatment may **reduce overall costs** by removing the need for trunk and collector sewers. The reduced cost of sewerage should be compared with a possible increase in the cost of treatment facilities as a result of decentralisation. However, economies of scale will not normally be important for the relatively simple treatment systems that are likely to be most appropriate for local systems.
- Decentralised treatment may **allow the use of sewerage in peri-urban areas** where there is no prospect of connection to a centralised system. (Many local sewered systems have no provision for treatment but this violates the basic strategic objective of environmental sustainability).

Decentralised treatment will be particularly appropriate where effluent is to be used for irrigation. **Why is this?** When sewage effluent is discharged to a watercourse, sewage treatment facilities have to be close to the watercourse, which must have sufficient flow to dilute the effluent. In practice, this normally means that sewage treatment is located downstream of a town or city, close to a stream or river. Even if treatment is decentralised, it may be necessary to carry the effluent to a point where it can be discharged to a watercourse. The situation is different when effluent is used for irrigation. The effluent can be used in a number of local irrigation schemes and so there is no reason to centralise treatment facilities.

How do wastewater treatment processes work?

Almost all wastewater treatment processes are based on processes that occur in the natural environment. Some of these are physical and some are biological in nature. **Physical processes** include screening, which removes rags and other large articles, and sedimentation, which removes settleable solids

Biological processes fall into two broad categories:

- **Aerobic processes** that use bacteria and other organisms that feed on waste products and break them down, taking oxygen from their surroundings in order to do so; and
- **Anaerobic processes** that use bacteria that take the oxygen they require from the materials upon which they are feeding.

Natural aerobic decomposition processes take place relatively slowly and require a large amount of land. Aerobic sewage treatment processes overcome this drawback in two ways.

1. By increasing the area of contact between wastewater and the air so as to increase the opportunity for take-up of oxygen from the air. This is the principle behind bacteria beds (commonly referred to as trickling filters or percolating filters). Water is allowed to trickle through a bed of stones (or some other suitable medium) so that it spreads as a fine film and is in contact both with air and the oxidising organisms.
2. By using mechanical methods to introduce additional air and hence oxygen. Air may be blown through the effluent or introduced by mechanical agitators. Activated sludge plants, oxidation ditches and aerated lagoons all rely on the introduction of air by mechanical means.

Aerobic processes produce sludge, comprising broken down products and waste bacteria, which must be removed, usually by sedimentation.

Mechanical methods require an energy source. They are unlikely to function properly if the energy source is unreliable (as is the case when the electricity supply is intermittent). They can also be expensive to run since energy is rarely a free commodity.

These disadvantages have led to increased interest in anaerobic treatment processes in recent years. The simplest aerobic processes are septic tanks and anaerobic waste stabilisation ponds, both of which hold wastewater and allow it to digest anaerobically. More complex processes include upward flow sludge blankets (UASBs) and upward flow anaerobic filters. Anaerobic processes require little or no energy and they produce relatively little sludge. The bacteria on which they rely perform well at the high temperatures found in most less developed countries. They are thus cheaper and simpler to run than aerobic processes. Their main disadvantage is that most require a follow-on stage if they are to produce the same quality of effluent as a conventional aerobic treatment process.

How conventional treatment combines physical and biological processes

Conventional sewage treatment options incorporate some or all of the following processes:

Preliminary treatment including screening and grit removal. Flow balancing is sometimes provided. Preliminary treatment is required for most sewage treatment processes but grit removal is not essential before facultative waste stabilisation ponds.

Screens should provide clear openings in the range 40-50 mm. They have to be raked regularly to prevent the build up of material behind them. This may be done mechanically but mechanical raking will rarely be appropriate for small works in less developed countries.

The design of manually raked screens should take account of the equipment to be used and they should make the job of raking as easy as possible. Remember that sewage works operatives are likely to neglect jobs that are difficult and dirty. Good design provides incentives for jobs to be done properly.

Primary treatment involves the physical settlement of solids in sedimentation tanks. It is required for many sewage treatment processes but not for oxidation ditches, aerated lagoons, UASBs and waste stabilisation pond systems.

Sedimentation tanks allow solids to settle and let clarified water escape over weirs around the top of the tanks. Small tanks can be designed with steep sides so that sludge falls by gravity to the centre of the tank. Larger tanks incorporate mechanical scrapers to move sludge to the central point at which it is removed from the tank. Scum boards are provided around the periphery of each tank to prevent floating solids escaping over the outlet weirs. Sludge is usually removed through a pipe under hydrostatic pressure. This is a very simple process, requiring no moving equipment other than a valve. The most likely cause of failure in mechanically scraped sedimentation tanks is lack of maintenance of the scraping mechanism.

Properly operated sedimentation tanks can remove 50 - 80% of settleable solids and 30 - 50% of BOD.

Septic tanks and anaerobic waste stabilisation ponds can also be considered as forms of primary treatment although their longer retention time means that they provide additional digestion of sewage solids. In hot climates, this means that they can remove over 50% of the total BOD.

Secondary treatment is the main biological stage of conventional treatment processes such as trickling filters and activated sludge treatment. Oxidation ditches, aerated lagoons and facultative waste stabilisation ponds combine settlement of solids with biological treatment and could thus be considered as combined primary and secondary systems.

Trickling filters and activated sludge systems produce sludge that has to be removed before the effluent can be discharged to a river. This is normally done using tanks, similar in design to those used for primary settlement. The sludge from these tanks may be returned to the head of the works and settled in the primary tank. In activated sludge systems and oxidation ditch systems, the continuation of the biological process requires that some of the sludge is returned to the aeration tank. The operator requires knowledge and experience to know how much sludge to return in this way.

The requirements for a local treatment system

The ideal technology for decentralised treatment is one that:

- has a limited land requirement;
- does not have a high power requirement;
- is relatively simple to operate;
- does not degrade the local environment through unpleasant smells;
- produces an acceptable quality of the effluent.

In practice, no treatment technology fulfills all these requirements and planners have to decide which requirements and constraints are most important for each particular situation. The table below summarises the performance of common treatment options in respect of the various requirements.

Comparison of sewage treatment options

	Land requirements	Power requirement	Operational skills required	Effect on local environment	Quality of effluent
Activated sludge	Low	High	High	Limited	BOD good Pathogens poor
Bacteria beds (Trickle filters)	Fairly low	Low if fall available	Fairly high	Limited	BOD good Pathogens poor
Rotating biological Contactors	Fairly Low	Fairly low	Fairly low	Limited	BOD good Pathogens poor
Waste stabilisation ponds	High	Low	Low	Some smell with anaerobic ponds	BOD fair Pathogens good
Reed beds	High	Low	Fairly low	Possible insect problems	BOD fair Pathogens good
Septic tanks	Low	Low	Low	Low	BOD medium Pathogens poor
Upflow anaerobic Sludge Blanket (UASB) reactors	Low	Low	Medium	Low if well maintained	BOD medium Pathogens poor

Choice of treatment system

The process of choosing between different sewage treatment options will be simplified if you ask the following questions in sequence.

1. **Will the effluent be used for agriculture or discharged to a water-course?** The answer will influence both the location of treatment and the degree of treatment required..
2. **What land is available at the proposed treatment locations?** In particular, is sufficient land available at an affordable price to allow simple systems such as facultative ponds and reed beds to be used?
3. **Is power available and if so, what prospect is there of meeting the power costs of different treatment options ?**

The table below provides a summary of the ways in which the answers to these questions are likely to affect choices sewage treatment in situations in which water is available on-plot and it is not possible to dispose of all waste water on-plot.

Is fall available?	Is space available locally?	Is power available	Preferred option / issues to be explored
No	No	No	On-plot sanitation with separate sullage disposal where necessary.
Yes	No	No	Explore availability of space further afield. This will probably require increased 'bundling' of local systems.
No	Yes	No	If limited fall is available, sewer interceptor tank systems leading to local treatment facilities may be possible.
No	No	Yes	Explore possibility of larger system, incorporating pumping.
Yes	Yes	No	Local aerobic treatment (ponds, reed beds, bacteria beds where fall allows).
No	Yes	Yes	Sewage pumped to local treatment.
Yes	No	Yes	Explore larger system with centralised treatment.
Yes	Yes	Yes	Compare economics of more and less localised systems.

There are reported cases of the use of systems such as UASBs and other 'intermediate' sewage treatment technologies for small-scale sewage treatment. However, there are some indications that these systems have worked less well than intended. Do not consider introducing a technology that has not been previously used in your area without testing its use on a pilot scale first.

Avoid the use of sophisticated technologies such as extended aeration and activated sludge treatment for local treatment, particularly where power is unreliable and/or expensive.

Treatment systems can easily become overloaded, particularly where finance is in limited supply and wastewater flows are growing rapidly. You may be able to allow for growth by setting aside land for future treatment facilities or by providing for systems to be upgraded over time. For instance, anaerobic waste stabilisation ponds might be upgraded to aerated lagoons, but this will require careful design and, as already indicated, there are potential problems with the use of sophisticated technologies.

If you are contemplating anything other than the simplest treatment technology, you will be advised to seek advice from a specialist in the design of sewage treatment facilities.

PART C - 3**TOOLS FOR SANITATION CHOICE****Contents**

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ABOUT THIS TOOL

This section will help guide you towards choosing the best form of sanitation for any given situation. The Tools contained in this section are linked together, and together will guide you through the process of choice.

Tool 3.1 examines approaches to sanitation choice. It points out that choice will be influenced by the existing situation and your reasons for wanting improved sanitation. After briefly examining some flaws in common approaches to sanitation choice, it puts forward a model that emphasises the need to base choices on sound information obtained through dialogue between the different stakeholders.

Tool 3.2 explains how to order sanitation choices. Its purpose is to help you to concentrate on appropriate sanitation technologies by eliminating those that do not suit your situation.

Tool 3.3 provides guidance on costing the remaining options. It stresses the need to consider both capital and recurrent costs. Information on estimating unit costs for on-plot facilities is given and an approach to estimating the costs of network systems is suggested. The recurrent costs to be considered in relation to on-plot technologies, sewers and interceptor tank systems are listed.

Tool 3.4 is concerned with options for estimating willingness to pay for improved sanitation services. It introduces a range of methods, identifies their strengths and weaknesses and suggests when and where they might be used.

TOOL 3.1 APPROACH TO SANITATION CHOICE

What this Tool will tell you

This Tool sets out the approach that provides the framework for the remainder of Tool 2. It stresses that choices must start from an assessment of the existing situation, take different people's objectives into account and to make use of shared knowledge.

Introduction – Key principles

Processes of sanitation choice should be designed to ensure that sanitation services are:

- affordable;
- acceptable to users; and
- appropriate to the situation.

You should bear these principles in mind at all times. The remainder of this note and the following notes will provide information on what these principles mean in practice.

Sanitation choices are not made in a vacuum

This is a key point. In almost every situation, **sanitation choice will be influenced by existing resources, facilities and attitudes**. Remember that:

- sanitation services will fail if the capacity to manage them does not exist;
- existing facilities represent 'sunk costs' that do not have to be taken into account when considering the relative costs of alternative courses of action; and
- sanitation facilities must be acceptable to their intended users.

The starting point for sanitation choice must therefore be good information about existing facilities, institutions, practices and social attitudes. In addition to considering how a given sanitation technology can solve perceived sanitation problems, you should also ask how a technology might fail. This question provides a framework for considering all the factors, social, financial, political, institutional and technical, that might affect the success or otherwise of a particular technology in a particular situation.

Objectives influence sanitation choice

As already noted in Section 1 of the guide, a person's choice of sanitation will depend on his or her objectives. Residents of low-income areas will usually be concerned primarily with the greater convenience that they experience because of improved sanitation and its impact upon their local environment. If they have been involved in sanitation promotion and hygiene education programmes, they may also be concerned with the impact of sanitation on their health. Municipal managers and the professionals who advise them should share these concerns but are also likely to have wider environmental concerns. The fact that different people may have different concerns and objectives should be taken into account when considering the options for improving sanitation services.

Costs affect sanitation choice

Given a choice, people will generally choose the option that provides them with what they want at the lowest available price. The better the available information on feasible sanitation options and their costs, the easier it will be for people to make a choice between them.

Remember that existing facilities represent 'sunk' costs. It may be, for instance, that every house has a septic tank from which wastewater is overflowing or being discharged into some sort of drain. It would be possible to fill in these septic tanks and replace the whole system with conventional sewers. Another option would be to connect all these septic tanks to small-bore sewers to create a sewered interceptor tank system. When comparing the options, the cost of providing the septic tanks does not need to be taken into account because they are already there. The cost of periodically emptying the tanks, on the other hand, must be included in the financial comparison.

Three common but flawed approaches to sanitation selection

The professional knows best. Professionals often assume that they know best and should therefore make choices on behalf of potential sanitation users. This approach does not take into account the local knowledge of intended users and risks giving people what they do not want.

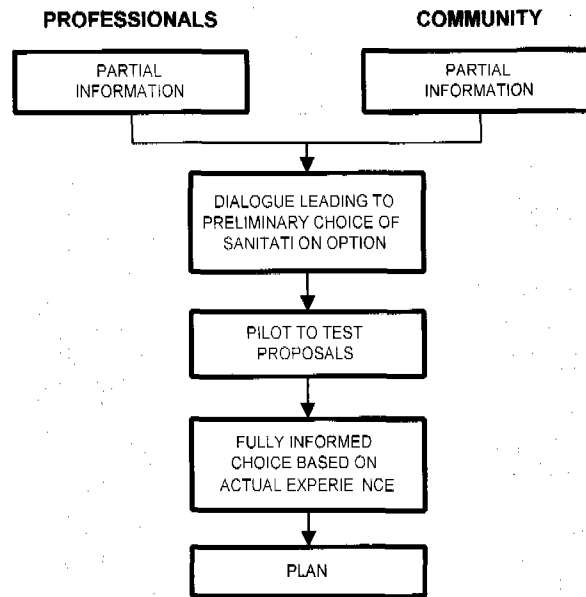
The market analogy approach. The approach assumes that sanitation is a commodity that should be sold like any other commodity, for instance a car. People should therefore be offered a range of sanitation options from which they can choose. This approach has three basic weaknesses.

1. It is confused about the nature of the choice to be made. When you choose a consumer item such as a car, you choose between different models, all of which have the same essential features (four wheels, an engine etc.) and fulfil the same function in an essentially similar way. In contrast, sanitation users are choosing between technologies that aim to achieve the same basic objective (to remove faecal material from the living environment) but in different ways and perhaps with different secondary consequences.
2. It assumes that individual sanitation users can act independently of one another with each achieving the optimum result for himself or herself. In practice, this is rarely the case and people need to act together if the best results are to be achieved.
3. It ignores the fact that different stakeholders may have different objectives. There is a real danger that the choices of community members will relate to their immediate needs and ignore the wider environmental implications of their sanitation choices.

The user knows best. This approach assumes that sanitation-related choices should be based solely on user preferences and that the role of professionals is to facilitate those choices. It underestimates the value of 'professional' knowledge. Like the market analogy approach, it assumes that all stakeholders have the same priorities and will act as a coherent group at the local level. These weaknesses mean that the approach encourages local ad-hoc activity at the expense of overall planning.

Shared decision-making – a better approach to sanitation selection

The best choices are likely to be those that take into account the knowledge, concerns and priorities of both professionals and users. When all factors are taken into consideration, there will generally be a best sanitation option in any given situation. The challenge is for users and professionals work together and pool their knowledge so as choose this best option. An illustration of the process of shared choice is given on the right.



SHARED APPROACH TO SANITATION CHOICE

The process outlined in the diagram above draws on the information and knowledge available with both professionals and community members. Either side may start the process but professionals are likely to take the lead in promoting and guiding it. These professionals may work for government but they may equally well come from the private or NGO sector. If you are one of those professionals, beware of dominating the discussion so that the role of users becomes marginalised. Remember that sound decisions are based on good information, including that available in the community.

Using pilots to test choices

Pilot projects provide a useful means of testing ideas on a relatively small scale before introducing them more widely. Choose a pilot that is representative of general conditions within the proposed project or programme area but ensure that it is as self-contained as possible. Make sure that stakeholders from both the professional and the community sides help to choose the pilot and are committed to acting upon the lessons learnt from it. Also, make sure that the lessons from the pilot are accurately recorded

Links with other Tools

Tool 1 provides information on categories of sanitation technology. Tool 4.4 in Tool 4 provides further guidance on the use of participatory methods to develop and analyse information.

TOOL 3.2 ORDERING SANITATION CHOICES

What this Tool will tell you

This Tool will guide you through the process of selecting a suitable sanitation option for a particular situation. It recognises that careful study of the existing situation enables the range of sanitation options to be narrowed so that the final choice will normally be made between two or three options at the most. The Tool can be used as a guide for individuals considering questions of sanitation choice. It can also be used to provide a framework for participatory workshops convened to consider options for improving sanitation in a neighbourhood, district or municipality.

The three basic choices

When choosing a sanitation option, you need to choose between:

- **household, shared and communal** facilities, in other words those intended for a single household, those shared by several clearly defined households and those that are open to use by anyone in the community.
- **'wet' and 'dry'** sanitation systems, in other words those that require water for their operation and those that do not; and
- **on-plot and off-plot** disposal, in other words systems that retain wastes on plot and those that remove it from the plot.

By considering these choices in turn, you will simplify your task by eliminating clearly unsuitable options. The three basic choices are examined in the pages that follow.

Step 1 – Choose between household, shared and communal facilities

In general, household facilities provide the best option in terms of convenience and impact upon health. However, the following factors may prevent their use.

- **Lack of space** – very small plots may not have room for a latrine. However, latrines have been provided on World Bank-funded schemes in Mumbai on plots with areas as small as 22 m². In other Indian cities, on-plot sanitation has been reported on plots as small as 14 m². (Information taken from Cotton and Saywell, 1998).
- **Lack of funds** - The cost of household level facilities may be beyond the resources of either users or government providers. It can be argued that the increased convenience and health benefits associated with household-level facilities justify some degree of price subsidy where users would otherwise not be able to afford them.
- **Vulnerability of residents** – There could be situations in which improvements in facilities lead to increased demand for housing and a tendency for existing occupiers to be squeezed out by a process of 'gentrification'. This possibility should always be considered if some residents are tenants. It will be reinforced if increased charges for improved facilities are found to be beyond the means of existing low-income residents.

Shared facilities can be used where there is insufficient space on-plot for individual household latrines but where it is possible to identify places close to plots where groups of toilets can be built. Access to these toilets can be controlled either by locating toilets in 'semi-private' space, which is only accessible to the intended users, or by providing intended users with keys.



Shared toilets in a 'refugee' settlement on the outskirts of Calcutta. Each toilet is allocated to several families each of which is given a key to their cubicle

Communal facilities, i.e. those open to anyone, should be avoided whenever possible. It is sometimes assumed that they offer the only affordable option for low-income people and some sanitation programmes still start from this assumption. In practice, communal facilities are unlikely to be cheaper than the other options for the following reasons:

1. They are often poorly maintained and at worst can become so unpleasant that people stop using them. This can make them very expensive in relation to their useful life.
2. Where a user charge is made to cover maintenance costs, this is often set at a level which means that the overall cost to users is greater than the cost of household or shared facilities.

Where they are used in public places such as markets, they should be viewed as a supplement to good sanitation in or close to the home and careful consideration should be given to the way in which they are to be managed.

Communal facilities may be the only option in some situations, for instance where people's tenure is not secure or where a settlement has grown so dense that there is no room for any other options. In such circumstances, careful attention should be paid to the way in which the facilities are managed. The Indian NGO SPARC has found this to be the case in 'slum' settlements in Mumbai and Pune.

Step 2 - Choose between wet and dry systems

As already noted in Tool 1, sanitation facilities can be broadly divided into **wet systems**, those that use water and **dry systems**, those that do not require water. As a first step to choosing between 'wet' and 'dry' systems, the following questions should be asked:

1. Is water available on or close to the plot?
2. Do people use water for anal cleansing?

A broad guide to the ways in which sanitation choice is affected by the answers these questions is given below.

Water available	Water used for anal cleansing	Implications for sanitation choice
Y	Y	Choose wet system. (Disposal of sullage and WC water may be separate).
Y	N	Two possibilities: 1. Wet system 2. Dry sanitation system with separate sullage disposal
N	Y	Priority may be to improve water supply to level that will support an on-plot wet system.
N	N	Dry system with separate disposal of WC water.

In some cases, there will be clear reasons for choosing a wet or dry system. In others, the best option may be less obvious. An example is suggested in the table above - where water is available for some form of pour-flush disposal system but there is no tradition of using water for anal cleansing. Another example is the situation in which water availability is only just sufficient to support a wet system. Try to clarify choices by obtaining information on costs, user preferences and the potential effect of the various options on the environment. Some general points with regard to these factors are listed below:

- Dry systems may offer some initial cost saving over wet systems because they do not require a WC pan and the associated pipework.
- Dry systems offer a potential operating advantage in that they do not mix human excreta with water, thus limiting the disposal problem to that of managing a relatively small volume of urine and faeces. In practice, this will only be a factor in the few locations where ground permeability is so low as to preclude the use of pour-flush WCs connected to leach pits.
- A more significant advantage of dry systems is that by separating faeces from 'greywater' produced in food preparation and washing, they allow the use of relatively simple treatment methods to deal with the latter.
- Separate sullage disposal can also be used with on-plot wet excreta disposal.

Step 3 – Choose between on-plot and off-plot disposal

Dry systems

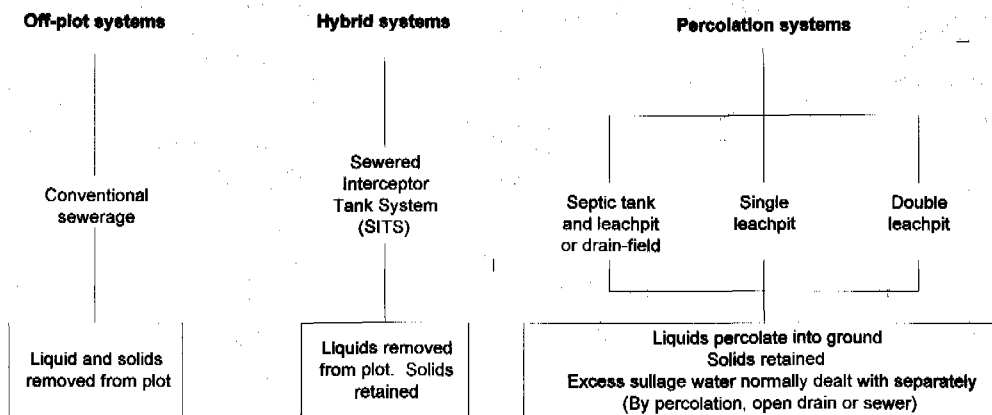
All acceptably 'hygienic' dry systems retain faecal material on-plot. This means that for all practical purposes, the choice of a dry sanitation system commits you to adopting on-plot disposal. (The one possible exception to this would be the use of an improved containerised system as described in the section on sanitation technologies but such a system has never been tested in practice).

Wet systems

Wet systems use water to flush faeces from the place where it is deposited, normally a WC pan or bowl. The result is faecally contaminated water which:

- is potentially harmful to the health of anyone who comes into contact with it; and
- will cause pollution and environmental degradation unless arrangements are made for its safe disposal.

The basic options for disposal of contaminated water are indicated diagrammatically below.



Note the following points with regard to the diagram.

'Hybrid' systems could also include septic tanks from which effluent is discharged to open drains. This system is theoretically unsatisfactory because open drains allow people to come into contact with effluent containing high pathogen levels. However, there may be situations in which it is the 'least bad' option.

Another theoretical possibility, not included in the diagram, is to hold wastewater from WCs in cess pits until it can be removed by some form of emptying vehicle. Such systems are expensive to run and can be ignored for all practical purposes.

The impact on the environment will generally be less if the excreta can be contained on or near the plot unless there is a danger that pathogens may enter groundwater used for drinking.

The choice between on-plot, hybrid and off-plot disposal of WC wastes will be influenced by:

- **The availability of water.** In general off-plot systems require more water than the other options.
- **The likelihood of pollution of either ground or surface water.** In general, sewage treatment will be required to ensure that the effluent from off-plot and hybrid systems does not harm the environment. There is a danger of groundwater pollution from on-plot systems where the ground is fissured or the groundwater table is close to the surface. This will not be a problem if groundwater is not used for drinking.
- **The capital and recurrent costs of the various options** and the way in which these are divided between users and institutional providers.
- **The skills needed to construct, operate and maintain systems.** In general, on-plot systems can be constructed and managed by individual households and thus have simpler management requirements than off-plot systems. Hybrid systems fall somewhere between in terms of the skills that they require.
- **The degree of cooperation needed between the different stakeholders.** In general, percolation systems

Key characteristics on the three main options and probable constraints on their use are summarised in the table on the following page.

Combining on-plot excreta disposal with off-plot sullage disposal

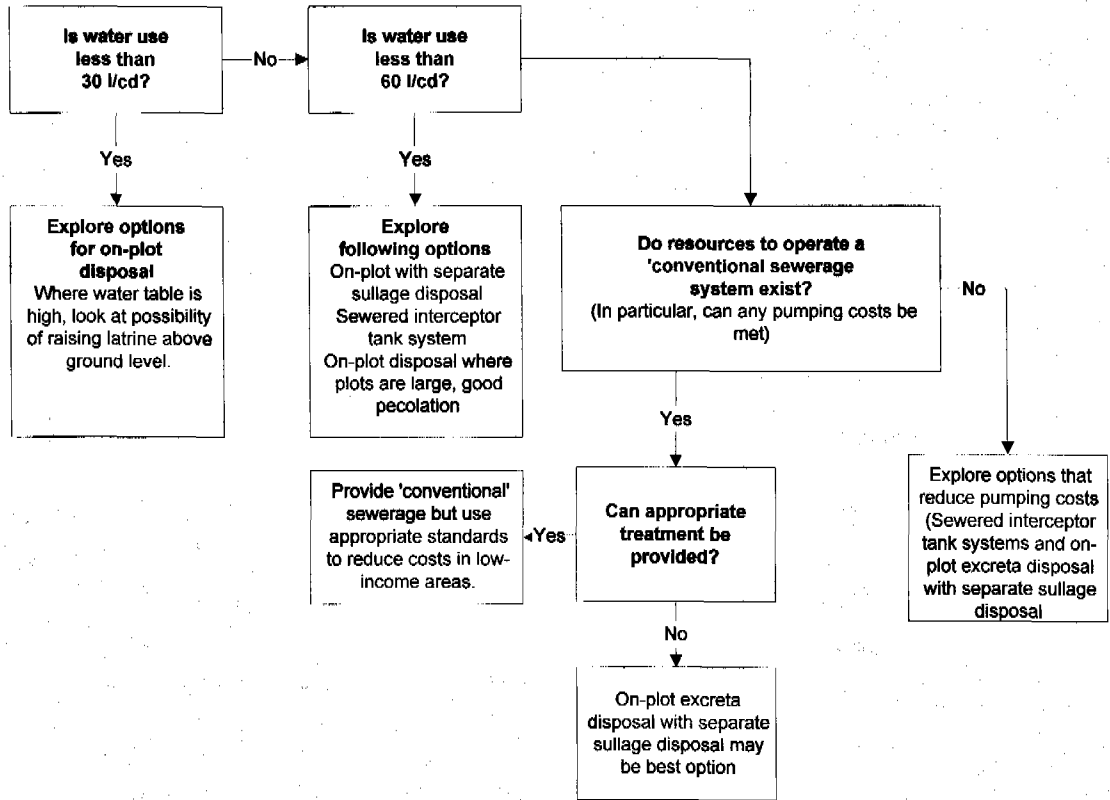
It is possible to combine on-plot dry latrines with separate sullage disposal. It is also possible to provide for separate disposal of sullage water where the effluent from a pour-flush WC is dealt with on-plot. The combination of on-plot excreta disposal with separate provision for sullage has the advantage that the polluting effect of sullage water on receiving waters will be less than that of the combined discharge of WC and sullage water. See note below.

Surendran and Wheatley (1998) report faecal coliform levels for 'grey' or sullage water from a hall of residence in a British university to vary between 600 per 100ml for bath shower water down to 32 per 100ml for kitchen sink waste. Rose *et al* (1991) found similar faecal levels, 100 per 100 ml, in grey water from families without children. Levels rose significantly to an average of 3.2×10^5 for families with young children.

Key features of the various 'wet' sanitation options

OFF-PLOT SEWERED SYSTEMS	PARTIALLY ON-PLOT OR HYBRID SYSTEMS	ON-PLOT POUR-FLUSH SYSTEMS
Water use should be at least 60 litres/person/day and ideally more.	Will function with lower water use figures than conventional systems (perhaps as low as 25 litres per person per day).	Minimum water use required about 25litres/person/day.
Remove all wastewater from plot.	Remove all waste water from plot	Separate arrangements required for water from bathrooms, kitchens etc. if water use above about 30 litres/person/day.
High pathogen levels in wastewater	High pathogen levels in wastewater	Water leached from pits contains pathogens, which may pollute groundwater if insufficient distance between bottom of pit and groundwater table.
Wastewater has high organic content. Will pollute water courses if not treated, causing deoxygenation and possible odour problems if not treated	Some reduction in organic strength of wastewater but pollution of water courses still likely.	Faecal material decomposes in pits.
Require some specialist skills in design and construction. (In particular in determining and laying to levels)	Less sensitive to inaccurate levelling than conventional systems so better match with skills of tradesmen and petty contractors.	Require only basic building skills.
Require cooperation between community members to ensure that all connect to the sewer.	Requires close cooperation to ensure that all households connect to the sewer via a suitable interceptor tank.	Can be constructed by individual householders independently of neighbours
Cost increases with increasing average plot size	Cost increases with increasing average plot size but at slower rate than for conventional sewer	Require space to provide leach-pit or pits on or next to plot
Minimal maintenance required if used correctly. In practice, many sewers in informal areas require frequent cleaning.	Periodic interceptor tank emptying required. Interval greater than for equivalent size on-plot system because of carry over of digested material into sewer	Periodic pit emptying required.
Pumping generally required in flat areas and this increases operational costs. Sewer will be surcharged if pumps are not operated	Can be laid to flatter gradients than conventional sewers and can sometimes remove and will always reduce need for pumping.	Can be used in flat areas.
Sewer construction difficult if there is a very high water table.	Flat gradients reduce depth of downstream sewers and should reduce length of sewer laid below water table.	Aquifer may be polluted if the water table is within about 4 metres of the surface

Bearing in mind the information given on the previous pages, a broad process for determining the most appropriate wastewater disposal option is outlined diagrammatically below.



This flow diagram is meant for guidance and the figures and recommendations given are not intended to be absolute.

TOOL 3.3 HOW TO COST THE VIABLE OPTIONS

What this note will tell you

This note sets out the procedures to be followed in costing technically viable sanitation options. It looks at both capital and operating costs. For the former, it recommends the development of unit costs for on-plot facilities. Guidelines are given for costing more complicated networked facilities. Finally, the main recurrent costs associated with on-plot facilities, interceptor tank systems and sewerage are listed.

What costs need to be considered?

The cost of providing a sanitation service consists of:

- 1) **capital** cost – what it costs to build it; and
- 2) **recurrent** costs incurred to operate and maintain it.

Both need to be considered when comparing options. Recurrent costs are sometimes ignored and this creates a real danger that a sanitation service will not be sustainable.

You may be able to obtain information on costs from previously completed projects. However, it will generally be better if you develop your own database of costs. The notes that follow provide information on how you can calculate costs.

Unit costs for on-plot technologies and components

Estimating construction costs for on-plot technologies is relatively simple. The cost of a standard unit, for instance a pit latrine or pour-flush latrine connected to a leach-pit, is calculated and multiplied by the number of units required. The simplest option for estimating the cost of a standard unit is to ask a contractor (or preferably two or more contractors) to give you an all-in cost for building it. Unfortunately, this does not tell you very much about where the money is spent and this makes it difficult to decide how much to adjust the price to allow for any modifications required on site.

A better approach will be to break the cost down to match the various components of the facilities to be provided. Standard construction contracts use this approach. A schedule of quantities is prepared and a unit price is put against each item in the schedule. (See figure on next page). The price for that item is then obtained by multiplying the unit price by the quantity. By summing the prices thus obtained, the overall cost of the unit is calculated.

Unit prices can be obtained from standard schedules of rates, which build up rates from the basis of cost of the materials used and the labour required to carry out each task. An alternative approach is to obtain information on market rates for each items including the cost of labour and any contractors profit.

If the work is being carried out or managed by the community, it will be useful to monitor the implementation of some typical units at the 'pilot' stage. The purchase costs of materials and the labour inputs required to complete the work should be recorded. Ideally, this information can be developed to give unit costs for the provision of different items.

ESTIMATING THE COST OF A VIP LATRINE

(a) Standard bill of quantities type schedule

Item no.	Description	Quantity	Unit	Rate	Amount
1	Excavate in laterite soil to depth of 5 metres and for pit diameter of 1.25 metres.	6.94	Cu. metres		
2	Brickwork in collar below slab				
3	Concrete in 75mm deep cover slab, including allowance for forming opening in slab and footrests as shown on the drawing.	0.8 2.4	Cu. metres		
4	112mm thick brickwork in superstructure	10	Sq. metres		
5	Provide and fix door and frame— dimensions 1.9 metres by 0.75 metres.	1	Number		
6	Roof— galvanised steel sheeting	2.25	Sq. metres		
7	Ventilation opening in superstructure, 0.5 metres by 0.3 metres	Item			
8	Provide and fix 150mm diameter plastic vent pipe, in accordance with specification.	Item			
9	Provide and securely fix plastic-coated wire mesh at top of vent pipe	Item			

Note that:

- (1) the volume of excavation must include for excavation to accommodate brickwork in slab support collar,
- (2) items for brickwork and concrete in slab should include for all formwork required, and;
- (3) the quantity of concrete in the slab could also be measured in cubic metres

(b) Estimate cost of material plus the cost of labour required to construct the latrine

Costs will be required for bricks, cement, aggregate, roofing material and all special items such as the door, any screen provided for the superstructure ventilation opening, the ventpipe and the screening material.

There are two options for calculating the cost of digging the pit. (1) Ask a specialist excavation contractor to quote a price and (2) Record the time taken to excavate the pit and multiply this by the amount paid to each worker and the number of workers employed on excavation.

You will need to calculate the amounts of sand and aggregate required to produce the volume of concrete required for the slab. For machine mixed cement using a gravel or shingle aggregate, one 50kg bag of cement will make 0.15 cubic metres of 1:2:4 concrete, 0.25 cubic metres of 1:3:6 concrete and 0.33 cubic metres of 1:4:8 concrete. Cement quantities should be increased by about 20kgm per cubic metre of concrete when the aggregate is broken stone. For all aggregates, cement quantities should be increased by about 10kgm per cubic metre when mixing is by hand.

The time taken to construct the support collar and the latrine slab, to lay the brickwork in the latrine superstructure and to fix the roof, ventpipe, door etc. should be estimated and used as the basis to calculate the cost of labour required

Estimating the cost of a networked system

The first step in estimating the cost for a networked system is to establish a hierarchy of components, as described diagrammatically in Box 2.3 (See Section 2). The costs of the different components can then be estimated as follows.

The cost of **household level components** (WCs and on-plot plumbing) can be calculated on the basis of typical house layouts, using the same approach as that used for self-contained on-plot technologies.

The cost of **tertiary level components** (local sewers and drains) should be calculated as follows.

1. Choose areas that are typical of different types of development.
2. Determine the number of households contained within each area (or which can reasonably be expected to be contained in the area if all vacant plots are developed).
3. Design a tertiary sewerage and/or drainage system to serve that area, assuming that the system will connect to a secondary facility at the edge of the area.
4. Prepare and cost a schedule of quantities or estimate the materials and labour that would be required for this tertiary system. The cost estimate should exclude house connections, which should be included in household-level estimates.
5. Divide the total calculated cost by the number of households to give the average cost per household.

Because there will always be differences between different areas, the exercise described above should be carried out for a number of typical areas and the results for areas having the same character should then be averaged. These results can then be extrapolated and used to estimate the average cost of tertiary facilities for all areas having similar characteristics.

The cost of **primary and secondary facilities** are likely to vary more between different areas, depending on factors such as the topography, the distance to a disposal point and the size of the sewer or drain. It will be best if the cost of these 'external' facilities is calculated on a case by case basis. If you are working at the local or municipal level, you should seek professional help to estimate the cost of any primary and secondary facilities required to serve your area.

Recurrent costs

The table below provides an introduction to the operation and maintenance costs that are likely to be incurred for the range of typical sanitation technologies.

On-plot technologies Pit latrines (and other 'dry' systems), leach pits, septic tanks etc.	Sewers	Sewered interceptor tank systems
<p>Pit emptying. (Frequency can be calculated on the basis that each person using the facility produces 40 litres of sludge per year).</p> <p>Replacement of vent-pipe screen (VIPs)</p>	<p>Any pumping costs</p> <p>Operation and maintenance of treatment facilities (Will include power costs for technologies such as activated sludge).</p> <p>Replacement of manhole covers.</p> <p>Cleaning and desilting. (For a conventional system laid to 'self-cleansing' falls, these costs will not be significant.</p> <p>Note that many sewers in low-income areas receive high silt loads and are laid to low gradients. In such circumstances, cleaning and desilting costs may be high.</p>	<p>Interceptor tank emptying.</p> <p>Perhaps some pumping costs but should be possible to avoid pumping in most cases.</p> <p>Operation and maintenance of treatment facilities. (Possibly some reduction in cost incurred for 'conventional' sewers because interceptor tanks remove some of the BOD load.</p>

The table does not include the costs associated with cleaning household facilities, keeping slabs clean and carrying out routine maintenance on buildings. Assume that the householder will carry out these tasks. An allowance will have to be made for keeping communal latrines clean. If there is a caretaker or attendant, this will normally be part of his or her job and the labour costs will be covered. Nevertheless, there may be a need to allow for purchasing cleaning materials.

If you are concerned with policy development or sanitation planning at the municipal level, you will need to estimate all of these costs.

If you are working at the local level, you may not need to estimate all the costs from first principles. For instance, if are considering the cost of local sewers, connected to a municipal system, your concern will be with the tariff that you will be charged rather than the cost of treatment and operating and maintaining the municipal sewer system.

TOOL 3.4 ESTIMATING WILLINGNESS AND ABILITY TO PAY

What this note will tell you

There is no point in providing facilities for which people are either unwilling or unable to pay. Previous notes have explained how to identify those sanitation technologies that might be appropriate in any given situation and how to estimate the cost of those technologies. This note provides guidance on how you can estimate the amount that people are willing and able to pay for sanitation improvements¹.

When should willingness to pay be estimated?

Estimation of willingness to pay for sanitation services should be considered when either:

- users are currently paying much less than the full cost of sanitation services; or
- there are plans to improve the level of service and/or protect the environment by providing improved facilities.

Willingness to pay and willingness to charge

Willingness to pay for a service is only one side of the equation. There must also be a willingness to charge for improved services. Is it worthwhile to spend scarce resources on accurately establishing user willingness to pay when the organisation that is responsible for providing a service is unwilling to raise charges to realistic levels? The answer to this question will only be yes if:

- resistance to raising charges stems from an unproved belief that the poor cannot pay higher charges; and
- those who make decisions on charges are willing to accept the evidence offered by a willingness to pay study.

The second condition is important. Government decision-makers may keep services charges unrealistically low for a number of reasons, not just a belief that the poor cannot pay. In many situations, these reasons are 'political' in that politicians believe that low prices help to maintain their popularity. In such circumstances, do not start a willingness to pay exercise unless those who make the decision about charges have accepted the need to raise charges to realistic levels and maintain them at those levels.

1. More detailed information on approaches to willingness to pay is provided in the DFID Guidance Manual on Water Supply and Sanitation Programmes – published by WEDC on behalf of DFID in 1998. This publication can be accessed on the internet at <http://www.lboro.ac.uk/well/gm/contents.htm>.

Approaches to estimating willingness to pay

Four broad approaches to estimating willingness to pay are introduced and briefly discussed below.

The simplest is the **affordability rule of thumb** approach. This is based on the assumption that people can afford to pay a set percentage of their income (typically set at 3-5%) for water and sanitation services. It is not accurate because income is only one of the factors that determines willingness to pay for water and sanitation services. Against this, the approach needs very few resources if basic income data are already available. Use it as a first check to determine whether the current tariff for water and sanitation services is unrealistically low.

Another simple approach is to **transfer information** from one location to another similar location. For instance, if people in one low-income settlement have installed and paid for local sewers or leach-pits, it would seem reasonable to assume that people in other similar areas should also be willing and able to pay for such facilities. Care needs to be used with this method since apparently similar areas may have very different characteristics. These may be social in character – for instance people in one area may have security of tenure and those in the second may not. They may also relate to physical factors. For instance, people are more likely to be willing to connect to a sewer if poor ground permeability means that their existing leachpits need frequent emptying.

Despite these drawbacks, the information transfer method is simple and appears to be a valid approach to the estimation of minimum willingness to pay at the municipal and local levels. Only use it where you are sure that the areas being compared have similar physical and socio-economic characteristics and, if possible, back up your findings using other methods.

Revealed preference (RP) methods measure demand indirectly by examining current expenditure, for instance the amount paid to use a communal sanitation facility or to a private sweeper to remove solid waste. They may use a variety of methods, including participant observation, small questionnaire surveys, focus group discussions and key informant interviews.

Clearly, revealed preference methods will not provide useful information where people are paying subsidised prices for a service and/or where they are only paying part of the true economic price of a service. The box below illustrates the point that not all subsidies are explicit. The problem with subsidies points to the main disadvantage of revealed preference methods. As with information transfer methods, they only tell you about what some people are already paying for services. This suggests that they can be used to estimate a minimum willingness to pay for services but do not necessarily indicate the maximum that people will be willing to pay.

Implicit and explicit subsidies – examples from sewerage in Pakistan

Community-constructed lane (tertiary) sewers are common in many Pakistani cities. In most cases, the participating households pay the full construction cost of the sewer and their household connections and also pay for essential maintenance as and when it is required. Where a good fall is available, as for instance in Orangi, Karachi, sewage is discharged to the nearest natural drainage channel. In flatter areas, it is more likely to be discharged to a collector drain or sewer provided by the municipal authorities.

The fact that community members are paying the cost of providing, operating and maintaining local facilities does not mean that there is no subsidy. Where sewage is discharged to the nearest natural watercourse, someone else is likely to have to pick up the economic cost of the resultant pollution. (In Orangi, sewage is discharged to the Lyari River). Where sewage is discharged to a municipal drain or sewer, it is still unlikely that it will be untreated. In addition, the cost of the receiving system has to be considered. In flat cities, sewage almost always has to be pumped and someone has to pay the cost of that pumping. Where connections from community-built systems are unauthorised, as is frequently the case, community members make no contribution to the costs of the municipal system. Even where their connections are registered, the sewerage tariffs in Pakistan are so low that there is a strong element of subsidy.

RP methods are likely to be particularly useful where people are already paying high prices for a relatively low level of service, for instance where people are paying vendors for water or are paying a regular contribution in order to be able to use a communal latrine.

Contingent valuation (CV) methods, involve asking people what they are willing to pay for different sanitation services in carefully designed and realistic hypothetical scenarios. The assumed advantage of CV methods is that they provide a way of estimating willingness to pay for different service levels². The aim is to develop a 'demand curve' which provides information on the quantity of a commodity (such as water) that people are likely to demand at different price levels. With this information, it should be possible to assess the degree to which facilities have to be upgraded and extended to cover demand. We have already seen that this scenario does not work too well for sanitation. A pit latrine is not necessarily a lower standard of service than a WC connected to a sewer. If there is no water on or near the plot, it may actually represent a higher standard of service.

A more appropriate use of CV, which is closer to the use for which it was originally developed, may be to assess willingness to pay for different levels of environmental protection. In this scenario, CV would mainly be used where the existing or preferred sanitation option is a sewered system. The key question then becomes how much people are prepared to pay to ensure that their wastewater is removed from residential areas and treated to a level that prevents harm to the environment.

² For an overview of the use of Contingent Valuation methods in India, see the field note produced by the UNDP-World Bank Water and Sanitation Program –South Asia and DFID entitled 'Willing to Pay but Unwilling to Charge: Do willingness-to-pay studies make a difference. (Available from the Water and Sanitation - South Asia in Delhi).

The disadvantage of CV methods is that they can give misleading results unless a CV expert is involved in their design, implementation and analysis. Until now, most CV exercises have been carried out by a fairly small group of such experts, many of whom have been expatriates. Countries such as India are developing in-country expertise but the relatively high cost of CV means that it should be used judiciously³.

When and where to use the various WTP methods

When and where should you use the various WTP methods?

Affordability rule of thumb methods should only be used to obtain an initial impression of willingness to pay. Where services are seriously underpriced, rule of thumb figures may be used to convince decision-makers that there is scope to raise prices. Where possible, they should be backed up by more rigorous methods of estimating willingness to pay but beware of devoting considerable resources to WTP surveys unless there is clear evidence that politicians and policy-makers are prepared to seriously engage with the need to increase charges.

Information transfer methods should only be used at the municipal and local levels and even then should be used with care. Where possible, local stakeholders should be involved in the investigation. This will help to ensure that factors affecting willingness to pay are not overlooked. It will also provide opportunities for the transfer of ideas and information between communities. This is an important point. There is a tendency to assume that willingness to pay is a static quantity. It is not. In most cases, people's willingness to pay for a service will be influenced by the information that is available to them. Involving local people in investigations of what people are doing in other similar areas may well lead to an increase in their awareness and a consequent increase in willingness to pay.

Revealed preference methods can be used at the municipal level and by policy-makers to provide broad estimates as to what people will be willing to pay for services. As already indicated, they will not necessarily indicate the maximum amount that people are willing to pay. Nevertheless, they will often reveal that poor people are paying considerably more for services than the amount assumed by officials and policy makers.

Because of their relatively high cost, contingent valuation methods are likely to be useful mainly for the development of policy. If you are planning to commission a contingent valuation survey, think carefully about the information that you want from it and make sure that sanitation specialists are involved in the design of the survey alongside economists. Remember that local circumstances will usually reduce the range of realistic choices (See Note 2.2) and be careful about what you assume to be different levels of service.

Use CV methods to obtain some idea of the amount that users are willing to pay to protect or rehabilitate the wider environment. However, do not be surprised if this amount is small. This is an area in which it is likely that user demand needs to be informed and perhaps developed by the use of suitable incentives.

³ The use of CV in Chennai is described in Anand, P.B (1999), Waste Management in Madras revisited, in *Environment and Urbanisation*, Vol 11 No 2, October 1999

Some examples of the use of different willingness-to-pay methods

Combining rule of thumb and revealed preference methods

In Faisalabad, Pakistan, the standard monthly tariff for water and sanitation services in 2000 was Rs 65 per month. The average household income obtained from household surveys in the areas covered by the Faisalabad Area Upgrading Project (FAUP) was around Rs 3000 per month. An assumed affordability level of 4% of household income would suggest that households in these areas should be able to pay around Rs 120 per month for water and sanitation services, around twice what they are paying at present. This simple calculation might be used, together with studies of what people are already paying for water and sanitation services, to illustrate the fact that people could and should be paying more for water and sanitation services.

The validity of the figure of Rs 120 per month is supported by the fact that small surveys in one FAUP area revealed that some households were paying up to Rs150 per month to purchase 'sweet' water from vendors. In this area, as in other areas in Faisalabad, the groundwater is saline and people do not like to drink it. However, this example also illustrates the main disadvantage of the information transfer method. Willingness to pay for vended water varies between settlements, partly because the groundwater in some areas is more saline than that in others. In such circumstances, the results of the survey in one settlement cannot automatically be applied to other sociologically similar settlements. Despite this caveat, the investigations do suggest that there is considerable scope to increase water and sewerage tariffs in Faisalabad. Given the political reluctance to increase charges, more sophisticated investigations using CV methods would not appear to be justified at present.

Contingent valuation and solid waste disposal in Chennai, India

A good example of the use of contingent valuation is provided by work carried out in Chennai, India (Anand, 1999). The work focused on solid waste collection, in particular on the role of the Civic Exnora model for primary (local) solid waste collection. Civic Exnora units are widespread in all but the highest and lowest income areas in the city. Each unit covers one or more streets and is responsible for the management of local waste collection from households and its removal to a suitable disposal point, preferably a municipal point.

CV was used to explore the interest of households in improved collection services, encompassing the introduction of a Civic Exnora service (in areas where these did not already operate), transfer of the waste to a suitable disposal point and final disposal in an environmentally acceptable way. They were also asked whether they would be interested in participating in a 'zero-waste' scheme, which involved composting the waste at the local level.

The survey revealed that most respondents were willing to pay for primary collection and that a significant percentage was also willing to pay for transport and disposal of the waste to the edges of the city. Statistical analysis of the results showed that concern for waste management was not limited to middle and upper-income groups and that households seemed to be least concerned with environmentally acceptable final disposal. The last point could be linked with another finding of the study, that 84% of respondents were unaware of how and where solid waste disposal took place. From the point of view of policy, the findings indicate a need to inform citizens of the need for environmentally-friendly solid waste disposal. Willingness to pay studies should not be seen as an end in themselves but part of an ongoing process to develop and inform demand.

Few people showed interest in local waste disposal using vermi-composting. (Composting pits at the household level). Indeed, those who were already members of local Civic Exnora groups did not opt for vermi-composting at all. This might be because they no longer faced a crisis situation once their primary collection needs were met. It could also be because their membership of a Civic Exnora group had made them more aware of the difficulties that could arise in pursuing local self-managed solutions to waste disposal. Again, there is a strong suggestion that knowledge affects willingness to pay.

PART C - 4**TOOLS FOR GATHERING, ANALYSING AND SHARING INFORMATION****Contents**

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ABOUT THIS TOOL

The importance of information has been stressed throughout this guide. If sanitation users do not have good information, their demand will not be informed. If sanitation providers do not have good information, their ability to respond to that informed demand will be reduced. This section is concerned with information needs and the ways in which they can be met. It is divided into a series of tools.

Tool 4.1 introduces the subject of information. It looks at why information is needed and relates information needs to the project cycle. It then moves on to examine different forms of information and their relevance to the needs of different stakeholder groups.

Tool 4.2 provides an introduction to information for policy-making and programme planning.

Tool 4.3 is concerned with information needs at the local and municipal levels.

Tool 4.4 introduces a number of techniques that can be used for assessing sanitation conditions at the local level. The various techniques are identified and their possible uses are listed. A one-page introduction is then provided for each technique.

Tool 4.5 is useful if you are involved in a sanitation programme at either the municipal or the local level and wish to share your experience with other people. It helps to answer basic questions such as: what information do you want to share, with whom do you want to share it, and how can the information be shared effectively?

TOOL 4.1 INTRODUCTION TO INFORMATION SYSTEMS

What this Tool will tell you

This Tool provides a brief introduction to information systems. It will tell you why information is important and what broad categories of information you are likely to require. It also explains the difference between different forms of information and points out the key requirements of any useable information systems. The ways in which different types of information can be combined and the need to record and present information in an effective way are then discussed.

Why is information needed?

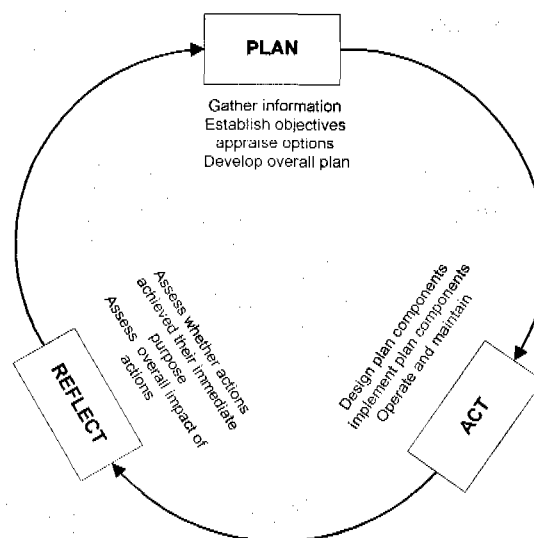
Information is needed to:

- inform decisions;
- monitor the progress of plans and activities; and
- evaluate the effect of those plans and activities.

In other words, information is needed in order to:

1. **Plan** (identify and prepare for change and improvement)
2. **Act** (implement, operate and maintain improved facilities) and
3. **Reflect** (evaluate the impact of those facilities).

These activities should be linked in an overall cycle as shown below



What information are you likely to require?

Your information requirements will depend on who you are and the level at which you are working.

Those working at the local level will require information on the local situation and the options for intervening in that situation.

Those working at the municipal level, you will need sufficient information to be able to compare what is happening in different areas and to link proposed actions in different areas into a coordinated whole.

Those who are concerned with policy and/or national sanitation programmes need information that allows you to see the overall picture and take action to enable those working more locally to respond to that situation.

Whoever you are and whatever the level at which you are working, you are likely to need information on:

- **the existing situation** - what facilities and services exist, how do they perform and who has access to them;
- **people's attitudes** – particularly their views on sanitation and their willingness to pay for improved facilities;
- **the options for change** – including available technologies and their costs;
- **available resources** – including physical, financial, institutional and human resources;

What forms can information take?

Information can take a number of forms. It can be:

Spatial Information – providing an indication of **where** things are. Spatial information is best recorded on maps and plans. The routes of sewers and the extent of areas subject to regular flooding are examples of spatial information.

Quantitative Information - informing you about numbers and/or percentages, for instance the number or percentage of households that have on-plot sanitation facilities.

Qualitative Information – informing you about the quality of a process or service for instance that municipal sweepers come irregularly and do not remove all the solid waste from local waste collection points. Photographs and videos are a particular form of qualitative information. They have the advantages that they are fairly easy to use and are easily accessible to community members.

Definitive Information – in the sense that it defines a particular item, usually by providing a drawing or some other form of illustration to show exactly how a facility is to be built.

How detailed should information be?

Collecting information requires time and effort, which could be put to other purposes. Your aim should therefore be to collect sufficient information to help you to plan, act and reflect effectively. Avoid collecting information for which you have no clear use.

What form of information is appropriate to your needs?

Key to success in collecting and using information is to make sure that:

- the information is **recognisable** to those who will use it; and
- the resources required to collect and manage it are available.

For a fuller discussion of the first point, see *The Critical Villager, Beyond Community Participation* by Eric Dudley, published by Routledge, London and New York.

Community members and those working with them will already use information in an informal way, weighing up options on the basis of what they already know and what they can see. They are likely to have limited time and energy available to engage in complex information collection and analysis. Local information systems should therefore use qualitative information whenever possible, supplemented by simple maps, graphs and tables where necessary. Information on possible technical options should be kept as simple as possible.

Those working at the municipal level will require all forms of information. Qualitative information will provide a feel for problems and people's perceptions of them. Spatial information will tell you where services are in relation to the people who need them. Quantitative analysis of subjects such as sanitation coverage in different areas, income levels and willingness to pay for services will help you to make decisions on priority areas and the interventions that you might make to improve services. Information on the various sanitation technologies will help you to choose between sanitation options and then implement the preferred option successfully.

Those who seek to influence policy must present information in a way that will convince their audience that their proposals are sound. Policy-makers have to compare the possible uses of limited resources. In order to allow comparison, information used for purposes will usually have to be quantitative.

Combining and developing different forms of information

Initial assessment of the existing situation and the problems that people face will normally be qualitative, based on observation and informal discussions with people.

More detailed information, including all four basic types of information is then likely to be required. Different types of information must be combined in a way that allows problems and their causes to be understood so that solutions can be developed.

Once recorded on plans, spatial information can be analysed to produce quantitative information on services. For instance, the lengths of sewers shown on a plan can be

measured and compared with the total length of sewer necessary to serve all houses, thus allowing you to estimate the percentage of a settlement that is sewered.

Techniques exist for quantifying qualitative information. For instance, it is possible to ask a number of people to rate the quality of a service on a scale from very bad to very good, as shown below.

Very bad	Bad	Satisfactory	Good	Very Good
1	2	3	4	5

Once the results have been obtained, they can be analysed and the average score can be determined, together with the standard deviation. The first will tell you what the overall view is about the question being asked and the second will help you to assess how far people's views diverge from one another. Techniques such as this can be used for assessing people's views on the adequacy or otherwise of existing services, the quality of maintenance and other subjects that may be difficult to assess quantitatively.

The need to cross-check information

Information should be cross-checked from different sources and using different methods whenever possible. In particular, it is unwise to rely entirely on official sources and the information that they provide should be cross-checked on the ground. If there are serious discrepancies between what is supposed to exist and what exists, it will be obvious from rapid assessment of typical situations. If initial checks reveal that there is a problem with existing information, you will need to consider how more accurate and relevant information can be obtained as effectively and cheaply as possible.

Recording and presenting information

In order to be useful, information must be recorded in a way that the intended users can understand and made available in a place where they can find it. Information on available technologies and their costs might be presented in a simple manual. This should include details of the various possible technologies and cost information, perhaps presented in the form of a simple costed bill of quantities. Guidance on the application of the technology and constraints on its use should be provided.

Information on physical and social conditions, sanitation coverage, institutional arrangements, physical conditions and available resources might be presented in the form of a digest of the available information for each town or city. Municipal authorities would be responsible for drawing up the digest of information, drawing upon any information available from those working at the local level. Those working at the centre would be responsible for bringing the digests together to provide an overall picture for a state, province or country.

TOOL 4.2 INFORMATION FOR POLICY MAKING AND PROGRAMME PLANNING

What this Tool will tell you

This Tool will help those who develop policies and programmes to identify their information needs and develop systems for assembling and analysing information. It covers the categories of information already identified in Section 3.7 and aims to tell you something about how to start collect and analyse information on each category. For each category, it will suggest what information is required, where that information can be obtained and who should be responsible for compiling and analysing it.

Information and policy

Information is required in order to:

- Assist you and others to make sensible policy choices; and
- Provide a baseline against which change can be measured.

Later, information will be needed to monitor the progress of sanitation initiatives and to amend policies, programmes and procedures as required to deal with problems as they arise. If information is to be used to make decisions, it is important that:

- it is available to those in decision-making positions in a format that they can understand and use; and
- an information-based management culture is in place – in other words, decision-makers should want to make decisions on the basis of information.

There is no point in having a sophisticated information system if decision-making procedures are not information-based.

Where to find information

Ideally, information on sanitation services should already have been collected and used at the municipal level. Your role should be to ensure that municipalities develop effective systems that can provide information for analysis in order that sensible policy choices can be made.

Possible sources of information other than official government records include sector profiles prepared by international agencies and studies carried out by national and international consultants and NGOs. If the existing information system is incomplete, unreliable or fragmented, it may be worthwhile to engage a consultant to develop a more complete system. Before doing this, be clear about what you want to achieve and reflect your understanding in clear terms of reference.

Further points on information needs are given in the box on the next page.

Information needs

Existing provision

You should ensure that organisations at the municipal level keep good records of existing sanitation provision in their towns and cities. Your role is to provide them with guidelines on how to collect and record information and to check the quality of their information collection and analysis processes. You may have to commission surveys of representative areas in order to develop a more detailed understanding of some aspects of existing provision.

Activities and programmes

Information on 'official' programmes should be fairly easy to obtain but do not ignore other less official activities. Householders are responsible for most investment within plot boundaries. In many cases they join together to provide shared facilities beyond their plot boundaries. NGOs and 'formal' and 'informal' sector private operators may also be involved in service provision – for instance providing local solid waste collection services. As with existing provision, you should develop simple guidelines for information collection and encourage/require municipal managers to follow these guidelines.

The framework for sanitation provision

Information on official roles and responsibilities should be reasonably easy to obtain. You should look for any overlapping of responsibilities, which is not uncommon and can lead to confusion and inefficiency. There may be differences between what is meant to happen and what actually happens in practice and you should aim to find out about both. Remember that existing systems will be driven by the incentives that are present, either explicitly or implicitly, within them. An understanding of these incentive systems will be necessary if informed decisions on possible changes are to be made.

Resources

You require information on financial, institutional and human resources in order to identify both constraints and opportunities for action. Information on the financial resources available for sanitation service improvements should include but not be limited to the resources available with government. You should aim to assess:

- expenditure on sanitation-related services by municipalities and other government departments, distinguishing between locally and centrally raised funds;
- possible sources of private sector finance;
- resources available with sanitation users and the organisations that represent them.

Consideration of institutional and human resources should include but not be confined to government agencies. You should also consider private sector and civil society organisations that might contribute to sanitation provision. The former is likely to include contractors, consultants and financial institutions while the latter will normally include NGOs and CBOs.

You may find it useful to commission studies to assess the capacity of typical organisations in the various sectors. What are the current resource needs of these organisations in terms of both finances and human capital and what is constraining their ability to contribute to the provision of better sanitation services.

Support systems

Higher levels of government may provide support to sanitation providers in the form of specific programmes (e.g. the Integrated Low Cost Sanitation Programme in India). They may also provide support in the form of training and/or through special national, state or provincial government units intended to provide technical back-up to those working at the municipal level. You need to be aware of the support systems that exist and be able to assess their effectiveness.

Information analysis

Four key questions for the assessment and analysis of information are suggested in sub-section 3.8 of this guide. Basic information on how you might go about answering these questions is provided below.

Nature and scale of existing problems. Use the five ways in which sanitation services can be deficient, identified in Section 1, as a framework for assessing the nature and scale of existing problems. Different types of deficiency may exist in different areas. Your task is to see the overall picture but in a way that does not ignore the lessons to be learnt from particular situations. In doing so, remember that the need is for a good overall understanding of the various aspects of sanitation provision rather than precisely correct facts and figures. You should use the available data to:

- make an approximate estimate of the extent to which sanitation services in urban and peri-urban areas are absent or inadequate. This will give you an idea of the scale of the problem to be tackled;
- assess (perhaps qualitatively) the nature of the areas with inadequate services. They will almost certainly include so called 'slums' and 'squatter settlements'. They may also include unauthorised peri-urban settlements formed by assembling and subdividing land without following official planning and/or building control procedures;
- identify the groups that are excluded from current approaches to sanitation provision;

The impact of existing programmes

The two fundamental points for analysis of existing programmes are whether they are properly focused and whether they are achieving what they set out to do. The importance of the first point can be illustrated in relation to sewerage. A programme might be very successful in providing new sewers but will only have value if householders are connecting to those sewers.

Another important question concerns the degree to which centrally sponsored programmes are coordinated with the efforts of local stakeholders. What is their impact, both in terms of coverage and their effect on other initiatives? You should also consider how they balance the immediate needs of users against wider environmental concerns?

You should be particularly interested in whether programmes provide incentives to take a truly demand-driven approach.

What resources are available?

Analysis of existing provision will give an idea of the extent and nature of existing sanitation problems but will tell you little about the opportunities for change. To be able to assess the latter, you must analyse the available information on the resources that are available and the constraints that prevent change. Your starting point for this analysis should be an attempt to answer the following questions:

- which organisations and individuals are currently involved in sanitation provision, both in theory and in practice?
- how well do they perform this role - are their activities 'technically' sound and do they take sufficient account of both the needs of the poor and the protection of the wider environment?
- how do they contribute to the cost of providing and sustaining sanitation services; and
- which organisations and individuals have untapped potential?

One way to present this analysis will be to prepare a table, setting out the various stakeholders and identifying their theoretical and actual roles and assessing the way in which they carry out their tasks and the scope for expanding their role in sanitation provision. This table might be structured as shown on the following page.

Stakeholder group	Statutory role	Actual role	Current performance	Financial contribution	Scope for expanded role
Householders					
Community-based organisations					
Local NGOs					
National NGOs					
Elected representatives					
Municipalities					
Specialist agencies					
State/provincial Government					
National Government					

This pro-forma is not a blueprint and you may find that you need to adjust it to suit local conditions. The information contained in it will be basically qualitative with a short note on each point contained in the appropriate box.

Constraints

Constraints are likely to include some or all of the following:

- the low priority given to sanitation provision by Government and perhaps by low-income residents themselves;
- limited knowledge and skills about appropriate sanitation approaches;
- unclear and/or complicated institutional structures that result in poorly defined and often overlapping activities and responsibilities;
- legislation and procedures that constrain the development of appropriate sanitation approaches and relationships.

Priority given to sanitation. The ultimate indicator of the priority that Government gives to sanitation is the budget allocated to it. Information on this should be available from official statistics.

Assessment of community attitudes to sanitation, and in particular willingness to pay for improved services, is more difficult. A possible framework for preliminary analysis might include attempts to answer these questions:

- In which order do people seek for services at present?
- Do people see improvements in sanitation and related services as a priority?
- What do people, particularly those in low-income areas, spend on sanitation at present?

Preliminary analysis might lead to the conclusion that there is a need to obtain more detailed information on willingness to pay for sanitation improvements. Methods of determining willingness to pay for sanitation services are considered in Tool 2.4. A more serious problem may be a lack of willingness to charge anything like the full cost of sanitation services. Changing this situation may be a priority policy concern.

Knowledge and skills. The knowledge and skills to be assessed include those relating to the provision of sanitation facilities and their ongoing operation and maintenance. You should not assume that these are automatically available. Also, do not restrict yourself to the knowledge and skills that are available in the government sector and relate only to conventional technologies.

Institutional structures, legislation and procedures. Systems and procedures will be strongly influenced by existing legislation and institutional structures. Those that are adopted in practice (as opposed to those set out in rule books) will also be influenced by available resources. An organisation that is constrained by deficiencies in manpower, finances, skills or knowledge, will develop systems and procedures that reflect this situation. You need to understand not only what is meant to happen, but what actually happens in practice if you are to introduce effective improvements. A checklist of questions to help gain this understanding is given in the box below.

Checklist of questions relating to legislation, structures and resources

1. Does existing legislation make responsibilities for sanitation clear?
2. How does existing legislation affect the way in which systems and procedures for sanitation promotion, provision and management operate?
3. How do the relationships between organisations and their assigned responsibilities affect the operation of systems and procedures?
4. How do relationships within organisations affect the ways in which systems and procedures operate? For instance to what extent are possibilities for local decision-making affected by hierarchical organisational structures?
5. How do existing institutional structures affect the resources available to institutions with responsibilities for providing and sustaining sanitation services? For instance, do municipalities suffer because of their relatively low status and their inability to attract high calibre staff?
6. How do institutional resources affect the way in which systems and procedures are operated in practice and are there differences between what happens in theory and what happens in practice? This is an important question that is often overlooked.

TOOL 4.3 INFORMATION COLLECTION AND ANALYSIS AT THE MUNICIPAL AND LOCAL LEVELS

What this Tool will tell you

This Tool provides guidance on collecting and analysing the information necessary to plan at the municipal and local levels. The Tool provides a checklist of the types of information that you will need to collect and suggests how you might collect that information. It goes on to suggest how you might present that information, focusing particularly on the possible use of overlays over base maps and geographical information systems (GIS).

What information do you need to collect?

Information is needed first to understand problems and then to explore the options for dealing with those problems. In order to do this, you will need answer the following questions:

Who is officially responsible for sanitation services in your town or neighbourhood?

Who actually provides those services?

What services exist at present?

Who pays for those services and how?

What resources are available?

Each of these questions is considered in more detail below. The level of detail suggested in answering these questions will be appropriate for those working at the municipal level. Those working locally should follow a similar but simplified process, bearing in mind that they are concerned with a smaller and less complex area.

Who is officially responsible for sanitation services?

Sanitation provision is usually a government responsibility. The **municipality health department** is often responsible for low-cost sanitation provision and solid waste collection. Other organisations with responsibilities in the sector are likely to include specialist **state/provincial level agencies** such as the Public Health Engineering Departments in India and Pakistan). In larger cities, specialist city-level **water and sanitation agencies** may be responsible for sewerage and drainage. The **irrigation department** may have responsibility for aspects of drainage. **Social welfare departments** and **community development cells** may be involved in poverty reduction programmes that include a sanitation component.

Responsibilities will usually be legally defined. Talk to government officials to obtain information on roles and responsibilities and, if possible, obtain copies of the laws and directives that assign responsibilities.

Who actually provides services?

Remember that individuals and organisations other than government provide many sanitation services. Individual householders are the largest providers and managers of on-plot facilities. People often cooperate to provide their own shared services at the local level. NGOs may provide support to these people and the community organisations that represent them. These 'self-help' efforts are most likely to occur in 'informal' low-income areas.

Visit different types of area and observe what is happening. Look for evidence that people are providing their own sanitation and solid waste services. Talk to local people to find out what they think about the situation. You may then want to develop your understanding of the situation by carrying out some more detailed surveys in representative areas. Refer to Tool 4.4 for further information on how you might carry out these surveys.

What services exist at present?

Try to involve the various sanitation providers in the assessment of existing services.

You should be concerned with the **extent** of services - where are services provided; their **quality** - how good are those services; and their **accessibility** - can everyone including the poor use them.

Possible sources of information on existing services include the following.

- **The records of specialist agencies and government departments.** Remember that these may be outdated and will normally only include information on services provided by government
- **Surveys.** Search for any existing physical and social surveys that provide information on sanitation conditions within the town. You may wish to take advice on commissioning additional surveys to find out what people think about sanitation and what facilities are available at present, perhaps using the participatory survey methods outlined in Tool 4.4.
- **Government employees.** Senior officials can provide information on the overall situation. Junior employees with responsibilities for particular areas will often have better information about what is happening in those areas.

What resources are available?

Financial resources. Key questions to ask are what sources of funds are available, how reliable are those sources and can they be expected to continue to provide funding over time.

At the municipal level, municipal and departmental budgets and balance sheets need to be examined to obtain information on income and expenditure. If you are not clear about the meaning of official records, seek assistance from a public finance specialist. Try to determine the relative contributions of different forms of municipal taxation and transfers from higher levels of government, particularly if the latter are earmarked for specific sanitation-related programmes. Is their scope for increasing the amount transferred? How much do specialist providers receive from user charges and how dependent are they on government subsidies? How sure can you be that funding from external sources will continue at present levels?

If you are working at the local level, investigate government programmes that might fund improved sanitation. Are there other possible sources of funding, such as trust funds and support from local businesses.

We have already seen that a strategic approach to sanitation provision requires that users pay a large proportion of the cost of sanitation improvements. They should certainly pay ongoing operation and maintenance costs, either directly or through tariffs. Methods for estimating people's willingness to pay for improved sanitation have already been outlined in Tool 2.4.

Organisational and human resources. A good way to start to assess organisational resources will be to list the tasks to be carried out, and then identify organisations with the capacity to carry out those tasks. This will allow you to identify any obvious gaps. For example, there may be no agency with expertise in hygiene education or low-cost sanitation.

You should also consider the ways in which national and state/provincial level programmes may provide resources for work at the municipal level, either directly or in the form of finance.

Those working at the local level can use a similar approach to identify people and organisations that might be available to assist in a sanitation programme. Again, it will be possible to identify gaps and take action to fill them, either by bringing in people from outside or providing training for local people.

Recording and presenting information

Information on physical features and the location of facilities is best recorded on maps. A good approach will be to develop a base map of your area and then provide information on different physical features, settlement types and services on a series of transparent overlays. This allows comparison between different factors and can provide a useful demonstration of how they are inter-related. (For instance, two overlays, may show that the locations of unplanned informal areas and those of deficiencies in solid waste management or sanitation provision tend to coincide.

In order to plan you need to know something about the physical and social characteristics of the municipality and its various districts.

Geographical information systems (GIS) provide a more sophisticated variation on the same approach for those with access to suitable computer facilities and skills.

Where might information be found?

A good base map should provide information on physical features such as hills and rivers, main roads and railways. Information on political boundaries will certainly be available with the municipality.

Information on settlement types is likely to be less readily available. Check with the municipal planning authorities. (In the case of smaller towns, responsibility for physical planning is likely to rest with a state/provincial level planning agency). Specialist agencies set up to deal with the specific needs of low-income areas may have information on 'slums' and 'squatter settlements'. If they are available, arial photographs should help you to identify older areas that pre-date formal planning and slum and squatter settlements. Unregulated settlements in peri-urban areas are likely to be poorly recorded and the best way of defining their locations and limits may be through 'windscreen' surveys – driving around and recording what you find on the ground.

Information on spatial features can be obtained from various sources. Specialist agencies should have good records of the routes of existing collector sewers and drains. In some cases, their information will be sufficiently detailed to determine drainage boundaries but it is more likely that information on existing tertiary systems will have to be obtained in the field.

Available resources include any ongoing sanitation programmes. These will include those implemented or financed by central and state/provincial government. They may also include programmes initiated and/or supported by national and international NGOs.

Social and technical mapping - the approach proposed in Bharatpur

In Bharatpur, social and technical mapping was proposed as a way of collecting and presenting information on sanitation conditions in the city as a whole, with a particular focus on the areas that were worst affected by sanitation deficiencies. The aim was to provide information on maps in a form that was accessible for decision-making on the priorities for action. This would ensure that funds and other resources were directed to the areas that were the most deprived and contained high numbers of poor people.

The information was to be presented in two parts

City maps

A base map and a series of overlays, all to the same scale, which could be laid over one another as described on the previous page. They should include:

- A social map showing colonies, *mohallas* (neighbourhoods), and 'informal' areas. Information on incomes and other socio-economic indicators would be related to the areas shown on this map.
- A technical map showing solid waste facilities and problem areas, particularly areas not covered by municipal facilities), unofficial dumping sites and areas that vehicles could not reach.
- A technical map showing the location of public toilets, areas with low levels of latrine coverage, areas with high incidence of service (primitive dry) latrines etc.
- A technical map showing the principal drain lines, areas experiencing severe blockages, low-lying areas prone to flooding.

Neighbourhood profiles

A profile for each neighbourhood comprising:

- A summary sheet (one page) with essential data and a weighting/points score to show whether problems are high, medium or low priority compared with the rest of the city.
- Community drawn maps showing facilities and problem areas. (The basic community-drawn maps might be developed into something more 'polished' with the help of professional draughtsmen).
- Basic social and demographic data.
- Details of sanitation problems
- Information on community preferences for improvement.

The aim was to keep the profiles brief so that they would be accessible to those who might be interested in using them.

A range of participatory survey methods, including several of those covered in Section 4.4 was proposed to collect this information.

An example of the pro-forma for a neighbourhood profile is given on the following page.

Mohalla Summary Sheet

Date of Assessment :

Name of mohalla (neighbourhood)	Ward no.
Name of elected representative	

Item	Details	Comments
Population		
Main income group		
Main ethnic/social group		
Type of development (approved, unplanned, notified slum, unrecognised slum)		
Tenure status		
Range of plot sizes		
Latrines Estimated percentage of households with a latrine (excluding katcha and service latrines) Is area served by a public toilet? Estimated percentage of households using open defecation.		
Solid waste management (garbage) Estimated percentage of households served by municipal collection service. No. of bins/collection points Frequency of collection Can vehicles gain access to streets and lanes? Cleanliness of drains and open areas	(All, none, some) (very good to very poor)	
Drainage Adequacy of natural drainage (Does water drain away easily due to slope or good soil permeability) Highest level of water table Details of any flood problems. (Do they affect public space, access routes or private plots)		
Water supply Estimated percentage of homes with house connection Water pressure (Above plinth, at plinth, below plinth) Hours supplied per day Details of other sources of water		
Community Willingness to participate in sanitation programme		

Priority weighting	(H / M / L)
Latrines	
Solid waste management	
Drainage	

TOOL 4.4 TECHNIQUES FOR ASSESSING SANITATION CONDITIONS AT THE LOCAL LEVEL

What this Tool will tell you

This Tool introduces a number of techniques for assessing sanitation conditions at the local level and suggests when they might be used. Most can be used in a participatory way. These techniques will help you to work with community members to develop a better understanding of the existing situation at the local level. They can also be to obtain information about conditions in representative areas as part of a municipal or regional assessment and to assess the impact of a completed project or programme.

Assessment methods

The assessment methods used in this Tool are introduced below in the order in which they are likely to be useful. Brief descriptions of the various methods follow.

1. **Transect walks** can be used to obtain an initial impression of sanitation problems and how people react to them. **Informal interviews** with community members in the course of such walks help you to understand what you see and may provide information on what you cannot see.
2. **Semi-structured interviews, structured observations, focus group discussions and timelines** can help you to understand what has happened, what is happening and what could happen.
3. **Questionnaire surveys and participatory mapping** can provide a more detailed understanding of the present situation. **Focus group discussions and structured interviews** can be used to explore specific issues arising from surveys and participatory mapping in more detail.

The need for triangulation

Whenever possible, cross-check or **triangulate** your findings. Some ideas on the ways in which this can be done are given below.

1. Speak to representatives of different groups in order to obtain a range of viewpoints on important issues. For instance, community 'leaders' may tell you that there are no problems with sanitation in their area but you may get a very different idea when you talk to women from poor households living in rented accommodation. (Note that men and women may have different views).
2. Look around you to check what people tell you. If you are told one thing but you see something different, it is time to cross-check the situation in more detail.
3. Use non-visual methods such as participatory mapping to obtain the views of those who may feel inhibited when asked to give their views in a formal meeting. This will provide information that might otherwise not be available to the planning process.

When preparing to assess sanitation conditions, spend some time to think of other ways in which you might triangulate information

Transect walks

One approach to observing existing sanitation conditions in an area is to undertake what is known as a **transect walk** through the area. At its most basic, this is nothing more than walking through the area, observing and recording what you see. However, it will be better if a group of people, including people from both within and outside the community and with different areas of knowledge, make the walk together. Different people will see different things. Engineers may see physical things that are missed by others. Similarly, sociologists are more likely to observe behavioural patterns that might be missed by those with a more technical background. People from the community may point to problems and issues that may not be obvious to an outsider. They will also enable the group to gain access to houses to observe the facilities that are available inside.

Transect walks should be timed to provide you with the maximum amount of information. For example, people are most likely to use communal and shared latrines in the early morning while open defecation usually takes place after dusk. Transect walks at these times will provide information on people's habits that would not be obvious at any other time

Examples of what you might observe in the course of a transect walk

- Young children defecating in the open suggest that there is a need to improve awareness of the health implications of poor sanitation but may also point to deficiencies in latrine design that discourage children from using them.
- The appearance of the outlet from a septic tank discharging to an open drain may provide guidance as to whether the septic tank is being desludged regularly. A build up of organic material around the outlet suggests that solids are being discharged and this in turn infers that desludging is being neglected.
- Manhole covers missing on sewers, suggesting less than adequate maintenance.
- Solid waste dumped in open plots and drains suggesting that the collection service is inadequate but possibly also that people need to be brought to a realisation of the need for improved solid waste collection.
- Solid waste spread around bins suggesting that the collection service is irregular, people do not bother to throw waste into the bin or both.

Informal interviews

People will usually be interested to talk to you once they know that you are interested in ways in which sanitation and related services can be improved. In the course of initial transect walks, you can talk to people about their concerns and find out more about the area. Informal interviews during such walks can provide you with information on what people think, who they perceive as their leaders and the 'activists' within the community and on aspects of their day to day life that you cannot see.

The most important thing to remember in the course of such interviews is that you should try not to influence people by suggesting to them what you think the answers should be. It may well be worthwhile to think about some of the issues that are likely to interest you the ways in which you might introduce discussion of these issues before talking to local people. Start by asking some fairly general questions and guide the interviewee onto these issues as appropriate as the interview progresses.

Reconnaissance surveys in the Faisalabad Area Upgrading Project

In the early stages of the Faisalabad Area Upgrading Project, there was a desire to introduce trainee social organisers to work in the field. However, the final go-ahead for the project had yet to be obtained and it was felt to be too early to establish direct contacts with the people living in the proposed pilot areas. In order to give the trainees some exposure, it was arranged that they should visit one of the pilot areas in teams of two, walking around for a period of 30 minutes to an hour and reporting back on what they had seen. So as not to draw attention to themselves, they did not carry any writing materials with them. The interesting thing about this exercise was how much people could remember based upon their observations. The comments and questions of the rest of the trainees back in the training centre brought out a wealth of detail as to what the two 'walkers' had observed during each trip. So, with nothing more than observation, a fair depth of information on the area was generated.

The point to take from this example is the following. If a wealth of detail can be obtained by outsiders who do not draw attention to themselves by asking questions, how much more can be understood when mixed teams, including community members and checking facts by talking to local people, carry out the transect walk.

At a later stage in the process, efforts should be made to talk to people who may not have either the opportunity or the confidence to speak in more formal meetings. These may include women and people from minority groups. In the case of women, informal interviews conducted by other women may provide information and reveal attitudes and interests that would otherwise stay hidden.

Focus group discussions

Focus group discussions can be used to obtain an initial idea of a community's concerns and priorities. All that is required is to bring together a representative group or groups from the community and encourage them to talk about their concerns, preferences, hopes and fears. In some societies, it will be best to hold separate focus group discussions for men and women.

Focus groups can also be used to explore specific issues that have arisen in the course of questionnaire surveys and other general information generation methods.

Someone is needed to facilitate the discussion and a second person is required to take notes of the discussion. The facilitator will usually be a person from the group that is leading the process of information collection and analysis. Ideally, the meeting recorder should be from the community although this is not essential.

The facilitator should aim to:

1. **ensure that no individual dominates the discussion.**
2. **make sure that the discussion covers issues of concern.** In early focus group discussions, these will include anything relating to sanitation, drainage, solid waste disposal and associated subjects. In later focus group discussions, the discussion may need to be much more focused and the facilitator may have to intervene more to ensure that this is so.

The facilitator will find it easier to guide discussion if he or she prepares a checklist of subjects to be covered before start of the focus group discussion.

A lesson on what focus group discussions can and cannot do

Focus group discussions are better at identifying overall problems and people's reactions to them than they are in providing precise data on those problems. An example from Calcutta illustrates this point. One component of the DFID-funded Calcutta Environmental Management Strategy and Action Plans (CEMSAP) project related to 'environmental' improvements in 'slum' areas. The areas investigated included Howrah. Initial focus group discussions provided a wealth of information and suggested that one latrine was often shared by as many as 500 people. Subsequent more detailed investigations suggested that the normal pattern was for one land holding to be divided into 10-25 one room units, each of which was rented to one family. In most holdings, two latrines had been provided through various municipality schemes. One of these was often reserved for the landlord or 'thika tenant', who usually lived in a slightly bigger dwelling on the same land holding. With family sizes typically in the range 6-10, the number of people living on one holding seldom exceeded 200. Thus, it was rare for more than 200 people to share one latrine. Unsatisfactory as this situation was, it was not quite as bad as the one latrine for 500 people suggested by the focus group discussions.

Structured interviews with key informants

Informants with special knowledge or who are representative of specific groups within the community can provide much useful knowledge. The normal approach to key informant interviews is to prepare a check list of the points upon which you require information and to make sure that those points are raised in the course of the interview. Whenever possible, the information obtained from key informant interviews should be checked by interviewing other people who may have a different viewpoint and cross-checking specific points against other sources of information.

Good key informants might include:

- Local *mystries* or masons who have been involved in aspects of sanitation provision (latrine construction, sewer laying etc.)
- Employees of sanitation providers (including local authorities, specialist line agencies and, where appropriate, NGOs and CBOs.
- Those who have taken action to improve the sanitation facilities available to them.
- Those who have not taken such action.

In the case of the last two, it will be important to try to understand the views of each and the reasons why they have or have not attempted to improve sanitation. Always try to cross-check the information that is given to you. For instance, does it correspond with what you can see or what other people have told you?

Government employees working at the local level should be included for two reasons.

1. They should have useful insights and information, based on their work in an area; and
2. They are likely to be involved in the implementation of decisions made in the course of the planning process.

It is also possible that some local government representatives (e.g. school teachers) will take the lead in following through the planning and implementation process at the local level.

Structured observations take a similar approach in that the aim is to observe a particular activity, for instance the way in which people deal with solid waste. You might say that a structured observation is a transect walk with a definite purpose.

Timelines

People who have lived in a settlement for a number of years will have information on the way in which the settlement, the facilities provided to it and the problems encountered by the population have developed over time. This information may be useful for the planning process in a number of ways.

1. It may reveal the **resources available within the community**. In particular, who has taken the lead in trying to address sanitation and drainage problems in the past?
2. It may provide **information on previous attempts to solve sanitation and drainage problems**. An understanding of what has gone wrong in the past will help to ensure that similar problems are avoided in the future.
3. It may reveal **social factors** that may be important for sanitation provision. Was everyone involved in attempts to improve sanitation? Did some people resist or did some attempt to 'highjack' the process and its benefits.
4. It may **reveal changes in the overall situation**. For instance, it may be that drainage problems got worse when the water supply to a settlement was improved.

Like other methods, timelines can be used at various stages in the planning process. They can be used at the beginning to bring people into the process. However, they are likely to be most useful once a basic rapport has been developed between the planning team and the local community. Timelines can be particularly useful in making sure that the knowledge of older people is taken into account in sanitation plans.

It is possible to obtain information about what has happened in the past by talking to individual people. However, it is better if people come together in a group to think about the past since the different people in the group will reinforce and correct each other's memories. Speak to local people to identify those who have knowledge of the history of the settlement and ask these people to be part of a timeline discussion.

The timeline exercise itself will require a facilitator and a recorder. The facilitator should explain the purpose of the timeline exercise. He or she should have a basic check-list of questions and issues to be raised. These might include the following:

- When was your settlement developed?
- What services are available and when were they provided?
- What attempts have been made to improve sanitation, when were they made and what were their results?
- Have there been any changes in the legal status of your settlement over the years? If so what were they and what results did they have?

However, the facilitator should allow the participants considerable freedom to introduce their memories and discuss the history of their settlement. The checklist questions should be used sparingly and the facilitator should aim to guide rather than direct the discussion. It may be useful to record information provided by in the course of the discussion on a map of the settlement.

'Conventional' questionnaire surveys

Some advocates of 'participatory' approaches to information collection appear to suggest that such participatory approaches can completely remove the need for conventional questionnaire surveys. They suggest that the latter require considerable resources and are not really suitable for measuring differences from the norm. Neither of these assumptions is necessarily correct. It is true that surveys intended to produce results for inclusion in 'scientific' papers have to be sufficiently large to ensure that meaningful statistical conclusions can be drawn. However, much smaller samples can produce sufficient information on the existing situation for decisions to be made and action plans to be formulated. For instance, if a sample of 50 households from a total of 500 shows that only 10% have any form of sanitation, it is unlikely that the figure for the total population will be very different provided that the sample is reasonably representative. Whether the population with sanitation is 5% or 15% of the total is immaterial when it comes to planning the way forward.

Similarly, it is not necessarily the case that conventional socio-economic surveys do not reveal difference. It is true that the results of these surveys are usually presented in averaged form, which automatically eliminates differences. However, the box below illustrates that it is possible to obtain information on difference from the raw data.

Assessing difference through conventional surveys

In Juba, Southern Sudan, a survey of existing sanitation facilities was carried out in the early 1980s. It involved the use of a conventional socio-economic questionnaire, administered by local enumerators, trained by the team responsible for developing and managing the survey process. At the beginning of the survey, the management team were aware that some people within Juba had installed on-plot pit latrines but that these pit latrines involved the use of expensive materials and usually cost over 3 times the average monthly salary in the town. It thus appeared that they were too expensive for general use. The survey revealed that around 20% of householders already had on-plot sanitation and that a further 20% had tried to provide sanitation but had failed for one reason or another. Beyond these general conclusions, the survey results revealed some interesting facts. A small number of people claimed to have pit latrines that had cost either nothing at all or very little. Further investigation revealed that these used a variety of locally available materials, including mud and sticks and scrap taken from old cars. Further, it seemed that a common reason for the failure of attempts to build latrines was that the pit was made too large so that the cost and technical difficulty of covering it proved to be beyond people's resources. In both cases, it was possible to obtain useful information from individual questionnaires.

In Juba, the ability to use individual questionnaires to obtain information about differences from the norm was dependent on:

- the ability of team members to ask the right questions about what might be important; and
- the corresponding ability and willingness of the enumerators to notice interesting things and report them at the end of each day's survey.

If this was possible in the early 1980s, without recourse to computer analysis of data, it should be much easier to do with the data analysis capacity that is now available.

Participatory mapping

Participatory mapping is a PRA (Participatory Rapid or Rural Appraisal) technique. In its pure PRA mode, people are asked to draw a map on the ground showing their locality and the features that are important to them. The theory is that by asking people to draw on the ground, everyone feels comfortable and is willing to participate. Experience suggests that this is not necessarily the case in urban areas where most people may feel more comfortable drawing on paper. Regardless of this, such open-ended approaches to mapping may provide help to establish what is important to people but will often be of limited use in developing a detailed understanding of sanitation, drainage and solid waste management issues.

A better approach when looking at these specific services may be to provide people with rather more guidance when they are preparing the map. This guidance can be provided in the form of questions on key points and suggestions as to information that might usefully be recorded. For instance, the people might be asked to be very specific about which drain connects to which other drains at a street intersection. An example of useful information might relate to details of on-plot sanitation arrangements, recorded house by house in what is in effect a local community-conducted census of on-plot facilities. The skill of the facilitator in such exercises will be to provide guidance while leaving space for the community to come up with their own ideas and suggestions.

The mapping approach adopted by the NGO TARU in India

The Indian NGO TARU has used interesting methodologies for recording the current situation with regard to household/local level solid waste disposal practices and infrastructure provision. In Lucknow, it first developed a broad picture of infrastructure provision and produced maps showing trunk infrastructure routes and the location of areas with serious deficiencies and/or bottlenecks. A more detailed reconnaissance was then undertaken in the various planned project areas to map out the broad settlement structure, densities, land use, topography, drainage patterns and residential localities. Along with previously collected socio-economic data, this information was used to arrive at a general classification of sub-zones in each drainage catchment. More detailed studies were then undertaken in selected streets in the various sub-zones. Multi-disciplinary professional teams, consisting of an engineer, an architect and a social development specialist carried out these studies. A measured plan of each street or area to be included in the study was first prepared. The study team recorded the results of both visual surveys (transect walks) and socio-economic surveys covering all the households in the study area on this plan. While the TARU approach was essentially a 'technical' one involving professionals, there is no reason why it could not be adapted to provide a role for community members. Maps showing basic information on plot boundaries and any other easily identifiable features would be produced by the professionals but local people would be fully involved in transect walks and simple socio-economic surveys, marking the results of their efforts on copies of the base map.

TOOL 4.5 HOW TO SHARE EXPERIENCE

For whom is this Tool intended?

You should read this Tool if you have been involved in a sanitation programme at either the municipal or the local level and wish to share your experience with other people.

Using the Tool

This Tool identifies the questions that you should ask yourself when starting to think about sharing information. It also suggests answers to those questions although the Tool stresses that you need to go on and think about the answers that apply in your particular situation. Use the Tool as a framework for discussions with your colleagues as to how you are going to share your own particular experience.

Some basic questions

The basic questions to ask are:

- **What information do you want to share?**
- **With whom do you want to share it? - or perhaps 'who will benefit from it?'**
- **How can the information be shared effectively?**

Each of these questions is considered in turn.

What information is to be shared?

The information to be shared may relate to successes but it may equally be about the lessons to be learnt from initiatives that have failed. The important point in each case is to identify the factors that led to success or failure. It may be useful to use the following questions as a framework for identifying the messages that you want to communicate:

- **How did our approach aim to solve the problems that it set out to tackle?**
- **What problems did we encounter? and**
- **How did we overcome those problems or how would we seek to overcome them in the light of our experience?**

Your information may relate to some or all of the following: sanitation promotion, technology, organisation and working with people. Indeed, you may add to this list yourself.

Look at the ways in which these different aspects of sanitation provision are linked rather than dealing with them in isolation. For instance, if you have been involved in a scheme to provide new sanitation facilities using a particular technology, perhaps double pit pour-flush latrines, you should not describe just the technology, but the arrangements made to implement and then operate and maintain it.

It may be useful to consider your experience in terms of the project cycle – how did you:

- **identify** the need for sanitation improvements (establish demand);
- develop an **understanding of the options** (inform demand);
- **implement** the project or programme (respond to demand);
- ensure that improvements were **sustained**; and
- **evaluate** the effect of your work.

At each stage, think about what you were able to do yourself and where you found it necessary to seek help from other individuals and organisations. How were your relationships with these people and organisations defined? How did you overcome any communication difficulties and ensure that responsibilities were clearly defined and agreed?

With whom do you want to share your experience?

The answer to this question might include some or all of the following:

1. Other people working at the local level – for instance NGOs, CBOs and councillors.
2. Municipal authorities, particularly those officials who have shown an interest in local action to improve sanitation.
3. Policy-makers and planners.

The information to be shared may vary depending on the group with whom you want to share it. It may be worthwhile to develop a two-stage approach to information sharing. In the first stage, you might put out general information on what you have done. As groups come to you for further information, you can tailor information to their needs, as identified in discussions with members of the group.

How can information be shared

Just as the content of the information to be shared should reflect the interests of the group for whom it is intended, so methods used will depend on the target audience. In general, written material will be more appropriate for those municipal authorities, national NGOs, policy-makers and planners while the spoken word and visual material will be more appropriate for those working at the local level. Of course, you can use a variety of methods for any one target group. Some specific routes for sharing information are listed below:

Written material. Articles and reports can provide a useful way of providing information on your experience – what you have achieved and the lessons that you have learnt. They will only be useful to others if they clearly identify the problems that you have faced and the ways in which these were overcome. They should also be very clear about any constraints that you believe may limit the applicability of your approach. You should always write about what you did rather than what you intended to do although a comparison between the two may be useful.

Videos have the advantage that they allow people to see what has been done. However, do not attempt to use un-edited videos to convey information. Rather, decide what you want to say and make sure that the video is edited so that your points are clearly made.

Talks give you more opportunity to expand on points than reports and videos. They also allow the possibility for people to ask questions and make comments. Like other methods of communication, talks need to be well planned and structured.

A **Workshop** requires more preparation than a simple talk but offers a longer period in which to get key points across. It offers good opportunities for interaction and sharing and may be a very good way of communicating important lessons. Again, it is important to ensure that the event is well planned and structured. Information on planning and holding a workshop is given in Tool 5.1.

Exchange visits give community members the chance to interact so that those who have been involved in sanitation improvements can tell others what their involvement has involved and how the improvements have affected them. People may be more convinced by what is said by 'people like themselves' than they are by more polished statements by outsiders.

Networks as a means of sharing experience

While you can do all the things discussed on your own, you will be more successful in sharing experience if you are part of a network of people and organisations with similar interests. Such networks may operate at the local level, holding regular meetings and exchange visits. They may also make use of electronic communications, in particular emails, to share experience. The disadvantage of electronic networks is that it is difficult to convey detail and the 'feel' of a project through an email. On the other hand, they provide access to much more information than would otherwise be available. Perhaps the best approach is a mixture of local interaction and global electronic networking. Networks do present some problems, as illustrated in the box below

WESNET - An example of an NGO network in Pakistan

The WESNET network was originally proposed by Youth Commission for Human Rights (YCHR), an NGO based in Lahore. The initiative had some success in bringing together the various NGOs that were working on sanitation and solid-waste management issues in Punjab Province and to some extent beyond. Some government officials attended its meetings. However, it has proved difficult to sustain the initiative, partly because of limited funding and partly because the network is seen as belonging primarily to the organisation that initiated it. NGOs are not always as good at cooperating as they might be, partly because they are often all looking for funding from the same sources so that there is an element of rivalry. Because of this, it may be best to try to ask an organisation that is seen as neutral to take responsibility for the process. This might be an international organisation such as UNICEF or the UNDP-World Bank Water and Sanitation Program. If there is a government department that is committed and engaged, it is possible that it could take on the lead role. Where neither of these options are possible, it may be that a number of NGOs and CBOs can cooperate to set up some sort of resource centre that will be responsible for coordinating networking activities.

PART C - 5**TOOLS FOR PLANNING & MANAGEMENT****Contents**

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ABOUT THIS SECTION

This section consists of two Tools. **Tool 5.1** provides information on how to organise and hold a participatory workshop. The general principles contained should be relevant for a wide range of workshops, from those held locally in the course of local sanitation planning exercises to those intended to develop agreement on policy issues and questions of programme design. Participatory workshops can be useful at the municipal level and reference is made to the workshop held in Bharatpur early in the strategic sanitation planning process there.

Tool 5.2 describes the way in which logical frameworks or logframes can be used to define the overall objectives and individual steps required to complete a planning process and to implement the various schemes identified through that process. A participatory approach to logical framework analysis is briefly described. Finally, ways of overcoming the possible tension between the logframe's essential rigidity and the need for a flexible approach to overall planning are discussed.

TOOL 5.1 PREPARING FOR AND HOLDING A PARTICIPATORY PLANNING WORKSHOP

What this Tool will tell you

Throughout this guide, we have suggested that workshops provide a good way of bringing people to share what they know, make decisions and assign responsibilities for action. This Tool provides guidance on how to prepare for a workshop, how to organise the workshop itself and how to ensure that responsibilities for follow-up action are agreed

How and when can workshops be used?

Workshops can provide an effective way of bringing together people with an interest in sanitation improvements to:

- Introduce the concept of strategic planning;
- assign responsibilities for investigating the existing situation;
- agree on the contents of a sanitation plan; and
- review progress in implementing the plan.

A workshop at the beginning of the planning process brings everyone together and helps to build consensus on what has to be done. Later workshops help to keep everyone locked into the planning approach and ensure that the various participants know about each others activities and concerns.

The Bharatpur pilot process, provides examples of workshops being used for the first three purposes listed above. The initial workshop was used to introduce people to the idea of strategic planning and to assign responsibilities for investigating the existing situation. Later, the main stakeholders met in a second workshop to agree the content of the Sanitation Development Plan for the period 2000 – 2003.

Preparing for the workshop

To be successful, a workshop needs preparation. When preparing for a workshop, ask yourself the following questions:

- What outputs do you expect from the workshop?
- What groups should be represented at the workshop?
- How many people should attend the workshop?
- How will the workshop be structured?
- What will happen during the workshop?
- Where will it be held?

Each of these is briefly considered below.

Outputs from the workshop The workshop will only be successful if you are clear about the outputs that you hope to achieve and what you intend to do with them after the workshop has been completed. You and your colleagues should make time to discuss this at an early stage.

How many people should attend the workshop? The number of people attending the workshop should not exceed about 50. The best results will probably be achieved with 25-30 attendees. These should include representatives of all the groups who are likely to be affected by the plan.

What groups should be represented at the workshop? Workshops at the local level should include **primary stakeholders** – those who will be directly affected by the outcomes of a sanitation policy or plan, and in particular the low-income people who suffer from inadequate sanitation facilities. They should also include selected **secondary stakeholders**, those who are or may be involved in various aspects of sanitation provision. Most attendees at workshops at the municipal and state/provincial levels will be representatives of secondary stakeholders. Look for ways in which the views of primary stakeholders can be included in these workshops

You need to think about which secondary stakeholder groups and decide which of these should be represented at the workshop and at which level. For example, local sanitary workers should be represented at a local workshop but it will not normally be appropriate for them to be involved in a state level policy-planning workshop. Remember that secondary stakeholders at all levels will normally include both government and non-government groups.

Remember to contact all those individuals and groups who are to be invited well before the workshop. Let them know where the workshop is to be held, its starting time and its length. You also need to explain the purpose of the workshop and indicate what if anything they should do to prepare for the workshop

Selecting representatives In all but the smallest planning areas, it will not be possible to ensure that all the interested stakeholders can be present at the workshop. It will therefore be important to:

- decide how those who attend the workshop are chosen; and
- the arrangements to be made to ensure that other stakeholders have an input into the planning process.

Ideally, the various stakeholder groups should be asked to select a person or people to represent them at the workshop. This will be easier to achieve if the workshop is part of an ongoing participatory process. The Indian Government's Community Development Society system provides one model for how such a process can be structured. It is described in the box on the following page.

The Indian CDS system – Representation in a tiered system

The CDS system grew out of the UNICEF-supported Urban Basic Services Programme in India. It is a participatory programme that works through women in low-income and is intended to reduce poverty through self-help action. The system as it operates in Kerala is structured as follows. Low-income families are identified on the basis of 9 indicators of risk. These include, among others, lack of access to safe drinking water and sanitary latrines. Women from these families are encouraged to form neighbourhood groups (NHG), typically comprising 20-40 members. These groups are federated into Area Development Societies (ADS), which normally operate at or about the level of the political ward. Each NHG selects one member to represent it at the ADS. The various ADSs, in turn, select members to represent them on a Community Development Society (CDS) representing the whole town.

Those working at the local level should be interested in the way in which NHGs are linked with their ADS. It will often be appropriate to hold a workshop to plan local sanitation improvements at about the level of the political ward (although it may be better to subdivide systems in terms of drainage areas than political boundaries). The system of representation used in the CDS system could be adapted for use in a sanitation planning system with representatives from the various groups attending the workshop.

Similarly, representatives chosen at the area level can provide inputs to workshops held at the municipal level. For large cities, there may be a need for an intermediate level, which might be referred to as the zone. This will typically include several wards.

Structure and content of the workshop The workshop will work best if you give careful thought to its structure and content **before** the start of the workshop itself. The structure should be built around 'natural' breaks for lunch and refreshments. People work more effectively if they are reasonably fresh and are able to relax and talk informally amongst themselves from time to time. A structure should be prepared to allow achievement of the workshop objectives within the allocated time. Within this structure, there should be space for a variety of activities. Allow as much time as possible for people to work together to achieve the workshop objectives. Further details on the organisation of the workshop will be provided later in this Tool.

Location for the workshop As a general rule, workshops should be held within or close to the area that is to be planned.

Policy workshops are often held in the administrative centre of the area to be planned – the national capital or the chief town or city of a state or province. You may like to hold workshops in other locations to ensure that everyone in the planning area has a chance to contribute to the development of policy.

Municipal level workshops may be held in a central location, perhaps a government facility or a hotel. If you are inviting people from local NGOs and CBOs, try to choose a location at which they will feel comfortable. Avoid five star hotels.

A school or a community hall might be a good location for a local workshop.

There should be space available so that people can 'break out' into small groups for discussions and group exercises. If the weather is suitable, it may be possible for groups to meet outside.

Preparing information to present to the workshop

The information required for the workshop will depend on the purpose of the workshop. If its purpose is to introduce people to a strategic sanitation planning process, you need to provide some information on what the process is intended to achieve. In particular, you need to provide evidence of the need to plan. It will be best if some background information on the characteristics of a strategic approach to sanitation, drawing on the material presented in Section 2 of this guide is also available.

For planning workshops relating to small areas, it may be possible to include some of the information collection and analysis in the workshop itself. However, the more normal situation will be that there is a need for information to be collected and subjected to at least preliminary analysis before the workshop itself. The key to success is then the effectiveness with which the information can be presented to the workshop.

Some of the key points to remember when preparing information for presentation to the workshop are as follows.

1. It will be best if the people who have collected and analysed the information are responsible for preparing it for presentation and then presenting it to the workshop.
2. As far as is possible, the aim should be to present information rather than opinions.
3. Do not present masses of data, which is only likely to confuse people. Rather, try to draw out the main facts about the existing situation.
4. Prepare information in a way that is easily accessible. In some cases, this may mean that you use techniques such as videos and recordings of interviews rather than written information. Consider the possibility of making key pieces of information available to workshop participants in written or even pictorial form after it has been presented in open session.

The workshop itself

The notes that follow relate to a planning workshop, such as that held early in the Bharatpur planning process. The details of the content of the workshop will be rather different for workshops intended for purposes other than planning.

The workshop length

The workshop itself will be a fairly short event. Planning workshops will last at most 2-3 days and often less. Workshops may also be required at other stages of the process, for instance a workshop at the beginning of the process may be a useful way to bring the stakeholders together and encourage them to participate in the process. These workshops will be shorter, lasting at most one day and perhaps only half a day. The time will be used most efficiently if relevant information is available to the workshop participants as and when they require it.

The content of the workshop

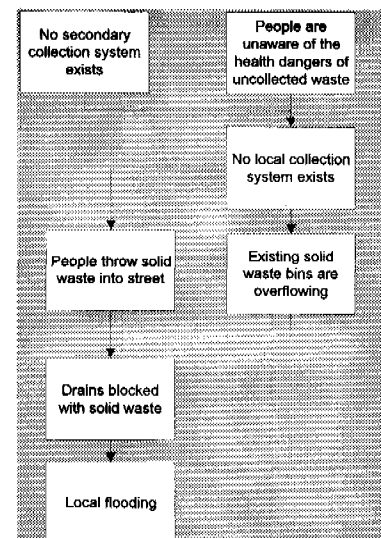
The workshop should normally include the following:

- An **Introduction** at which the background to the workshop, its purpose and the expected outputs are explained and, where appropriate, discussed. If the participants are not already familiar with them, this could include an introduction to the strategic principles outlined in Section 2 of this guide.
- The **presentation or collection** of information.
- **Analysis** of the available information.
- Development of **framework for action**
- Agreement on responsibilities for taking action

The **Introduction** provides an opportunity to set out the objectives of the workshop, at the same time ensuring that those attending are active participants rather than passive observers. Make sure that the participants introduce themselves. Apart from ensuring that everyone knows who everyone else is, this will also have value in that it involves everyone in the workshop process from the start.

Remember the point already made that **Information** to be provided to the workshop participants should be presented by those who have been responsible for collecting and analysing it. Ask presenters to distinguish between facts and opinions, as far as they are able.

The next step will be to **analyse** the available information in order to identify the underlying causes of problems. There are various options for doing this but all should involve the workshop participants as actors rather than observers. Various analysis methods are available. The method used during the first Bharatpur workshop is briefly outlined in the box below. This is a variation on problem tree analysis, in which problems are noted on cards, which are then organised and displayed so that relationships of cause and effect can clearly be seen. The figure on the right provides an example of how cards relating to localised flooding and deficiencies in solid waste collection might be arranged to show possible relationships of cause and effect.



Problem analysis used in Bharatpur

Participants were asked to write down sanitation and drainage-related problems on cards. The cards were about 200mm long by 100mm deep and participants were told to write one point per card, using key words rather than sentence, writing clearly and using not more than three lines per card. Descriptions had to be specific and the participants were asked to include both 'hardware' and 'software' aspects, the latter including issues relating to management and finance among others. Examples of physical problems noted in the course of the workshop included 'no primary collection of solid waste' and 'poor drain maintenance'.

The next stage was to collect the cards and group them under appropriate headings. Repeated cards were then removed and similar ones were edited so that each subject was covered by a single card.

The cards were next arranged into three groups, relating to factors that could not be changed, the primary causes of sanitation problems and the resulting problems with water and sanitation facilities respectively. The analysis showed that participants found lack of planning to be a primary cause of current problems. More specifically, deficiencies in management, lack of community involvement, inadequate finances and lack of user education were found to be contributory factors to problems with solid waste, toilets and drainage. These, in turn, were causing the Sujan Ganga, the moat at the centre of the city, to be polluted with sewage and refuse.

The analysis showed that Bharatpur's sanitation problems were inter-related. Pollution in the Sujan Ganga could not be prevented until the causes of pollution had been dealt with. This required that all the contributory issues had to be dealt with if lasting change was to be achieved.

The development of a **framework for action** requires decisions on what has to be done and who will do what. Obviously, the precise nature of the action and the responsibilities for that action will depend on the workshop objectives.

In Bharatpur, the workshop participants broke into two groups, one to deal with community involvement, drainage and water supply and the second to consider solid waste management, low-cost sanitation and hygiene education. For each sector, participants were asked to identify a possible lead agency and support organisations, and the resources available within those organisations. The result of the analysis is set out in the table on the following page.

This identification of resources was followed by consideration of the options for action. A number of activities were agreed which could begin shortly after the workshop so that within a few months sufficient information and experience would be developed to produce a viable sanitation plan. (The developing solutions stage described in Section 4). Some of these tasks were technical, some involved a review of existing systems and services, while others involved developing and piloting improved approaches, especially in the area of community involvement. An example of the output from this stage of the workshop is provided in the second table on the following page. It was recognised that some tasks would need outside support in the form of technical advice or funds. WSP-SA would provide or access this support where needed (e.g. from UNICEF or the Indian Institute for Rural Development).

It is necessary to decide what is to be done to ensure that the actions agreed in the workshop are actually carried out. In Bharatpur, this need was met by setting up an Interim Sanitation Coordination Committee, including representatives from the various groups represented at the workshop. Finally, a timetable for following up on the tasks agreed at the workshop needs to be agreed. Ideally, a date should be set for a follow-up event designed to monitor progress towards achieving the workshop objectives.

Result of Bharatpur resource analysis

Note: Shaded boxes indicate that a resource is lacking or needs enhancement. The agencies listed in that box are proposed additional sources of support.

	Community Involvement	Drainage	Water Supply	SWM	LCS	Hygiene Education
Lead / Nodal Agency	Agency headed by Collector, Vice-Chair MC, other GONGO and prominent persons	Yes - BMC Proposed nodal agency	Yes - PHED Should come under proposed agency	BMC	BMC	Med/ICDS CARE
Support Agency	NGO's/clrs/ CBOs/clubs, Industrial / social organisations	Yes -BMC -UIT -Housing Board	PHED	ACORD And NGO's Small scale enterprises	Sulabh UNICEF	Anganwadis, schools, Adult Ed Prog CBO's DWD
Available Personnel	Mobilise from support agencies	Yes	Yes	Yes	Yes	Yes
Technical Expertise	To be tapped from local and o/s sources	Yes but needs improvement	Yes but needs improvement	ACORD IIRD; CPCB Small enterprises	Sulabh UNICEF	UNICEF CARE IEC (Med+H)
Extension Skills	Need to be mobilised	Yes but needs improvement	NGO's, other social organisations	NGO/CBO	NGO/CBO GO's	NGO, Angan, ANM, Health Workers Youth Clubs, childrens gps, media
Capital Funds	From MC/UNICEF/ WB/ADB	Need from bilateral and multilateral agencies	Bi- and multi-laterals; State	[WB-UNDP ; CPCB, HUDCO]	BMC-inadequate (Sehbhagi Vida Yojana) UNICEF/ WB /HUDCO	UNICEF Med+H CARE
Operation + Maintenance Funds	Short-term project fund sustainable from users	Bi- and multi-laterals; MCB, State, User	Users/state	User charges (sharing basis)	User charges	ICDS, WHO, UNICEF Donations, clubs, social Institutions

e.g. Lions

Part of Bharatpur Task Summary Sheet

	Drainage	SWM	Improved latrine programme	Sanitation promotion
	Comprehensive Survey of levels	Review of current SWM system	Technical / social review of LCS in one or more colonies	Introduce LCS Promotion
Lead Agency	Consultants And MC	ACORD	BMC and Sulabh Lupin	BMC and Sulabh Lupin
Support Requirements	Terms of Reference and Funds from WB	Funds - CPCB?	Advice on how to implement study	UNICEF advice. Support from CARE / ICDS
Start Date and duration	Preparation immediately - finish by Nov	? When funds come. Duration two months	Start by July - finish in two months	
Constraints	Need good baseline map of drains	Funds	Arrival of Sulabh Hygiene Education team?	

TOOL 5.2 LOGICAL FRAMEWORKS FOR DECISION-MAKING

Introduction

A logical framework or **logframe** provides a useful way of providing information on a project in a way that clearly identifies its **overall goal**, its **immediate objective** and the **outputs** and **activities** that are required to achieve that immediate objective. It also provides information on the **indicators** that you can use to assess whether the project is proceeding to plan and the means that you can use to **verify** that those indicators have been achieved. Finally, it requires you to think of the **assumptions** that you have made in relation to the project and **risks** to the successful completion of the project.

The logframe prompts you to ask basic questions and identify potential problems and weaknesses, both those internal to the project and those that may result from external factors. By preparing the logframe at the beginning of the planning process, you make sure that you are clear about your objectives and have at least an idea of the constraints that you will have to overcome. You are thus able to make better and more informed decisions.

For small projects and schemes, all this information can be provided on a single page. For larger projects and schemes, two or three pages may be required but the system is still concise and provides basic information in a readily useable form.

The logframe structure - what has to be achieved'

The logframe is a four by four matrix with a basic structure as shown below.

	OVI	MoV	Assumptions/risks
Goal			
Purpose			
Outputs			
Activities			

The meaning of the various terms and the way in which the logframe can be used are explained in the following pages.

First column - Objectives and activities

The first column of the matrix provides information on the overall and intermediate project objectives and the activities that are required to achieve those objectives. These are divided as follows.

1. The **overall goal** is the higher order objective to which the project is intended to contribute. There should be only one goal. For a municipal sanitation plan this could be that *'the whole population, including the poor, is covered by sanitation services that respond to informed demand and are adequate, reliable and environmentally friendly'*.
2. The **project purpose** is the intended outcome of the project. There should be only one purpose. The project purpose for a municipal sanitation planning process might read something like *'All components of municipal sanitation plan for town implemented as agreed by the concerned stakeholders'*.
3. The **project outputs** section provides information on intermediate objectives that must be reached if the project is to achieve its purpose. The early outputs may relate to stages in the planning process. For a municipal plan, the first output might be *'Current problems identified and roles in developing solutions agreed'*. This might lead into a second output *'Problems investigated and solutions developed'* which in turn would lead into an output *'Municipal sanitation plan completed, agreed and ratified'*. A final output might be *'All plan outputs completed'*.
4. The **project activities** section lists the main activities that are required to achieve each output. The activities relating to the output *'Current problems identified and roles in developing solutions agreed'* might include the following:

Identify organisations and individuals with an interest in sanitation.

Develop understanding of sanitation problems through reconnaissance surveys, inspection of existing reports and records and interviews with key stakeholders.

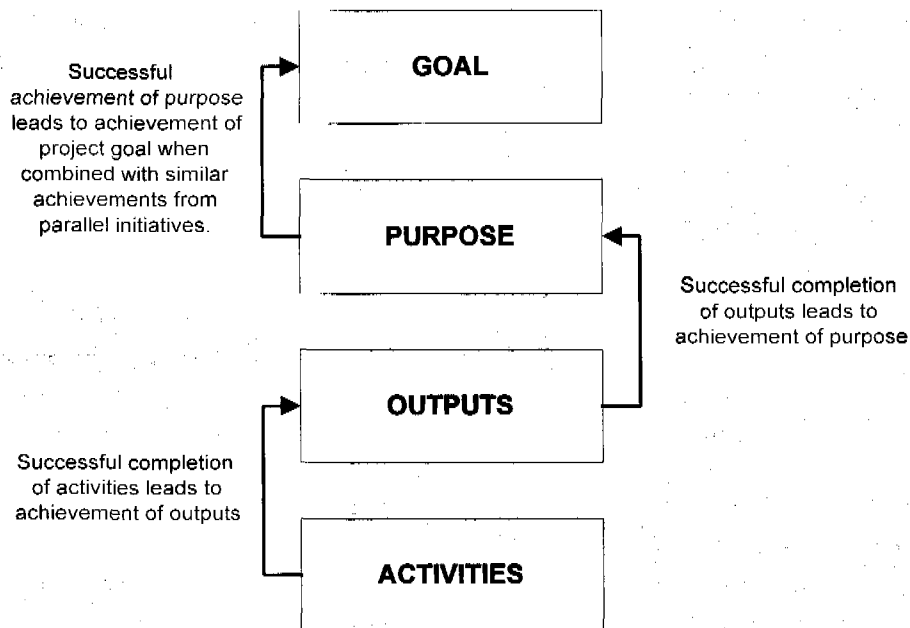
Agree priority problems in course of problem identification workshop.

Agree short-term activities required to develop solutions to problems and assign responsibilities for carrying out those solutions.

Initiate sanitation committee or similar arrangement to guide the municipal planning process.

Similarly, the activities relating to the *'problems identified and solutions developed'* output should relate to the tasks assigned to the various stakeholders. In the case of the Bharatpur process described in Section 4, activities would include *'map town at scales of 1:500 and 1:2500'*, *'investigate solid waste management arrangements in one ward'* and *'review implementation of low-cost sanitation programme in one ward'*.

The way in which the project goal, purpose, outputs and activities are linked is shown in the figure below.



Measuring performance – Objectively verifiable indicators (OVIs)

Objectives are of limited use if you have no way of telling whether you have reached them. The second column of the logframe is reserved for indicators of achievement, which specify what has to be done, when it has to be done and, where appropriate, the quality to be achieved. One or more OVIs should be provided for every objective included in the logframe.

The OVIs for the output 'Municipal sanitation plan completed, agreed and ratified might be' :

1. *Municipal sanitation plan presented and accepted at stakeholder workshop by June 30th 2001.*
2. *Municipal sanitation plan ratified by Municipal Council by September 30th 2000.*

Note the importance of stating the dates by which outputs are to be achieved

The OVIs for physical outputs will often relate to the number or percentage of households served. Thus, for instance, the OVI for a programme to introduce sewers in a specific area might be '450 households have on-plot sanitation facilities connected to sewers'. Alternatively, the OVI might be '85% of all households in catchment area connected to sewers'. OVIs for changes in behaviour and performance will often be the most difficult to define. An OVI for hand washing after a hygiene promotion campaign might be '80% of households wash hands after defecation'. The problem will be assessing whether this OVI has been achieved. We turn to this problem in the next section.

Verifying achievements - defining the means of verification

In order to show that objectives have been achieved, there must be some means of verification. The third column of the logframe is the place where the proposed means of verification (MoV) are listed. Normally, there will be one MoV for each objectively verifiable indicator.

The MoV for the two OVIs given in the previous section might be:

1. *Workshop report available*; and
2. *Minutes of council meeting available*.

These are relatively easy to check. Information on the spread and take-up of improved facilities will also be available if good records are kept of project and programme achievements. See Tool 4 for further discussion on collecting, recording and using information. It will often be more difficult to assess changes in behaviour and performance. For instance, how can you know that more people are washing their hands after defecation? Carefully planned surveys may be necessary to assess such changes. You should take specialist advice on how to carry out such surveys but the methods outlined in Tool 4.4 may give you some ideas on how to proceed.

Stating assumptions and identifying risks

When designing a project, you need to be clear about the assumptions that you make and any risks to the success of the project. The fourth column of the logframe allows this by inviting you to write down the main assumptions and risks. An assumption becomes a risk if it is not justified. The initial assumption underlying any strategic sanitation planning process is that *'the various stakeholders agree to take part in the process'*. A later assumption is that *'the plan will be ratified once it has been produced'*. There are many cases of municipal plans that have been produced by outside consultants but have never been ratified and made the basis for official policy. Without this official ratification, the sanitation plan is unlikely to have much impact. The final assumption is that *'the various stakeholders are willing and able to carry out their roles in implementing the plan components'*.

There is no point in identifying risks if you do not do something to reduce them. So, for instance, the risk that the various stakeholders will not agree to take part in the strategic planning process can be reduced by explaining to them the purpose of the planning exercise and the benefits that can bring. This example illustrates an important point – as risks are identified, activities to reduce or remove them should be included in the logframe.

The logframe as a participatory tool

If a logframe is produced in a participatory way, it is more likely to take the concerns of the various stakeholders into account. How can this be done? It will require a process including the following steps.

- Initial agreement on the overall problem to be addressed
- Identification of stakeholder groups and their interests;
- Problem analysis, in which problems are noted on cards and then sorted to form a problem tree (See Tool 7.1 for some further information).
- Conversion of the problem tree into an objectives tree. In essence this involves rewording each problem so that it becomes an objective to be achieved.
- Ranking of the objectives, the development of an agreed goal, purpose, outputs and activities and initial discussion on the OVIs and MoVs, assumptions and risks.

These steps are taken in the course of a workshop attended by representatives of all the stakeholder groups. Together, they can be referred to as a 'Goal orientated planning process' or GOPP¹. The original process was developed by the US-based organisation Team Technologies Inc, which calls it the TEAM UP process². Various international development agencies have developed their own variations on the basic GOPP³.

While the process is very thorough, it does take a lot of time - the German agency GTZ allow 5 days for a ZOPP, their version of a GOPP. Experience suggests the need for a good facilitator, who can move the process forward and help participants to identify what is and is not important without imposing his or her views on the process. Such skilled facilitators will not always be easy to find. For these reasons, you should think carefully before trying to organise a participatory GOPP session.

The logframe and strategic planning

The project outputs suggested earlier in this Tool refer to the sanitation planning process as a whole. They should provide sufficient detail for stages in the process up to and including the production of the strategic sanitation plan. Beyond this, there is a potential problem. The final suggested final output '*All plan outputs completed*' is very general. It might seem better to include a separate output for every component of the plan. There are two problems with this. The first and most serious is that the plan components are not known at the beginning of the process. The second, at the municipal level at least, is that the sanitation plan is likely to have many components, to be undertaken by a number of stakeholders, and this means that the logframe is likely to become very unwieldy.

¹ A manual on GOPP has been produced by Little and van de Geer, P.O. Box 4040, 6803 EA Arnhem, the Netherlands, tel +31 85 216242, fax +31 85 219612

² Team Technologies Inc, the producers of TEAM UP software can be contacted at 205 East Washington Street, PO Box 309, Middleburg, VA, 20118-0309, USA, tel +1 540 687 8300, email info@teamusa.com

³ The Netherlands-based organisation MDF run courses in GOPP and logframes. Their contacts in the Netherlands are MDF Management for Development Foundation, PO Box 430, 6710 BK Ede, The Netherlands, +31 318 650060, fax +31 318 614503, email mdf@mdf.nl MDF also has a South Asia branch, MDF - South Asia at 974/7 Pannipitiya Road, Battaramulla, Sri Lanka, tel +94 74 404016, fax +94 74 404017, email mdf@stinet.lk

The first problem stems from the logframe's essential rigidity. In defining not only the overall goals to be achieved but also the project outputs and activities that are required to lead to those goals, it is creating a blueprint for the work to be carried out. This approach is not theoretically compatible with a process approach in which activities and outputs have to be modified in the light of the existing situation as the process continues. Despite this obvious contradiction, the logframe does provide a sound framework within which small steps can be directed towards an overall goal. How can this advantage of the logframe be retained while retaining an acceptable degree of flexibility?

One answer to this question is to 'nest' logframes. The term nested means that an individual output from a 'higher-order' logframe becomes the purpose or goal of a 'lower order' logframe. An overall logframe is produced for the project or programme as a whole but with later outputs represented in general rather than in specific terms. The example used previously in this Tool uses this approach in that the final output, is very general '*all plan outputs completed*'. An OVI for this output might be '*Report on progress with each component available within 4 years of start of process*'. This OVI says something about the time at which the process has to be evaluated but recognises that different plan components may have different timetables for completion.

More detailed logframes can be developed for the various sanitation plan components immediately after the plan has been prepared. The goal for these components will be '*Strategic sanitation plan implemented*' with the purpose of each plan component depending on what the component sets out to achieve.

Thus for example, the purpose of the solid waste management component of the Bharatpur Sanitation Plan, summarised in Box 4.9 might be '*Solid waste collected from all areas of the city at least 3 times per week and disposed of in a way that maximises opportunities for resource re-use and minimised harm to the environment*'.

Specific outputs might include:

- *Primary collection service operating successfully in one ward*
- *Secondary collection services extended to all areas in town.*
- *Primary collection service replicated in areas in which it has been established that a primary collection service is feasible.*
- *Disposal site or sites operational and handling wastes in an environmentally and socially acceptable way.*

This approach should provide sufficient flexibility to allow detailed proposals for individual plan components to be developed once the need for them has become clear. At the same time, it provides sufficient guidance on the small steps that have to be followed to take the first steps towards overall plan objectives.

PART C - 6**TRAINING MODULES****Contents**

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ABOUT THIS SECTION

The Guide can be used as the basis for training sessions on the various aspects of strategic municipal sanitation planning. The loose-leaf format means that sections can be taken out and photocopied to form handouts. In this final tool, we provide some background notes for trainers, explaining how the guide might be used as a basis for training. These notes are for guidance only and you may need to modify the suggested approach in the light of your local situation.

The notes are intended for training courses lasting 2-3 days and include provision for both classroom sessions and field visits. However, senior policy makers will usually have limited time available and it may be necessary to develop a shortened training module, lasting perhaps half a day or a full day.

We believe that people learn more by 'doing' than by 'seeing' or 'hearing'. With this in mind, the training is designed to be interactive and participatory, with trainees exploring ideas and possibilities for themselves whenever possible. This does not mean that the trainer has no role in providing information. The philosophy here is the same as that which runs through the rest of the Guide. The best results are obtained when different stakeholders combine their knowledge and insights rather than working independently.

Introduction to training material

The training material has been divided into five modules, with each module linked to one of the five main sections of the Guide. Modules 1 and 2 should be used for all training courses. Module 1 provides an introduction to sanitation and sanitation. Module 2 deals with the development of a strategic approach.

You should select the follow up Module that is most relevant to the background and needs of the course participants. Use Module 3 if participants are involved in policy development and programme planning. Use Module 4 if most are concerned with sanitation provision at the municipal level. Use Module 5 if they are working at the local level.

Suggested timings for each module and its constituent components are included in the description of the module. These are for guidance and you may need to modify session lengths in the light of the local situation. Further information on the time to be allocated for constituent components of each module is provided within the description of the module.

It should be possible to complete Modules 1 and 2 in one day, a day and a half if a site visit is included.

Module 3 can be completed in a long day but it may be better to spread it over one and a half days.

Modules 4 and 5 are each designed to last about 1.5 days but could be developed and amended to extend over two days if required.

A checklist of requirements for running a training course is given on the following pages.

Requirements

Course presenters

It will be best if two trainers present each module. This will ensure that:

- different viewpoints and experience are presented;
- participants do not get tired of hearing the same person all the time; and
- trainers are available to provide advice to course participants during group work.

Number of participants

Ideally, there should be between 10-15 participants and no more than 25 people should attend any course. If you wish to train more people than this, it will be best to hold two training or more training courses.

Course setting

The training modules have been developed on the assumption that a suitable room is available for 'plenary' sessions including all the course participants. Space will also be needed for small group sessions (usually involving 3-5 people). If the main room is large enough, these group sessions can be held in corners of that main room but it is preferable if the groups can go to separate rooms where they do not disturb each other. You will often have to compromise on this and allow two or three groups to stay in the main room while others go to side rooms.

It will be preferable if course participants can stay close to the place where the course is held since this reduces logistical problems and ensures that they spend time together in the evenings. This can be important in developing a spirit of cooperation and team work.

Equipment and materials

There should be sufficient tables and chairs for all the participants. At least one reasonably large table will be required for each group.

A flip chart and/or whiteboard will be required to present information in plenary sessions and to allow individual groups to report back to the other course participants.

An overhead projector (OHP) will normally be required to present information. To make overhead slides, you will also have to have a supply of transparent acetate sheets that can be put through a photocopier. If you do not have access to an OHP, you can write up the relevant information on the flip board or whiteboard but this obviously takes a lot more time than using an OHP.

A slide projector will be required if you want to illustrate what you are saying with examples from the field.

Every participant should have a supply of paper and some pens and pencils.

Each group should have a clip board for use during field work.

You will also need good supplies of cards, in a number of different colours, to be used in group work. These should typically be about 200mm by 100mm in size. Plenty of flip chart paper should be available to enable groups to record their ideas and present their conclusions to the rest of the course participants. Marker pens again in a number of different colours should be provided so that individuals and groups can write on cards and flip chart paper.

If you are using a whiteboard, make sure that you have the right pens for it, ie those that leave marks that can be rubbed off.

If you are relying on more traditional blackboards, make sure that you have plenty of chalk and a good blackboard cleaner.

You will need plenty of drawing pins, sticky tape and other means of hanging up flip chart sheets and displaying cards. One possibility is to produce 'sticky' sheets, to which cards can be fixed.

Transport

You will need to consider transport arrangements, to bring course participants to the main training venue (where necessary) and to transport them on site visits and for field work. A large mini-bus is ideal for this purpose. Another option might be to hire local taxis.

Any other points

Use the remainder of this sheet to add your own checklist of requirements for running a course. (If you identify a problem during one course, write it down so that you do not forget it during the next course).

MODULE 1 – INTRODUCTION TO SANITATION AND SANITATION PROBLEMS

The module is divided into 5 sessions, requiring 3 hours training time in total. You should allow for a 30 minute break between sessions 3 and 4. A further 3-4 hours will be required if, as recommended, this session includes a site visit.

Session 1.1 - Introduction (Plenary session - Time allowed 45 minutes)

The aim of this session is to 'break the ice' and give course participants an idea of what they will be doing during the course. First introduce yourself and your fellow trainers and explain the purpose of the course – that it is intended to help participants to think and act more strategically about sanitation. Vary the introduction, depending on whether you are going to be moving on to use Module 3, 4 or 5. Explain the structure of the course, if this has not been done already. In particular, explain that the course participants will be expected to take an active part in the course, which will not just be about transferring information through conventional lectures (Allow 15 minutes).

Ask participants to introduce themselves, saying who they are, what organisation they represent, summarising their role in sanitation provision and stating what they hope to learn from the training session. You may like to ask participants to split into pairs and request that they find as much about the other person as they can in a 5 minute period and then introduce the other person to the group as a whole. (Allow 30 minutes)

Session 1.2 - What do we mean by sanitation? (Group session – 20 minutes)

The aim of this session is to ensure that the course participants have a shared understanding of sanitation. Ask them to split into groups of 3-5 people and consider what they understand by the term sanitation. Allow 10 minutes for this. Ask each group to write their definition on a large card or sheet of flip-chart paper and explain it to the other groups. Allow 2 minutes for each group to present. Allow the remainder of the time for general discussion. Make sure that the need for a broad view of sanitation, as noted in Section 1.1 of the guide, is emphasised.

Session 1.3 - Why improved sanitation? (Plenary session – 25 minutes)

The aim of this session is to introduce course participants to the idea that different people have different reasons for wanting improved sanitation. Ask each trainee to write down on a card one reason why he or she thinks that improved sanitation is important. Then display the cards, grouping those that say much the same thing. Use this exercise as an introduction to the fact that different stakeholders will have different reasons for wanting to improve sanitation and emphasise the fact that it will often be necessary to mediate between objectives. (See Sections 1.2 and 1.3 of guide)

BREAK (30 minutes)

Site visit (Recommended. Allow 3 - 4 hours – perhaps including lunch)

The site visit provides the context for the remainder of the course so it is important that it is carefully planned and organised. The site should be chosen so that it exhibits as many as possible of the types of sanitation deficiency identified in Section 1.4 of the guide. You should have already talked to the people living in the area to explain the purpose of the visit and obtain their permission for it. Ideally, the site should include an area in which sanitation improvements are planned and one in which improvements have already started. (If everything that you want to show is not available on one discreet site, look for two sites close to each other, which between them provide the examples that you need).

The course participants should split up into groups. (Allow around 3 people per group) Ask them to walk around the area and note the sanitation-related problems that they see, together with any attempts to solve those problems. Tell them that they may talk to local people and should be prepared to explain what they are doing in the area.

Note that parts of Modules 4 and 5 are fieldwork-based. The area used for the initial site visit should also be the area used for fieldwork.

Session 1.4 – Identification of ways in which sanitation services can be deficient
(Group work leading to presentation to whole group 45 minutes)

The aim of this session is to introduce/reinforce the idea that sanitation services can be deficient in a number of ways. Ask the course participants to split into the same groups as for Session 1.2 and explain that you want each group to identify and record the ways in which sanitation services can be deficient. If the course participants have just made a site visit, ask them to base their ideas, at least partly, on what they have seen during the site visit. (It will be best if this session can be programmed to take place at one of the sites visited so that the problems and deficiencies that they see are fresh in the minds of the course participants).

Ask each group to list the different types of deficiency on a sheet of paper, large enough to be displayed for all the course participants to see.

Next ask each group to present its findings. Following each presentation, a little time will be required for questions but stress that these questions should be for clarification rather than to raise other issues at this stage.

Once all the groups have presented, work with the course participants in a plenary session to bring together the various group presentations and agree a composite list of the ways in which sanitation services may be deficient. This list should be similar to that presented in Section 1.4 of the Guide.

Session 1.5 Current approaches and their problems (45 minutes)

The aim of this session is to make participants aware that sanitation problems are currently approached in a number of ways and by a number of actors. This will provide the background for a later emphasis on involving all the stakeholders in a strategic approach to sanitation provision.

Ask the course participants to identify the organisations and groups that are currently involved in sanitation provision. The various groups should be listed on a flip chart as they are identified. You should be prepared to intervene if an obvious group (for instance householders) is ignored. Do so by asking questions rather than giving answers. So, for instance, you might ask who is responsible for planning, constructing and maintaining facilities within the plot boundary. You might also ask who provides facilities in areas that fall outside the areas served by government service providers.

Once you and the group are satisfied that the list of stakeholders is fairly complete, ask whether the approach of each stakeholder is formally recognised by government. Ask participants to think about whether the actions of these groups are coordinated. Lead the discussion into consideration of the problems with current approaches to sanitation provision. Use the information provided in Sections 1.5 and 1.6 of the Guide to help you to categorise approaches and identify the problems with them.

MODULE 2 – DEVELOPMENT OF A STRATEGIC APPROACH

Time allowed for this session 3 hours and 15 minutes.

Session 2.1 - Introduction (Plenary session – Allow 10 minutes)

At the beginning of this session, explain that the aim is to explore the essential features of a strategic approach to municipal sanitation provision. Suggest that a strategy may be defined as a 'plan of action' and perhaps ask course participants to give their understanding of what is meant by a strategic approach.

Suggest that a strategic approach can be recognised by what it sets out to achieve and how it sets out to achieve its objectives.

Session 2.2 - Objectives of a strategic approach (Group followed by plenary session. Allow 35 minutes)

Ask the course participants to divide into groups and consider what should be the essential objectives of a strategic approach. Ask them to summarise each objective that they identify on a card. Ask them to put cards on a sheet or board at the front of the room as they complete them, arranging the cards so that those that cover similar subjects are grouped together.

For the last 15 minutes of the session, bring the group together to work towards agreement on the key objectives of a strategic approach. It should be possible to group the suggested objectives to give at least some of the four objectives identified in Section 2.1 of the Guide. If any of these objectives does not emerge, you should suggest it and explain why you think it is an important overall objective.

At the end of the session, you may like to present an overhead slide summarising the content of Section 2.1 of the Guide.

Session 2.3 - Key requirements for the implementation of a strategic approach (2 hours 30 minutes Mixture of plenary and group sessions. Allow a coffee/tea break at an appropriate point. Ideally, provide refreshments and ask course trainees to take these with them as they continue with course activities.)

This is an important session since it provides the basic framework for the rest of the course. Explain that implementation of a strategic approach will only be possible if the context is supportive and introduce the three aspects of a supportive context set out in Section 2.2 of the Guide:

- incentives that ensure that stakeholders want to act strategically;
- support and guidance to help them to know how to act strategically; and
- sound financial systems that provide the funds that enable them to act strategically.

Ask the participants to give examples of from their experience of each of these three aspects. Then try to draw out some key points about incentives, support systems and financial systems. In particular, note the need for rules, rewards and sanctions and

referees (See Section 2.3). Also, emphasise the point that sound finances will not be possible if there are subsidies on recurrent costs. (Allow 20 minutes to this point).

Move on to consider basic strategic principles. Introduce the five basic strategic principles identified in Section 2.2. (These can be written up or presented on an overhead slide). Give some additional information on each, based on the material contained in Sections 2.4 to 2.8 of the guide. In particular, bring out the following:

1. The need to take into account what has already been done and to respond to actual problems and deficiencies.
2. The need to assess, inform and respond to demand.
3. The concepts of division, devolution and diversity and their role in ensuring that all stakeholders, including sanitation users and those working outside the formal government sector, are involved in the strategic planning process.
4. The need to proceed in small steps towards an overall goal.
5. The need to look at sanitation in an integrated way, which balances concerns with new provision and improved operation and maintenance, consider the wider impacts of sanitation provision and deal with related problems in an integrated way.

Give at least one example of what each principle will mean in practice and be ready to clarify and explain concepts if it seems that they are not clear to the course participants. (Allow 25 minutes for the introduction of basic principles).

Now ask the course participant to split into groups, ideally around 5 in each group, to discuss the relevance of each principle and to think of examples of what its application might mean in their own situation. (Allow 45 minutes for group discussion).

Each group should then report to back on its discussions in a plenary session. If all groups 'buy in' to the basic principles, you will be ready to move on to the next session. It may be that they have identified what they believe to be other key principles. (For instance, it might be that they feel that the need to pay greater attention to operation and maintenance is a basic strategic principle). Do not dismiss such feedback. Rather explore its implications with all the course participants. It will often be the case that the concerns raised are already covered within the five basic principles and you should explore this probability with the course participants. (For instance, a process that is genuinely grounded in the existing situation will identify any problems with operation and maintenance at an early stage. A strategic approach must then tackle those problems).

The strategic approach outlined in the Guide provides guidance on the actions necessary to ensure that this can be done. They include changes in incentive systems to support improved operation and maintenance, the division and devolution of responsibilities where appropriate and matching plans to available resources in order to ensure that adequate levels of operation and maintenance are possible). If you and the participants feel after discussion that the basic strategic principle have to be modified in the light of the local situation, now is the time to do it. (Allow 45 minutes for presentation and discussion).

The final activity in this session will be to write up the agreed strategic principles in a place where they can be seen and referred to for the remainder of the training session. (Allow 15 minutes for this activity).

MODULE 3 – POLICY DEVELOPMENT AND PROGRAMME PLANNING

Time allowed for this session –

Session 3.1 – Introduction (15 minutes)

During this short introduction, explain that the aim of this module is to provide an introduction to the ways in which strategic principles should inform policy development and programme planning.

Ask participants what groups they think should help to shape policies and why. Write the answers up on a whiteboard or flip chart. Assess the answers – do course participants see a role for those from outside government? If not, raise the possibility, noting that individuals and groups other than government are already involved in sanitation provision. Try to reach consensus on the groups that might be involved in developing and shaping policies.

Session 3.2 – Why is improved sanitation important? (45 minutes)

Ask course participants to divide into groups of about 5 and consider the reasons why improved sanitation is an important policy matter. Ask them to write down their conclusions on a sheet of paper and arrange for one person to report back to a plenary session. Allow 30 minutes for discussion and 15 minutes for presentation. Use Section 3.3 of the Guide as a check and introduce discussion of any of the points made there that are not covered by the group presentations.

Session 3.3 – The role of policies and programmes (Allow 1 hour - 30 minutes for introduction and presentation of case study and 30 minutes for discussion of the implications of the case study).

Introduce this session by explaining that policy sets the framework within which national, state, provincial and local governments operate. Use an overhead slide to illustrate the point that policy-makers must be concerned with institutional structures and systems, legislation and procedures, incentive structures and the availability of resources. A second overhead can be used to suggest the ways in which programmes developed at the centre but perhaps implemented locally can be used to support policy.

(See Sections 3.4 and 3.5 for further details).

Emphasise the importance of recognising the roles of the different stakeholders, making sure that adequate arrangements exist for operation and maintenance and basing policies on information rather than hunches. Use a short case study to illustrate these points. This should preferably be based on a local initiative and must have been prepared before the training course. An example of a suitable case study is summarised in the following box.

A case study example Baldia and Orangi, two large settlements on the edge of Karachi, Pakistan. Residents have developed their own local sewerage facilities in both settlements, with guidance from the Orangi Pilot Project in the case of Orangi. Despite the fact that both areas were well served by local sewers, a new sewerage scheme for Baldia, prepared by consultants, completely ignored the existing systems. Later, OPP persuaded authorities to change the approach to an ADB-funded scheme in Orangi to allow local community groups to take responsibility for local sewers. This example raises questions about the way in which current systems allow for the roles played by the different stakeholders, the optimal use of limited resources and arrangements for operation and maintenance among others. It also shows that change is possible.

Session 3.4 - The role of Information (Allow at least 2 hours for this session, including a break for refreshments).

Introduce the session by emphasising that policies must be based on a sound understanding of the existing situation, that policy objectives must be checked against strategic objectives and principles and that there may be a need to amend legislation and procedures and introduce suitable incentives. Make a copy of Figure 3.1 from the Guide and show this as an overhead to illustrate the points that you are making.

Ask the participants to split into groups of 3 – 5 to consider what information will be required for policy development and where that information might be found. Ask them to write the various subjects on which information will be required on one set of cards and the possible sources of information on a set of differently coloured cards. Allow 30 minutes for this task. As cards are produced, ask the groups to bring them to the front and place them on a board. Where several cards say much the same thing, select and possibly amend the best card and remove the others. Try to arrange the cards so that they form a matrix with subjects of information along the top of a whiteboard or sheet of paper and sources of information along its side.

Now, ask the groups to come together in a plenary and decide where information on different subjects is likely to be found. The appropriate space or spaces can then be ticked on the matrix. At the end of this exercise, the participants will have a good idea of what information is available and where it might be found. (Allow 30 minutes)

The next step will be to consider who should be responsible for collecting and analysing information. One approach to this might be to write up a number of propositions. For instance:

- Municipalities should be responsible for collecting information and supplying it to higher levels of government.
- Consultants should be employed to develop information systems and collect information.

Ask participants for other similar propositions. Once you have a list of four or five propositions, ask the participants to split into small groups to discuss each proposition. Is it basically sound? How does it need to be modified and qualified? Allow 15 minutes for discussion and then ask the groups to report back.

Move on into discussion of the way in which information should be analysed. Use the sub-section entitled 'Information Analysis' from Tool 4.2 as a guide to what you say. Emphasise the need to consider what happens in 'informal' areas, particularly those that are not recognised by government. When considering the role of different groups, you may like to use the table pro-forma included on Page T4-9 as a guide. Ask the participants to break into groups of 3-5 to make an initial attempt to fill in the various boxes in the table. To save time, different participant groups should be asked to consider the roles and contributions of different stakeholder groups. For instance, one group might look at the roles and contributions of householders, community-based organisations and local NGOs, another at National NGOs and elected representatives and so on. (Allow 30 minutes)

Bring the groups back together to present their findings and build the overall matrix. (This will be easier to do if the information is recorded on cards that can be placed in the appropriate space in the matrix). Once this has been done, start a discussion on constraints, emphasising the need to overcome these if information systems are to be successfully maintained over time. Use the material on constraints from Note 4.2 to inform your initial remarks.

You should emphasise the fact that systems and procedures can be influenced by the availability of resources as well as legislation and official institutional structures. Use an overhead slide based on Figure 3.2 to explain this point and promote discussion.

Session 3.5 - Deciding policy objectives (Mixture of plenary and group sessions. Allow 1 hour and 30 minutes overall)

Key points to be addressed in this session include:

- Who should be involved in deciding policy objectives?
- How can they be involved?
- To what should policy objectives relate?
- How should objectives be decided?

Start the session with a plenary and ask participants to suggest the groups that should be involved in deciding policy objectives and those that are involved at present. Allow 20 minutes discussion, at the end of which you should have two lists, that on the left detailing the existing situation and that on the right detailing the desired situation. Check the latter against the list given in Section 3.9 and suggest any groups that you feel have been neglected. Do this towards the end of the session so as not to pre-empt the discussions of the course participants.

Move into discussion of the ways in which the various groups might be involved. You can use the ideas given in Section 3.10 as a starting point or, alternatively, use them later as a check-list. Whichever you do, encourage the course participants to put forward their own ideas (15 minutes)

Ask course participants to break into groups to discuss to what policy objectives should relate and how they should be decided. In order to guide discussion, make sure that the strategic principles, already developed in the course of the previous module, are

displayed where everyone can see them. Allow 30 minutes for this activity and a further 20 minutes for reporting back.

Complete this session by spending a few minutes to talk about the ways in which policy makers can promote and support the production of realistic plans at the municipal level. (See Section 3.13 of the guide and talk around a copy of Figure 3.3. Emphasise the need to develop a planning culture, to take a holistic approach to sanitation provision and to encourage coordination between actors. Explain that actions to support such policy objectives will be considered in the next session.

Session 3.6 - Actions to support policy (Allow 1 hour total for this session)

Introduce the session by saying that policy changes will require support in the form of amendments to existing legislation and procedures and in the creation of effective incentives. (5 minutes).

Use a local case study to illustrate the point that existing legislation and procedures might create barriers to the devolution and division of responsibilities. If possible, the case study should bring out the following points:

- Local facilities will often be dependent on higher-order systems (Use the figure in Box 2.3 of the Guide to illustrate this point.
- If different organisations are to be responsible for managing facilities in either different areas or at different levels in a hierarchical system, it is important that enforceable agreements on financial and managerial responsibilities exist.
- It is important to reach agreement on affordable and workable standards and specifications.

(Allow 20 minutes for presenting case study and obtaining initial feedback)

Move on to discuss incentives, recognising that changes in legislation and procedures may be needed to create better incentive systems. Briefly introduce each of the incentives suggested in Section 3.17 of the Guide. Then encourage discussion on these suggestions and also ask participants for any ideas that they have on possible incentives. (Allow 20 minutes overall).

Make the point that changes in legislation and procedures often take time and ask the participants to spend a little time in group discussion before reporting back on what can be done to facilitate any required changes. (Allow 15 minutes).

Session 3.7 - Implementing policies (Allow 45 minutes in total)

Introduce this session by reminding participants that the best of policies will be useless unless it is implemented. Emphasise the two points made in Section 3.18 that key stakeholders must 'sign up' to policies and policies must be communicated if they are to be effective.

Suggest that support for policies can best be gained by:

- holding short workshops with important stakeholders to explore policy decisions; and
- demonstrating the impacts of policy decisions.

Ask the participants to split into groups and to discuss these possibilities and any other options that they can identify. Allow 15 minutes for this discussion followed by a further 10 minutes of plenary discussion. (Total for this sub-session 30 minutes)

Finish the module by speaking for a short time on the role of centrally-sponsored programmes and encouraging discussion on the role of such programmes. Emphasise the fact that externally-funded supports should not be seen as completely separate from mainstream government projects and programmes. Rather, they should be integrated into those projects and programmes and used to support and expand them. Ask participants to give ideas of how this might be done in relation to the projects and programmes with which they are familiar. (15 minutes)

Session 3.8 - Wrapping up session (45 minutes)

This session is important. It should allow the course participants to think of the next steps that they might take to implement the lessons that they have learnt during the course. Suggest that each participant (or perhaps groups of participants from the same organisation) spend a little time to develop an 'action plan' to guide their activities after the course. If possible, you should arrange for some follow-up support to be provided to help them to work through the implementation of their action plans. Allow 30 minutes.

Finally, thank all the participants for attending and ask them for feedback on the course, preferably in writing on a pre-printed assessment sheet. Do not forget those who helped to set up the course, those who provided space, those who bought materials and so on.

MODULE 4 – PLANNING AT THE MUNICIPAL LEVEL**Session 4.1 - Introduction (Total 45 minutes)**

Explain that the Guide and this training session draw upon the experience of a municipal planning process in Bharatpur, Rajasthan, India.

Remind course participants of the four objectives of strategic planning, that plans should have a city-wide impact and be equitable and institutionally and environmentally sustainable. (Present these points on an overhead slide). Point out that a concern with equity will require that plans pay particular attention to the needs of poor communities.

Remind participants of the key strategic principles already identified in the previous session. It will be a good idea to write up the key principles and objectives where everyone can see them if this has not already been done.

Why plan? (15 minutes) Suggest that many plans are not implemented. Ask participants to split into groups of 3-5 and to spend 10 minutes thinking about the reasons for this. Afterwards, ask one group to present its results and then ask the other groups to add any points that have they have identified that have not been covered by the first group. Use this session to develop a list of actions that need to be taken/conditions that need to be fulfilled if the plan is to be successful. Use the points made in Section 4.6 of the Guide, together with the those contained in Box 4.1 as a checklist to make sure that all important points are included in the list.

The planning process (15 minutes) Suggest that the planning process can be divided into steps, using an overhead based on Figure 4.3 to illustrate those steps. Provide a brief explanation of each step and the way in which the steps fit together. Point out the importance of feedback and the need to test new ideas in practice before applying them widely.

Session 4.2 - Prepare to plan (20 minutes)

Focus first on building consensus on the need to plan. Show an overhead slide with the suggestions made in the three bullet points in Section 4.8. Ask participants to discuss these points briefly - could they be used in participants' own local situations and what other possibilities are there to build consensus on the need to plan (10 minutes)

Move on to a brief discussion of how to deal with existing plans.

Session 4.3 - Understanding current problems (1 hour)

Put up an overhead slide listing the four questions listed in Section 4.10

- Who is responsible for existing services?
- What sanitation problems does our municipality face?
- What are the causes of those problems?

- What resources are available to solve them?

Remind participants that they need to understand **how** services are currently functioning, **where** the problems are and the **reasons** for those problems

Ask participants to split into groups of 3-5. Ask them to consider how much they already know about the answers to each question and how and where they might seek to find additional information. Allow 30 minutes for discussion and then ask the groups to come back to report on their conclusions. Each group should be given 5 minutes to present their findings and you should aim to conclude the session by summarising the main points made.

(Use the material contained in Tool 4.3 as a rather more detailed checklist of the sources and types of information).

Spend a little time at the end of this session to provide an introduction to the ways in which information can be presented. Emphasise the use of base maps and overlays and the development of neighbourhood profiles. (Ideally, you should have an example of a map and overlays to show to participants). Also emphasise the points that the information needs to be 'recognisable' to those for whom it is intended. For instance, there is no point in using a drainage plan that is not to scale and does not provide sufficient level information to show how drainage systems work at present when talking with government engineers.

BREAK/TRAVEL TO SITE

Develop solutions (Role-play, including site visit site visit- Allow a total of 3-4 hours for the site visit and a further 2 hours for participants to work in groups, reflecting their assigned roles to develop what the attitude of the characters that they are representing is likely to be. Break overnight and come back for the workshop the following morning).

Explain the approach used in Bharatpur, using a slide of Figure 4.4 as a guide. Explain that 'we are going to carry out a role-play exercise in which course participants will assume the roles of various sanitation providers, users and intermediaries'. These are likely to include the municipality public health department, various government engineers, NGOs, CBOs, local and municipal-level politicians and local activists. The role-play will focus on a planning workshop, intended to produce agreement on the need to develop solutions and move toward the implementation of a strategic plan. Two or three of the participants will be cast in the role of workshop organisers and will have to present the workshop and mediate between the different groups.

The role play exercise can be set up in one of two ways. The first is to provide information on a municipality in the form of plans, slides and statistics. The other is to consider the planning process for a case study, which will of course be smaller than the municipality as a whole but which can provide an introduction to the principles governing a municipal planning process. This second option is the preferred one.

Assign roles and then show participants a copy of Figure 4.4 from the Guide. Emphasise the need to consider the different types of activity identified there as steps in the run-up to the development of a city or area plan.

Arrange a visit to the site or provide a first run through the information on which the role play exercise is to be based. Ask the course participants to view the situation, as far as is possible through the eyes of the character that they have they have been asked to adopt in the roleplay.

Once the site visit has been completed, ask them to break into groups that reflect their roles and discuss what they think 'their' characters would think about the situation that they have just seen.

OVERNIGHT BREAK

Participatory workshop simulation (Allow 3 hours in total)

The simulated workshop might be held at a location close to the site since this would allow some local people to take part in the simulation to represent the views of the community. (Think about this. The local people will have to be well briefed but this could provide a degree of realism that would not otherwise be achievable).

The people assigned to moderate the workshop should introduce the workshop and explain its purpose and its structure. Based on the Bharatpur workshop, this could include problem analysis, a presentation of the community perspective by a representative of an NGO, a presentation on strategic principles by someone from an international agency, the development of a framework for action and agreement on who will do what. (See Box 4.5 for information on the tasks identified to be carried out in Bharatpur). Finally, the workshop should consider who should do what to develop solutions and the options for managing and monitoring the process.

At the end of the process, there should be a general discussion as to the workshop process and identification of its strong and weak points. During the workshop, the trainers role should be to stand back and provide advice and guidance only when requested. However, you should monitor the process and give your ideas on how it went during the general discussion.

Developing a city-wide plan (45 minutes)

Use the guidelines and examples from Bharatpur given in boxes 4.7-4.9 to illustrate the way in which a municipal plan might be presented. Emphasise the need to:

- link the plan to available resources;
- take action to secure additional funding where necessary;
- assign responsibility for plan components; and
- make the plan official.

You should ask the course participants to discuss all these points in the light of their own situations but to focus particularly on the last, which is particularly important. Allow up to 30 minutes for this discussion.

Wrap-up session - Following up on the plan (45 minutes)

This will be an appropriate point to wrap up the session. It would be possible to move into discussion of the issues relating to the implementation of plan components but it may be best to hold a separate one day workshop on this subject. Rather, you should ask the participants to consider how they might go about ensuring that the plan can be implemented once it has been produced. Ask them to break into small groups to discuss this, focusing particularly on the need to monitor results and to ensure good cooperation between actors.

At the end of the session, encourage discussion of the ways in which the participants will put the lessons learnt in the course of the workshop into practice in their own work situations. Ask for feedback on what they felt was good and bad about the training course and whether they feel that strategic planning is a realistic possibility in their own situation.

MODULE 5 – STRATEGIC PLANNING AT THE LOCAL LEVEL**Session 5.1 - Introduction (Plenary session - 10 minutes)**

Start by reminding the participants of the concept of demand - that the term demand implies a desire for the service and a willingness to pay the cost of providing that service. Explain that the session will be built round the need to:

- establish demand for improved sanitation services;
- inform that demand by working with people to understand their situation and the options open to them; and
- respond to demand by working with people to achieve their objectives;
- sustain improvements once they have been achieved.

Some course participants may argue that the cost of services to the poor should be subsidised. Explain that this point will be considered shortly.

Session 5.2 - Preparing to plan (Plenary session 35 minutes)

Ask the question, why plan at the local level? Write up summarised answers on a board or flip chart but make sure that the following points come out: (10 minutes)

1. Plans can help to coordinating the efforts of different individuals and groups and make the best use of limited resources
2. Local plans can help to provide inputs to municipal plans and thus ensure that the latter respond to local needs.

Move on to consideration of who should be involved in planning. Ask the participants to suggest groups and individuals that should be involved in local planning. List these groups and individuals on the board or flip chart. Use Section 5.6 of the guide as a checklist to ensure that all groups are covered and suggest any groups that have not been covered at the end of the session (15 minutes)

Finally move on to consideration of how outsiders might approach the community and the need to establish a team to lead the planning process. Ask participants to note those individuals and groups that might provide the initial link with the community and those who might be involved as core team members. Also, ask for participants' ideas on the options for forming the core team. Encourage participants to discuss the advantages and disadvantages of focusing first on those who show an interest in improved sanitation in the hope that their efforts will interest and encourage others. Use sections 5.7 and 5.8 of the Guide for guidance. (15 minutes).

Session 5.3 - Establishing demand (30 minutes)

Ask participants how they might carry out a quick appraisal of the level of demand for sanitation. Write answers on the board or flip chart and bring out the need to:

- look at what people are doing; and
- hear what they are saying.

Use the material in Tool 4.4 to provide information on the methods that might be used to explore demand and the way in which more detailed participatory activities can be used to supplement initial impressions.

Session 5.4 - Sanitation promotion (30 minutes)

Introduce the session by explaining that sanitation promotion may be required to convince people of the need for improved sanitation and to take into account the wider impacts of sanitation improvements. Suggest that someone or some organisation has to advocate sanitation promotion and ask for suggestions on who or what this should be. Encourage discussion of the options. Raise the question of who should pay for sanitation promotion and again encourage general discussion among course participants.

Say that sanitation promotion must be concerned with the product (the sanitation options available), its price and the way in which people use sanitation facilities. Give examples from Tool 1.3 (and local sources if possible) of what these principles mean in practice..

Encourage a general discussion on the options that are available for sanitation promotion, where possible drawing on the personal experience of individual course participants. Introduce the ideas suggested in Tool 1.3 and encourage course participants to consider them.

Session 5.5 - Establishing willingness to pay (Total time 45 minutes)

Ask participants to divide into groups of 3-5 and consider the following questions:

- Should people pay the full cost of providing and operating services?
- If not, who should pay?
- How should they pay (directly, through tariffs or other)?

Allow 20 minutes for group discussion. Then ask one group to present their findings. Other groups should be asked whether their conclusions are the same. If not, they should be asked to explain how their ideas differ from those of the first group. Encourage debate since this is an important issue. If there is general consensus, you may act as 'devils advocate' and put forward a different view to encourage discussion. (Allow 30 minutes)

At the end, you should highlight two important points.

1. It will be more difficult to provide services to everyone if users do not pay some share of the capital costs.
2. It will be difficult to sustain services over time if users do not pay operation and maintenance costs in some way.

Explain that participants have to go through the same process with community members in order to raise their awareness of the need to pay for sanitation services. Emphasise

the point that willingness to pay for services is likely to increase over time as people become more aware of the benefits that are likely to arise from receiving those services. Make the link with sanitation promotion. By promoting sanitation, you can increase willingness to pay for sanitation services. (Allow 15 minutes)

BREAK

Session 5.6 - Informing demand (Allow 45 minutes to explain the approach and assign roles, followed by around 3 hours in the field).

It is best if this session can be built around the collection and analysis of information from a real area. Ideally, this should be an area in which there are already plans to work towards the introduction of improved sanitation services. You will need to think of the logistics of this session. How will the course participants be brought to the areas for the field work? Will the introduction to the session be held at the main training location or at the field location? In general, the latter will be preferable if a suitable location such as a school room or a community hall is available.

Introduce the session by asking 'why inform demand?'. Suggest that the most successful actions are those that result from informed decisions. Informing demand is not telling people what they should do. Rather, it is working with people to develop a shared understanding of problems and possibilities.

Introduce the three basic questions by writing them up on a board or flip chart.

- Where are we now?
- Where do we want to go?
- What options are open to us to get from here to there?

Suggest that the starting point for answering these questions should be to bring the local stakeholders together in a meeting or workshop at which the proposed process can be explained and worked through. Emphasise the need to encourage people to proceed from a good understanding of the existing situation. For small areas, it should be possible to investigate the existing situation and identify objectives within the workshop itself. Explain that, with the help of local people, we are going to try to simulate this process. We are going to make a preliminary assessment of existing problems and resources and will then identify objectives in the light of this assessment. (This site visit will be to the same area as that used for the site visit in Module 1 but the investigations now will be more detailed and focused).

Suggest the need to answer the four basic questions set out in Section 5.18 of the Guide.

- What problems are people facing and what are their causes?
- What facilities already exist?
- What resources are available to deal with the problems?
- How do people live and how might social and physical conditions influence the approach to sanitation improvement?

Give participants a sheet with these four questions written down. Also, give them copies of Boxes 5.2 and 5.3 of the guide, which will provide them with more guidance on the detailed points to be considered when answering these questions. Make any existing secondary information, including plans survey results etc. available to the participants).

Then ask them to split into groups of 3-4 people and to go out into the study area and try to obtain answers to these questions. Each group should include people from different backgrounds and disciplines if possible and should be accompanied by a local person. They may seek to find answers by looking and by talking to local people. If possible, arrange for them to meet a range of local stakeholders including local activists, local political figures, government employees who are responsible for the area, artisans with specialist skills etc. Allow at least 2 -3 hours for this activity.

Provide participants with handouts based on Tools 2.1 and 3.2 in order to give them an idea of the possible sanitation options, their advantages and disadvantages and the conditions for their use. Ask one group to be prepared to absorb this information and consider the possible physical improvements that might be appropriate in the light of what they have seen during the site visit. Ask another group to consider options for sanitation and hygiene promotion.

BREAK (OVERNIGHT)

The next two sessions simulate a planning workshop, based on the information collected during the site visit.

Session 5.7 Agreeing and recording findings (Time required - 1 hour and 45 minutes).

At the end of this period, the groups should return to their base and each group should spend 30 minutes to agree on their answers to the four basic questions. They should then put those answers on flip chart paper, emphasising what they see as being the absolutely crucial points.

The next task will be to decide which of the points are generally agreed. Start by focusing on problems and their causes. Encourage discussion of the problems identified by the various groups, leading to agreement on which are important. You might then ask participants to define objectives based on the relative importance of the priorities identified. This is a crucial stage in the process and you should allow plenty of time for it. Allow perhaps 45 minutes for agreeing the key problems and 30 minutes for identifying objectives. Be prepared to question objectives. For instance, if investigation has found that few people have access to basic sanitation facilities, do not assume that the objective must be to 'build sewers' or 'provide communal toilet blocks'. The objective may be to provide improved sanitation facilities but the way in which this should be done will depend on the answers to the other questions given above. The participants will investigate these questions when they start to think about how to move 'from here to there'.

Allow a tea/coffee break before proceeding to agree a plan.

Session 5.7 - Agree plan (Allow 2 hours)

The group should now have analysed the information obtained in the field and should have a good idea of their objectives. Ask the groups selected the night before to present their findings on the available options and then move into discussion leading to agreement on:

- what should be done
- when it should be done; and
- who should do it.

If necessary, remind the participants that plan components might include changes in behaviour, improvements in the way in which services are organised and the introduction of new services in addition to physical improvements. (See guide, section 5.25).

You might suggest that the participants record their answers to these and other relevant questions (to be agreed through discussion) in the form of a matrix. The headings for the matrix might include the following:

Task	Resources required	Start time	Expected duration	Group primary responsibility	with Government approval required?
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These headings are for guidance and course participants should develop their own headings. Remember the need to consider funding arrangements for each plan component.

At the end of this session, you will have the basis of a local sanitation plan for the area in which you are working.

Session 5.8 - Following up on the plan (45 minutes)

Introduce the session by reminding the course participants that the process does not finish with the implementation of the plan. Stress the need to identify those planned activities that will require action from outside organisations and institutions and stress the need to monitor the progress of the plan. Ask the participants to break into groups to discuss how they will implement what they have learnt from the training course. Perhaps ask each participant to make a personal programme for acting more strategically in the future.

Ask the participants to give their views on the content and style of the course. (This will help to ensure that the next course is better because it incorporates the lessons from this one).

REFERENCES AND SOURCES OF FURTHER INFORMATION

ABOUT THIS SECTION

This section contains details as to where you might obtain further information related to strategic sanitation planning. There is a wealth of resources that are available in a variety of forms. The references in the annotated bibliography are divided according to the structure of the guide to help you identify the most relevant source of information for the purpose that you require.

Traditionally, information has been made available as printed reports and books. However, the internet is increasingly becoming the most versatile dissemination tool for information and is also increasingly used for communication. Through email networks and electronic publishing, such as the weekly *SOURCE Water and Sanitation News Service*, it can also be a useful starting point to find out about new publications and recent developments.

If you are unfamiliar with using the internet, the ELDIS Gateway to Information Sources on Development and the Environment offers some excellent and user-friendly guidance on where to begin an information or literature search and on ways of keeping up to date with new publications. It also includes a training guide and set of tools on how to use WWW (world-wide web). Refer to the section on internet information networks for details about ELDIS.

This section also contains information about :

- mailing lists, discussion groups and electronic conferences
- publications and newsletters
- key international organizations in water and sanitation

PART A - CONTEXT AND CONCEPTS

Urban Sanitation Problems and the Need for a Strategic Approach

A Review of Sanitation Program Evaluations in Developing Countries

Anne LaFond. (1995) USAID Environmental Health Programme Activity Report 5.

Investment in sanitation has been inadequate for several reasons. The demand for sanitation is often low, and stimulating it takes time and money. Many development institutions are not attuned to demand-led programming, which may explain their unenthusiastic approach to investing in sanitation. Furthermore, key decision-makers are not clear about an overall strategy for sanitation programming, have not reached a consensus on a definition of sanitation, and differ on the optimal role for governments, NGOs, communities, the private sector, and external donors in program implementation. This paper consists of a review and analysis of sanitation program evaluations and sanitation program strategies of various implementing agencies, a summary of lessons learned, and provisional program guidelines for discussion among planners and managers. The six topics under which data were collected and the findings are presented are service delivery, the role of sanitation consumers, influencing behavior, capacity building, economics and financing, and intra- and inter-sectoral links.

Learning what works: 20 Years Cooperation in Water and Sanitation

Maggie Black (1999) *UNDP-World Bank Water and Sanitation Program* (1999)

The UNDP/World Bank Water and Sanitation Programme has published a book called: "Learning what works: A Retrospective view on International Water and Sanitation Cooperation, 1978-1998". This new publication traces the developments which have guided thinking and action in the water and sanitation sector since the Program's inception in 1978, and analyzes how the Program has affected - and been affected by - these developments.

Characteristics of a Strategic Approach to Sanitation Planning

Toward a Strategic Sanitation Approach - Improving the Sustainability of Urban Sanitation in Developing Countries

Albert Wright

The urban environmental sanitation crisis in developing countries is taking a large health, economic, and environmental toll on all city residents. Willingness to pay for basic water and sanitation services is often high in peri-urban neighborhoods, provided that services are appropriate, effective, and affordable. The positive and negative experiences of a wide range of organizations and institutions worldwide have been assessed and analyzed in developing a demand-based strategic sanitation approach. A demand-based approach requires implementing agencies to find out what potential users want and what resources they have to finance and manage installed systems. Adoption of strategic sanitation principles has been seen to delivery results and to generate better projects. The use of a strategic sanitation approach also helps to build capacity within implementing agencies and enhances the ability of communities to make sustainable sanitation improvements.

The document is available from the UNDP/WorldBank Water and Sanitation internet site

www.wsp.org/english/urban-ssa.html

Strategic Sanitation Approach: a review of literature

Andrew Cotton and Darren Saywell (1999) *Water, Engineering and Development Centre (WEDC)*

The purpose of the review is to examine how the key concepts underlying the Strategic Sanitation Approach (SSA) have been addressed in operational terms on the ground, highlighting examples where SSA ideas have been applied, what problems were identified in their application, and what issues require further consideration or clarification with the approach as a whole. Each section ends by abstracting the key points identified and posing questions which remain unresolved.

<http://info.lut.ac.uk/departments/cv/wedc/gamet/ssacover.html>

Better Sanitation Programming: a UNICEF Handbook

US AID Environmental Health Project (1997) UNICEF, New York, USA.

Produced by UNICEF's Water, Environment and Sanitation Cluster (Programme Division) and USAID's Environmental Health Project, the UNICEF Handbook consists of a series of notes for better decision-making and strategic sanitation planning. The book includes chapters on building community will, identifying communities and community participation, technology options, financing and institutional arrangements. The Handbook also provides a useful set of resources for participatory methods, the programme design process, and resources for workshops, meeting, and other programme-design activities.

Household-Centered Environmental Sanitation Model

John M. Kalbermatten, Richard Middleton, and Roland Schertenleib (1999), SANDEC, Switzerland

The Household-centred Environmental Sanitation approach is a further development of the 'unbundled' approach advocated in the Strategic Sanitation Approach and offers a potential solution to the problems associated with the conventional approach to water supply and environmental sanitation based on a highly-centralized system of decision-making, usually under the control of the national government. The HCES model is therefore predicated on the provision of authority to act on responsibilities assigned to the stakeholders at whatever level the decision is appropriate.

<http://www.wsscc.org/vision21/docs/doc09a.html>

PART B - PROCESSES

Policy Development and Programme Planning

Guidance Manual on Water Supply and Sanitation Programmes.

WELL Resource Centre (1999) DFID, London

The Manual has been prepared as a tool to help improve DFID's support for water supply and sanitation (WS&S) projects and programmes in developing countries. The primary purpose of this *Manual* is to set out the principles, procedures, and practices that should guide decisions on the choice, design, and management of appropriate WS&S projects. Because the effectiveness and sustainability of WS&S projects depends not only on technology choice, but also, critically, on user involvement, the right gender approaches, innovative community-based financing, and the promotion of behavioural change, the guidance includes discussion of social, financial, and institutional aspects as well as engineering and health concerns. The Manual has been written primarily for DFID staff: both those identifying, appraising, and evaluating WS&S projects; and those developing, managing, and monitoring such projects, but will also be of interest to its project partners in national and local governments, non-governmental organizations (NGOs), and other external support agencies.

World Bank Sourcebook on Participation.

The World Bank, Washington DC 1996.

The Participation Sourcebook is a how-to guide written to "highlight the importance of the participatory approach in economic and social development". Includes the involvement of the private sector, NGOs, the poor and community groups in policy dialogue and decision making for project lending. This *Sourcebook* is targeted for World Bank Task Managers and those who work with them to assist them in supporting participatory processes in economic and social development activities. It contains numerous subject sections as well as examples of how World Bank staff used or helped others use participatory approaches in Bank-supported operation. Other chapters are devoted to reflections on participation, participatory planning and decision making, enabling the poor to participate and participatory techniques.

Contact address: The World Bank, 1818 H Street, NW, Washington, DC 20433, USA. Fax: (202) 477 0565. The World Bank Participation Sourcebook is also available online at:
<http://www.worldbank.org/html/edi/sourcebook/>

Sanitation Planning at the Municipal Level

Resources on Participatory Approaches and Communication for Water and Sanitation Programming: annotated references

Dick de Jong, Veera Mendonca and Silvia Luciani (1997)

Advocacy and Communication Strategies Working Group, Water Supply and Sanitation Collaborative Council, IRC International Water and Sanitation Centre and UNICEF, 1997

This resource package on participatory approaches and communication tools aims to serve planners, implementors and field workers who are dealing with advocacy, social mobilization and programme communication for change in water and environmental sanitation programming. The document incorporates a variety of annotated information: important publications, training manuals, workshops, training courses and other resources available. The resource package consists of two parts; *Resources on Participatory Approaches and Communication* and *Communication and Training for Water Supply and Environmental Sanitation*. An appendix provides contact addresses of publishers and other organizations of which materials have been included

The resource package is available on the internet at

<<http://www.irc.nl/themes/communication/comres/comres00.htm>>

and is also available in printed form and on diskette, free of charge from:

IRC International Water and Sanitation Centre, PO Box 2869, 2601 CW Delft, The Netherlands.

Telephone: +31-15-219 29 39. Fax: +31-15-219 09 55. E-Mail: general@irc.nl

Municipalities and Community Participation - A Source Book for Capacity Building

Janelle Plummer (1999) GHK International / DFID

The participation of poor urban communities in the delivery of services and infrastructure is becoming common development policy. As the implementation arm of state and nation policies, municipalities are increasingly cast participatory projects. Yet they are often bureaucratic and resource-deficient organisations and it is unlikely that they have the skills or organisational capacity to 'let participation in'. It is also unlikely that they have a comprehensive idea of what capacity is required.

Municipal officials are interested in exploring what participation means, where participatory processes have been tested and what lessons their peers have learnt. This sourcebook provides a strategic framework for municipal capacity building and illustrates a range of experiences of community participation and municipal change from ten different case studies.

Partnership for Local Action: a sourcebook on participatory Approaches to Shelter and Human Settlements Improvement for Local Government Officials.

UNCHS HABITAT/CityNet (1997).

Recognising the important role of local governments in tackling people's problems, it became necessary to strengthen capacities in dealing with human settlements issues in a participatory way. The Sourcebook identifies issues and case studies which illustrate how local authorities can respond to problems of urban poverty in a community in a sensitive way. It provides a guide to a range of training materials and institutions available to assist local governments, and includes a bibliography. It also gives an overview of demographic, social, economic, and environmental trends in Asian cities, a rationale for upgrading low-income settlements in cities, and includes a chapter on local authorities and the need for institutional reform and capacity building.

Financial Management of Water Supply and Sanitation - A Handbook

WHO (1994)

Describes a range of financial principles and methods for improving the management of water supply and sanitation services - whether large or small, urban or rural. Addressed to decision-makers, the book shows how financial mechanisms, such as cost recovery, cash raising, and cost containment, can be used to ensure that services are financially sustainable and able to meet users' needs. The book introduces some of the underlying principles for ascertaining that all resources required for services are identified and available and provides a practical guide to methods of cost recovery.

Toolkits for Private Participation in Water and Sanitation

World Bank (1997)

Toolkits for Private Participation in Water and Sanitation are aimed at ministers and mayors and outline the advantages/disadvantages of involving the private sector in the provision of water and sanitation services. The processes of programme identification, negotiation and contractual formation are covered by three toolkits:

Toolkit 1 - Selecting an Option for Private Sector Participation,

- **Selecting an Option for Private Sector Participation:** What problems does it hope to solve? Which private sector options offer the best solutions to these problems? Do existing legal and regulatory arrangements support private sector involvement?

Toolkit 2 - Designing and Implementing an Option for Private Sector Participation

- **Designing and Implementing an Option for Private Sector participation:** guidance on the process by which a government fine-tunes the option it has chosen, makes the legal and regulatory changes necessary for this option, and develops and enters into a contract with the private sector.

Toolkit 3 - What a Private Sector Arrangement Should Cover

- **What a Private Sector Arrangement Should Cover:** checklists of the issues that should be covered in three basic kinds of contract: the concession contract, the build-operate-transfer (BOT) contract, and the management contract.

Water & Sanitation Help Desk, Room F4K-172
The World Bank, 1818 H Street, NW, Washington, DC 20433
Fax (202) 522-3228
email : whelpdesk@worldbank.org.
<http://www.worldbank.org/html/fpd/wstoolkits>

World Health Organisation Operation and Maintenance Working Group of the Water Supply and Sanitation Collaborative Council

Practical tools to achieve effective Operation & Maintenance

The Working Group has developed a series of tools which can be used at the country level to improve O&M performance. The tools have been developed in response to the demand for practical solutions to the sector's problems. They include guidelines, manuals, training packages, and case studies. Individual tools have been designed to meet the specific needs of sector participants, from the information needs of policy makers in both private and public operations to the more practical needs of engineers and technicians. Collectively, the tools help all those involved in water supply and sanitation. Those currently available are:

- *Selected Case Studies on Operation and Maintenance of Water Supply and Sanitation Systems.* These case studies describe different O&M experiences in a variety of countries in both rural and urban settings. They are a useful source of practical information for improving O&M practice.
- *Tools for the Assessment of Operation and Maintenance Status of Urban and Rural Water Supply.* These comprehensive guidelines show how to assess O&M performance in both rural and urban areas
- *Operation and Maintenance of Urban Water Supply and Sanitation Systems: A Guide for Managers.* This publication examines the factors that may prevent existing urban water supply systems working efficiently, and provides guidelines and solutions for optimization.
- *Linking Technology Choice with Operation and Maintenance.* This document helps users to make more appropriate technology choices by providing information on the O&M implications - particularly the costs - of selecting a specific technology.

For further information on the tools, contact the Operation and Maintenance Working Group
Water, Sanitation and Health (WSH)
World Health Organization CH-1211 Geneva 27, Switzerland
Tel.: (+41-22) 791-3946 Fax: (+41-22) 791-4159
http://www.who.int/water_sanitation_health/wss/o_m.html

Urban Services Manual

General information on planning for urban services is provided by the Urban Services Manual, produced by WEDC with assistance from GHK Research and Training. The manual aims to provide detailed guidance on the planning, design implementation and sustenance of improved services for the urban poor through integrating participatory approaches at the local level with strategic improvements to city level infrastructure. Its focus is on the municipal level and it is built around an action planning approach. The manual has been prepared in six separate sections, each of which is aimed at a particular audience. Each section 'stands alone', so that it can be used without the reader necessarily having to work through previous sections. Section 2 of the Manual provides guidance on the different institutional arrangements that can be used to implement action plans. Technical sections of the guide cover sanitation, solid waste disposal and drainage alongside other infrastructure services.

Note : the manual is due to be published in September 200. Contact WEDC for further information

Sanitation Planning at the Local Level

Communicating Health - An Action Guide to health education and health promotion.

John Hubley, TALC, London, 1994.

It is increasingly being realised that the prevention of disease and the promotion of health depend on the social conditions in which people live and decisions made by politicians, planners, families and individuals. This book explores the role of communication in improving people's health and discusses strategies for health education, health promotion and empowerment of families and communities to take action on health issues. Practical guidelines are given on how to carry out effective communication in a wide range of settings, including the family, community, schools, health services and the mass media. Among the topics covered are an introduction to health education and health promotion; understanding human behaviour; what communication is; how to teach effectively; face-to-face communication; working with communities; using media and popular media; working with children and young people; intersectoral collaboration; and the planning process, including research, evaluation, and preparation of project proposal.

Contact address: TALC, St. Albans, AL1 4AX, UK. Tel: 0727 53869; Fax: 727 46852.

Participatory Development Tool Kit.

Deepa Narayan and Lyra Srinivasan (1993) The World Bank, Washington DC

This Tool Kit, with accompanying materials, is designed primarily for project managers, engineers, and trainers in the water and sanitation sector. Those working in other sectors, as well as Researchers, however, may equally find this Tool Kit useful.

This is the last in a series of four publications by the World Bank and PROWESS and is designed as a companion to the other publications. The overall purpose of the Tool Kit is threefold: 1. To stimulate development practitioners at all levels to consider and promote participatory approaches by letting them see and touch materials that actually work in the field. 2. To provide trainers with examples of participatory materials. 3. To offer ideas to local artists and field workers so that they can create their own participatory materials. There are 25 "participatory activities" listed and described. For each activity the purpose, time taken, audience and materials needed (some of which are provided), is given. A number of these activities are of direct relevance to both PRA and PM&E. Examples of some of the most useful participatory activities described include: 'Map making'; 'Pocket chart'; 'Gender analysis'; 'Three-pile sorting cards'; 'Poverty ranking'; 'Understanding the decision making process', and 'Monitoring forms'.

Participatory Evaluation: Tools for Managing Change in Water and Sanitation.

Deepa Narayan-Parker, PROWESS series on water supply and sanitation projects, The World Bank, Washington DC 1994.

This is a useful report for PRA users and those at all levels concerned with PM & E, both in government and NGOs. The volume aims to explore the role of participatory evaluation, with a focus on water and sanitation programmes. It draws on 15 years of experience in participatory development and tries to move beyond participatory planning to participatory monitoring and evaluation. Sustainability is discussed, in terms of equipment, human resources and institutional capacity. The concept of participatory evaluation is considered, and the potential for the use of participatory methods outlined, along with its characteristics, strengths and pitfalls. Indicators, methods of monitoring and replicability should be considered for each project, including the 'what' exactly should be measured, and by 'whom'. Detailed examples in the water and sanitation context are given. It is important to be able to assess change over time, and participatory methods offer a way forward.

Participatory Evaluation Tools for Managing Change in Water and Sanitation.

Deepa Narayan-Parker, The World Bank, Washington DC 1993.

The methodology described in this document may be of interest to policy makers, managers and planners working on projects - not only those in water and sanitation, but also in other sectors. This very useful document will be widely relevant to members of government, large donor institutions, and NGOs. Part of PROWESS's development of participatory techniques, this book is the first in a series of four, although this is the most relevant to PRA. The aim of this book is to challenge the "reluctance to leave the classical 'objective' methodologies" and "move PE into the mainstream of development". It recognizes several risks: participatory tools can be simply used as extractive techniques; information gathered may not be used by managers; and that there is a danger that PE will be relegated to the community level when many of the tools and methods can improve the performance of government officials and external agencies. The book is practically oriented around a framework of indicators measuring sustainability, effective use and replicability.

Community Initiatives in Urban Infrastructure

Cotton, A. P., Sohail, M. And Tayler, W. K. (1998)

This manual investigates the extent and nature of the involvement of low-income urban communities in the provision of their local infrastructure. It also provides guidance for policy-makers and professional staff of urban government, development agencies, non-government organisations, and small to medium enterprises for promoting increased involvement of communities in the procurement of neighbourhood (tertiary level) infrastructure. Cases relating to water supply, sanitation, drainage, access, paving, street and security lighting, solid waste removal, and community buildings are examined.

http://www.lboro.ac.uk/departments/cv/wedc/community_initiatives/contents.htm

PART C - TOOLS FOR STRATEGIC PLANNING

Tools For Hygiene and Sanitation Promotion

Happy, healthy and hygienic: how to set up a hygiene promotion programme

Valerie Curtis and Bernadette Kanki, United Nations Childrens Fund in New York

This set of four mini-manuals is based on the experiences of the UNICEF-supported Saniya project in Burkina Faso. The objective of the series is to show how to encourage people to adopt safer hygiene practices and to make hygiene programmes more effective. It advocates the promotion of safe hygiene practices as preventive measures against diarrhoeal disease, and thereby contributes to a reduction of child mortality in developing countries. The four mini-manual titles in this series are: Planning a Hygiene Promotion Programme, Risk Practices, Target Practices, Motivating Behaviour Change and Communicating Hygiene

<http://www.unicef.org/programme/wes/pubs/hyg/hyg.htm>

Sanitation Promotion

edited by M. Simpson-Hébert and S. Wood (1998). WSSCC Working Group on Promotion of Sanitation

The book provides ideas, practical lessons based on experience, guidance on "best practices" in meeting a range of difficult needs, and some innovative new tools for both promoting sanitation and introducing ecologically-friendly technologies. Although all areas of sanitation are considered, the major emphasis is on the management of human wastes. The book includes a collection of original articles, case studies, checklists, worksheets, and stimulating ideas aimed at raising the profile of sanitation and thus attracting the assistance and investments needed to make progress. It provides ideas on promotional techniques that can be used to gain political will and secure partnerships, whether at the government level or with non-governmental organisations and the private sector.

<http://www.wsscc.org/publications/spkit.html>

Further information on this document can be obtained from the
Water Supply and Sanitation Collaborative Council
c/o WHO (CCW), 20 Avenue Appia, CH-1211 Geneva 27, Switzerland.
Tel. +41 22 791 3685, fax +41 22 791 4847, e-mail: wsscc@who.ch

UNICEF Manual on School Sanitation and Hygiene

This manual on school sanitation and hygiene (SSH) deals with both hardware and software aspects needed to bring about changes in hygiene behaviour of students and, through these students, in the community at large. The *hardware* is the total package of sanitary conditions and facilities available in and around the school compound. The *software* are the activities aiming to promote conditions at school and practices of school staff and children that help to prevent water and sanitation-related diseases.

<http://www.irc.nl/sshe/manual/index.html>

The Participatory Hygiene and Sanitation Transformation (PHAST) Initiative: - a new Approach to Working with Communities WHO (1997).

Describes the Participatory Hygiene and Sanitation Transformation (PHAST) approach, based on an innovative set of participatory techniques, that has demonstrated its ability to promote hygienic behaviour, sanitation improvements, and community management of water and sanitation facilities. The approach is designed to be used in resource-deficient settings, and aims to bring about change in terms of environmental and behavioural improvements. The document explains how the approach stimulates a very high degree of community involvement and enthusiasm while also allowing outsiders to appreciate the depth and breadth of local knowledge and intuition.

<http://www.who.int/peh/gelnet/hlm97wat.htm>

The PHAST methodology. A Step-by-Step Guide: a participatory approach for the Control of Diarrhoeal Disease WHO (1998)

Provides step-by-step instructions for helping communities improve hygiene behaviour, prevent cholera and other diarrhoeal diseases, and manage their own water and sanitation facilities. It is addressed to facilitators working in the community and uses the Participatory Hygiene and Sanitation Transformation (PHAST) approach which relies on visually based learning materials and activities aimed at stimulating community enthusiasm and participation.

Hygiene Evaluation Procedures: Approaches and methods for assessing water- and sanitation-related hygiene practices

Almedom, A., Blumenthal, U., and Manderson, L. (1997)
International Nutrition Foundation for Developing Countries

Actions Speak. The study of hygiene behaviour in water and sanitation projects,

Boot, M.T. and Cairncross, S. (1993)
IRC International Water and Sanitation Centre and London School of Hygiene and Tropical Medicine.

Just Stir Gently. The way to mix hygiene education with water and sanitation,

Boot, M.T. (1991) IRC Technical Paper No.29, IRC International Water and Sanitation Centre, The Hague.

Hygienic, happy and healthy - a series of practical manuals designed to help you set up a hygiene promotion programme. Part 1. Planning a hygiene promotion programme.

Curtis, V. (1997). Draft manual prepared for UNICEF.

July 2000

Tools on Technologies and Sanitation Choice

Low-cost Sanitation: A survey of practical experience

John Pickford (1995) Intermediate Technology Publications.

This book is valuable because, as its name suggests, it is a survey of what has actually happened in the field, based on the author's unrivalled knowledge of low-cost sanitation systems. The practical manual describes and compares a range of low-cost systems – what they are, where they are appropriate, and how they can be planned, built, operated and maintained. Particular emphasis is given to software aspects – the role of women and agencies in sanitation projects and programmes, and how individual householders and communities improve their own sanitation. The author examines the underlying health, social and cultural aspects and preferences in diverse regions of the world; and gives evidence of the diseases which occur through lack of adequate sanitation provision, and the health benefits which result from its installation or upgrading. The book concludes with a discussion about the practical, financial and organization considerations of obtaining or upgrading sanitation provision, the emphasis being firmly on the community and its needs and preferences.

Ecological sanitation

Esrey, S.A. (et al.). (1998).

This book provides an introduction to concepts of ecological sanitation and shows how systems which replicate natural ecosystems can offer an appropriate form of technology to tackle increasingly prevalent problems of urban sanitation in developing countries. The authors provide substantial evidence to suggest that these systems offer low-income communities in the developing world a chance to use local knowledge and traditional practices to provide affordable and sustainable solutions to the existing environmental and health problems. Case studies illustrate the advantages of systems of ecological sanitation as a viable alternative to conventional 'flush' sewerage and 'end-of-pipe' wastewater treatment.

SIDA, Swedish International Development Cooperation Agency, Stockholm, Sweden,

On-Site Sanitation

A Guide to the Development of On-Site Sanitation

Franceys, R., Pickford, J.A. and Reed, R.A. (1992) WHO, Geneva.

Provides detailed practical and technical advice intended to guide the selection, design, construction, and maintenance of on-site facilities for the removal of human excreta. Addressed to engineers, sanitarians, medical officers, and project planners, the book concentrates on technical options suitable for householders building their own latrines, whether in small communities, rural areas, or deprived urban settlements. Details range from line drawings illustrating features of design and construction, through a list of reasons why improved sanitation may elicit negative responses from users, to instructions for calculating the internal dimensions of a septic tank.

On-plot Sanitation for Low-income Urban Communities: Guidelines for selection

Cotton, A. and Saywell, D. WEDC, Loughborough University (1998)

<http://www.lboro.ac.uk/departments/cv/wedc/onplot/onplot98.htm>

Particularly relevant because it refers specifically to sanitation options for low-income urban communities.

Guidelines for Operational and Maintenance of Public Toilets

Urban Management Programme - Regional Office for Africa (1995)

These Guidelines provide information to those who are actively involved in the management of public toilets by presenting examples of good practice in operation and maintenance. They offer criteria and arguments to decision-makers and planners from both public institutions and communities. They may also assist the ongoing discussion on the roles of the public, community, and private sector in the area of public toilets and how to improve their management.

Low-cost sanitation in areas with shallow groundwater

Sarah Parry-Jones and John Pickford

A WELL technical brief on the subject of constructing low-cost, on-site sanitation facilities in areas with a seasonally high groundwater table, or in areas which are prone to flooding. This is clearly a widespread problem and the aim of this technical brief is to provide some practical guidance on sanitation options in these difficult conditions.

www.lboro.ac.uk/well/services/tecbriefs/lcshallow.htm

Further information on pit latrine options in the African context is provided by Morgan P, *Rural Water Supplies and Sanitation: A Text from Zimbabwe's Blair Research Laboratory*, published by Macmillan in 199 which provides a good introduction to VIP latrines

Sewerage and drainage

Information on appropriate forms of sewerage can be found in

Low Cost Sewerage

edited by D. Mara (1996). Wiley

This contains a number of papers presented at a workshop and gives details of a number of approaches to sewerage from various locations in Asia, Africa, South and North America and Europe. It covers both conventional low-cost sewerage and sewered interceptor tank systems.

Sustainable Sewerage: Guidelines for community schemes

R.A. Reed (1995)

This handbook describes how conventional sewerage schemes can be modified to reduce the cost of construction and maintenance and suggests objective methods of prioritizing communities needs for sewerage. It surveys the planning, selection, design, management and maintenance of community schemes, and provides technical and financial suggestions on cost-effective practice and procedures. Non-conventional options are discussed as well as the conventional approach to sewerage design and implementation.

The Design of Shallow Sewer Systems

UNCHS Habitat (1986)

The specific objective of this publication is to introduce an innovative low-cost sanitation technology and to present a methodology and criteria for its planning, design and implementation. The manual has been prepared as a design tool for national planners and engineers engaged in the provision of infrastructural services in urban slums and squatter settlements.

Simplified Sewerage: Design Guidelines

Bakalian, A., Wright, A., Otis, R., and de Azevedo Netto, J. (1994). UNDP-World Bank Water and Sanitation Programme

Provides detailed technical guidance for the design of low-cost sewerage systems. Includes chapters on design criteria, operational experience, and costs.

Surface Water Drainage for Low-income Communities

WHO 1991

An illustrated practical and technical guide to the design, construction, rehabilitation, and maintenance of surface water drainage systems in low-income urban areas. The book concentrates on the many "do-it-yourself" measures that communities can undertake to construct a simple, effective, low-cost drainage system or to rehabilitate an existing system that has fallen into disrepair. Projects conducted with engineering assistance and municipal support are also thoroughly described. Readers are introduced to four principal phases of a typical neighbourhood drainage improvement programme and then given full details on the technical aspects of drainage design, construction, and maintenance, including the pros and cons of different technical options.

Storm Drainage - an engineering guide to the low-cost evaluation of system performance

Kolsky, P. (1998) Intermediate Technology Publications

The manual is written to help engineers, aid and agency workers understand drainage problems more clearly in the developing world, so that they can work towards finding practical solutions. It focuses on three questions of particular relevance to low-income urban areas in developing countries: what is drainage performance and what happens then it floods, how can we evaluate a drainage system and to assess how best to improve performance and what are the effects of solids in drains upon performance?

Treatment, disposal and reuse of excreta and wastewater

Guidelines for the Safe Use of Wastewater and Excreta in Agriculture and Aquaculture - Measures for Public Health Protection

D. Mara and S. Cairncross (1989) WHO

Presents and explains the full range of practical and technical factors that need to be considered when planning, designing, and implementing schemes for the safe reuse of wastewater and excreta in agriculture and aquaculture. Emphasis is placed on the practical implications of new knowledge indicating that the recycling of wastewater and excreta can now be managed in ways that eliminate risks to health. The book provides detailed guidance on technical options for health protection and on the legal and financial components of project planning and implementation.

http://www.who.int/environmental_information/Information_resources/on_line_water.htm

Solids Separation and Pond Systems for the Treatment of Faecal Sludges in the Tropics - Lessons Learnt and Recommendations for Preliminary Design

Heinss, U., Larmie, S.A., Strauss, M. (1998). EAWAG/SANDEC, Report No. 05/98.

<http://www.sandec.ch/sos/references.html>

The excreta of most urban dwellers in developing countries are disposed of through on-site sanitation systems such as private and public latrines, aqua privies and septic tanks. This is in contrast to industrialised countries where excreta are disposed of via cistern-flush toilets, city-wide sewerage systems and central wastewater treatment works, all of which constitute standard technologies. These are, however, unaffordable to most urban inhabitants of developing countries. A major problem is the fact that faecal sludges (FS) collected from on-site sanitation installations are commonly disposed of untreated. In larger cities, haulage distances to outlying treatment or disposal sites are excessive and traffic congestion prevents efficient emptying and haulage of faecal sludges. Land within city boundaries is often highly valued and might, thus, not be available for waste treatment. The sludges are therefore dumped untreated at the shortest possible distance, be it on open grounds, into drainage ditches and water courses, or into the sea. Growing urbanisation leads to an increase in faecal sludge quantities to be disposed of and, hence, to increased environmental pollution and health risks. Appropriate means and ways to treat, use and dispose of faecal sludges are, consequently, urgently required.

Ecological sanitation

Stockholm, Sweden, Esrey, S.A. *et al.* (1998). SIDA, Swedish International Development Cooperation Agency

An introduction to concepts of ecological sanitation and shows how systems which replicate natural ecosystems can offer an appropriate form of technology to tackle increasingly prevalent problems of urban sanitation in developing countries. The authors provide substantial evidence to suggest that these systems offer low-income communities in the developing world a chance to use local knowledge and traditional practices to provide affordable and sustainable solutions to the existing environmental and health problems. The book demonstrates the feasibility of this alternative technological approach to meet increasing demands for excreta disposal systems to provide effective sanitation, combined with the concurrent benefits of environmental protection and efficient resource management. It provides advice on the selection of different technological options, design and construction methods and materials, as well as operational requirements.

Tools for Gathering, analysing and Sharing Information

Methods for Gathering Socio-cultural data for water supply and sanitation projects.

Simpson-Hébert, M. (1983). UNDP Technical advisory Group (TAG) Technical Note: No.1.

Planning and Management Tools

Participatory Evaluation - Tools for Managing Change In Water and Sanitation*

Narayan, D. (1993) World Bank Technical Paper No. 207

This document provides policy-makers, managers and planning and evaluation staff with ideas about participatory processes and indicators that can be used to involve community members and others in programme evaluation. The document is structured around a framework of key indicators that can be used to measure progress towards the objectives of sustainability, effective use, and replicability in water and sanitation programmes.

A Resource Kit for Participation and Social Assessment *

Compiled by Jennifer Reitbergen-McCracken and Deepa Narayan (1997) Social Policy and Resettlement Division, Environment Department, The World Bank, Washington

Although it provides information similar to that provided by the World Bank *Participation Sourcebook* (also reviewed in this document), the *Resource Kit* places more emphasis on the conceptual understanding of participation. The kit - held in a briefcase-like box - contains six separate booklet modules that discuss different aspects of participatory development. These include: social assessment; stakeholder analysis; participatory methodologies; participatory rural appraisal; SARAR and beneficiary assessment; participatory monitoring and evaluation. Each booklet module includes four components - an overview, techniques, case studies and suggestions for seminars. The kit also includes a video containing video clips from three films focusing on different applications of participatory methods.

Contact address: The World Bank, 1818 H Street, NW, Washington, DC 20433, USA. Fax: (202) 477 0565.

Workshop on Strengthening Participatory Attitudes In Communication and Development: Facilitator's manual *

UNICEF (1996) New York

This workshop has been designed to help UNICEF staff and their partners in government and NGOs to plan, implement and evaluate together, in a highly participatory manner, keeping the community at the center of their development interventions. The workshop - organized as a series of exercises - reviews the principles and practices of adult learning, adult-to-adult communication, dialoguing, participatory problem-solving processes, participatory assessment methods, changing attitudes, building alliances for action, etc. The workshop's manual is clear, detailed, and offers different options for different needs. This learning workshop helps the participants develop a common vision of development, define goals and objectives and work in a participatory manner, in the name of a people-centred development agenda. The manual has been designed for use by a team of practiced facilitators.

Training¹

Training of Trainers: A Manual for Participatory Training Methodology in Development*

Society for participatory Research in Asia, 1987.

This training manual on participatory methodologies has been designed in such a way that the different sections can be used independently. Each section contains theoretical inputs, practical guidelines, and examples of methods used. The sections are :1) Participatory training methodology: context and principles; 2) Role of trainer in participatory training; 3) Designing a training programme; 4) Small groups; 5) Learning-training methods; 6) Evaluation and follow-up; 7) Additional resources.

Contact address: 45, Sainik Farm, Kanpur, New Delhi 110 062, India.

Training Trainers for Development: Conducting a Workshop on Participatory Training Techniques *

This manual is a tool for trainers and managers who implement training activities. It teaches interactive, learner centred methods: an approach based on the research of human resource development experts such as Malcolm Knowles, Paulo Freire, Gordon Lippit and Leonard Nadler.

CEDPA-PACT Publications, Educational materials and training tools for the international community.

A Tool Box for Building Health Communication Capacity *

BASICS/HealthCom, AED, Washington DC 1996.

The *Tool Box* can help programme officers and their partners in the task of developing the communication component of the country programmes and projects. The manual provides a structure that guides through the process of communication, step by step: from problem definition to identification of target audience; from identification of behaviours that need development to definition of research needs; from research design and techniques to research planning; from communication strategy statement to development of messages and communication materials; without forgetting monitoring and evaluation of the communication strategy. The *Tool Box* is a very useful tool for individual, self-paced training and can also be utilized to organize group training of programme staff and their partners, or for immediate application to a specific and impelling issue.

Contact address: BASICS, 1600 Wilson Boulevard, Suite 300, Arlington, VA, 22209, USA. Fax (703) 312 6900.

Participatory Development Tool Kit: Training Materials for Agencies and Communities *

D. Narayan and L. Srinivasan, The World Bank, Washington DC 1994.

This Tool Kit of visual materials was prepared in response to repeated demands from people working in the field for materials to help decision makers, project staff, training institutes, trainers, and artists initiate the process of developing their own local materials to address their specific concerns. At the community level these materials help to empower the unaccustomed to speaking up, particularly women and the poor; they enable expression through drawing, role playing, songs, stories and puppetry. At the agency level, the materials have been very useful in encouraging senior staff to get out of their usual mode of thinking and planning. The Tool Kit includes cards, flexi-flans and pictures to be used with an accompanying manual.

Contact : The World Bank, 1818 H Street, NW, Washington, DC 20433, USA. Fax: (202) 477 0565.

¹ Please note that references marked * have been reproduced from the "Resources on Participatory Approaches and Communication for Water and Sanitation Programming"

This resource is produced by the Advocacy and Communication Strategies Working Group, Water Supply and Sanitation Collaborative Council, IRC International Water and Sanitation Centre and UNICEF, 1997 <<http://www.irc.nl/themes/communication/comres/comres00.htm>>

INTERNET INFORMATION NETWORKS

ELDIS Gateway to Information Sources on Development and the Environment

The ELDIS Gateway to Information Sources on Development and the Environment provides a wealth of descriptions and links to a variety of information sources for policy makers, academics and development NGOs. It includes information about and links to other WWW sites, databases, library catalogues, bibliographies, and email discussion lists, research project information, map and newspaper collections. Where there is no Internet link available, other information on the availability of databases, CDROMs, etc. is provided.

<http://www.ids.ac.uk/eldis/>

IRC Database on Water and Sanitation in Developing Countries (IRCDOC)

Researchers, students, and information gatekeepers can access a unique bibliographic database on water supply and sanitation in developing countries (IRCDOC) at <<http://www.irc.nl/ircdoc>>. IRCDOC includes nearly 13,000 references to documents collected by Documentation Unit of the IRC International Water and Sanitation Centre since 1984 and a growing number of documents available on the Web. For more information see the IRCDOC web page at www.irc.nl/ircdoc or contact Cor Dietvorst (email: dietvorst@irc.nl)

Global Applied Research Network (Garnet)

GARNET is a mechanism for information exchange in the water supply and sanitation sector using low-cost, informal networks of researchers, practitioners and funders of research. It is designed to facilitate the sharing of applied research information between researchers working in the water and sanitation sector throughout the world. Garnet uses global, local and topic electronic networks drawn from a variety of institutions, including higher education establishments, NGO's, government ministries, international organisations and consultancy.

<http://www.lboro.ac.uk/garnet/> or contact Darren Saywell (email: d.l.saywell@lboro.ac.uk)

N-AERUS - Network for Research on Urbanisation in the South

N-AERUS is a pluridisciplinary network of researchers and experts working on urban issues in Developing countries. It was created in March 1996 by a group of European researchers. Its objective is to mobilise and develop the European institutional and individual research and training capacities on urban issues in the South with the support of institutions and individual researchers with relevant experience in this field. N-AERUS will work in association with researchers and institutions in developing countries.

<http://www.naerus.org/>

Forum: Habitat in Developing Countries

An internet resource aimed at providing information to researchers and professionals working for the improvement of the built environment in developing countries, and at facilitating communications among them.

<http://girotondo.oasi.asti.it/forum/welcome.htm>

Mailing lists

"SOURCE" Water and Sanitation News

<http://www.wsscc.org/source>

Source Water and Sanitation News Service is a joint endeavour of the Water Supply and Sanitation Collaborative Council (WSSCC) and IRC International Water and Sanitation Centre. *SOURCE Weekly* brings you a weekly update of short news, while the bi-monthly *SOURCE Bulletin* gives more in-depth news, news from the WSSCC and IRC. Both are available on this site, and distributed by email. *SOURCE Weekly* and *SOURCE Bulletin* are also distributed by email.

ID21 Development Research reporting service

The ID21 Development Research reporting service provided by the Institute of Development Studies Information Service, University of Sussex, offers a selection of the latest and best UK-based development research, is an online service offering hundreds of summaries of problem-solving work on critical development dilemmas around the world. This Information for Development in the 21st Century is drawn from over 40 top UK research centres, conference papers, unpublished reports, research by aid and development agencies and pressure groups, and research consultants.

<http://www.id21.org/>

Discussion groups

Mailbase offers a number of email discussion groups including

▪ Water and Sanitation Applied Research

A list for discussion and information exchange relating to applied research in the water supply and sanitation sector. Intended for those with a research interest in the UK and developing nations, discussion focuses on priorities, funding and a range of multi-sectoral topics in the sector

<http://www.mailbase.ac.uk/lists/water-and-san-applied-research/>

▪ Pitnet Latrine network

The network aims to provide members with recent information about a wide variety of topics relating to pit latrines, including aspects such as design, construction, operation, maintenance, and emptying in rural, urban or peri-urban environments. Of particular interest will be results of recently completed research, or interim findings from current projects.

<http://www.mailbase.ac.uk/lists/pitnet/>

<http://info.lut.ac.uk/departments/cv/wedc/gamet/tncpitl.html>

▪ Urban drainage

A list for discussion and information exchange concerning the research, planning, design, operation and modelling of urban drainage systems. Topics range from urban hydrology, drainage and sewerage to treatment plants, receiving water impacts and sustainability.

<http://www.mailbase.ac.uk/lists/urban-drainage/>

▪ Urban Environmental Health

A list for information exchange and dissemination on the health impacts of urban environment related diseases and hazards. This includes health issues related to and/or affected by urban water supply, wastewater, solid waste, air pollution, food hygiene and tropical diseases such as urban malaria.

<http://www.mailbase.ac.uk/lists/urban-environmental-health/>

▪ Wastewater management

List for discussion of all aspects of sustainable wastewater management, including appropriate and affordable collection, treatment and disposal technologies and practices, especially those which encourage conservation, recycling and reuse of resources; as well as issues of planning and regulation.

<http://www.mailbase.ac.uk/lists/wastewater-management/>

Key International Organizations in Water and Sanitation

INTERWATER Internet Gateway to Water and Sanitation Information

The *interWATER* Guide to Information Sources provides the addresses of selected organizations concerned with water supply and sanitation in developing countries. The list includes organizations able to provide additional information in various forms, including newsletters, reports and publications, technical expertise, products, training courses, Internet sources, etc.

<http://www.wsscc.org/interwater/index.html>

These are some of the key international organizations working in water and environmental sanitation.

Water and Sanitation Program

The United Nations Development Programme (UNDP)-World Bank Water and Sanitation Program is a global partnership of UNDP, the World Bank and 15 bilateral donors. The Program assists countries with capacity building (including policy reforms), planning and implementing sustainable investments, and synthesizing and disseminating lessons. The lessons are then fed back into another cycle of policy and program development, and learning.

1818 H Street,
NW ,F4K-172,
Washington DC
20433
USA
www.wsp.org

Tel: +1 202 4739785
Fax: +1 202 5223313
Email: info@wsp.org

World Bank - Water Supply and Sanitation

The Transport, Water and Urban Development Department of the World Bank provides extensive externally funded technical assistance in water supply and sanitation through the UNDP-World Bank Water and Sanitation Program. The Water Division of the Department deals with water resources management, utility reform and nonformal institutions for service delivery to the poor. In the Land, Water and Natural Habitats Division, the Blue Team aims to promote an ecosystems approach in Bank-financed water projects.

1818 H Street, NW ,F4K-172,
Washington, DC 20433, USA

Tel: +1 202 4734761
Fax: +1 202 5223228
Email: whelpdesk@worldbank.org

Business Partners for Development - Water and Sanitation Cluster

Business Partners for Development (BPD) is an informal network of businesses, civil society organisations (NGOs and community organisations) and relevant government ministries. The Water and Sanitation Cluster, one of four Business Partners for Development (BPD) initiatives, aims to improve access to safe water and effective sanitation for the rising number of urban poor in developing countries and to promote good examples of tri-sectoral partnerships that provide water and sanitation services to the urban poor.

<http://www.bpd-waterandsanitation.org>

USAID Environmental Health Project (EHP)

The Environmental Health Project assists development organisations address environment related health problems. It is funded by USAID and provides technical assistance on water supply, sanitation, wastewater, solid waste and air pollution. The EHP publishes a series of working papers, discussion documents, and research reports which are available for download from the website.

www.ehproject.org

PPIAF (Public-Private Infrastructure Advisory Facility)

The World Bank's Public-Private Infrastructure Advisory Facility (PPIAF) focuses on helping to eliminate poverty and achieve sustainable development by facilitating private sector involvement in infrastructure, encompassing water and sanitation, electricity, telecommunications, gas transmission and distribution, and various transport modes. Its aims are firstly to channel technical assistance to governments in developing countries on strategies and measures to tap the full potential of private sector involvement in infrastructure, and secondly to identify, disseminate, and promote best practices on matters related to private sector involvement in infrastructure in developing countries.

For further information about PPIAF, please contact the World Bank's Private Participation in Infrastructure Group by telephone at +1 202 458 5588 or e-mail at PPIAF@worldbank.org.

<http://www.ppiaf.org>

WHO (World Health Organization)

The Division of Control of Tropical Diseases of the World Health Organization (WHO) supports treatment and prevention programmes on various water related diseases, including: dracunculiasis (or guinea worm disease); malaria; schistosomiasis (or bilharzia); and onchocerciasis (or river blindness). The Division of Child Health and Development deals with diarrhoeal diseases in children.

Avenue Appia 20, 1211 Geneva 27, Switzerland

Tel: +41 22 791 2111

Fax: +41 22 791 0746

Email: info@who.ch

or: publications@who.ch, library@who.ch

[Office of Global and Integrated Environmental Health]

Tel: +41 22 791 3760/3730, Fax: +41 22 791 4123, E-mail: pfister@who.ch

Global Water Partnership (GWP)

The Global Water Partnership (GWP) aims to support high quality, integrated activities at country-level and, at the international level, to bring a global learning perspective to these activities. A Technical Advisory Committee is charged with ensuring that programmes follow the principles agreed at the Dublin and Rio conferences in 1992. The GWP has close links with the World Water Council, drawing overall policy-guidance from the WWC and translating it into specific actions at country level.

Secretariat, c/o Sida, S-105 25 Stockholm, Sweden

Tel: +46 8 6985000

Fax: +46 8 6985627

Email: gwp@sida.se

WSSCC (Water Supply and Sanitation Collaborative Council)

The Water Supply and Sanitation Collaborative Council (WSSCC) was formed at the end of the United Nations International Drinking Water and Sanitation Decade (1981-1990) to provide a framework for collaboration between sector agencies in both developed and developing countries. Further information about the Council is provided elsewhere on the interWATER page.

c/o World Health Organization, Avenue Appia 20, CH-1211 Geneva 27, Switzerland

Tel: +41 22 791 3685

Fax: +41 22 791 4847

Email: wirasinhar@who.org or: wsscc@who.ch

United Nations Environment Programme (UNEP)

The Water Programme of the United Nations Environment Programme (UNEP) seeks to: develop policy-relevant assessments of the state of freshwater and marine resources; develop tools and guidelines for sustainable management and use of freshwater and coastal resources; promote international cooperation in the management of river-basins and coastal waters; and provide support and institutional servicing of regional seas conventions and action plans.

Director, Water Branch, P.O. Box 30552, Nairobi, Kenya

Tel: +254 2 621234

Fax: +254 2 226890

Email: water@unep.org

WaterAid

WaterAid is the UK's specialist development charity working through partner organisations to help poor people in developing countries achieve sustainable improvements in their quality of life by improved domestic water supply, sanitation and associated hygiene practices. WaterAid provides the financial support and technical advice to communities overseas to help them work towards practical solutions to their water and sanitation problems.

WaterAid, Prince Consort House, 27-29 Albert Embankment, London SE1 7U

Telephone: +44 020 7 793 4500 / Fax: +44 020 7 793 4545

Email: information@wateraid.org.uk

<http://www.wateraid.org.uk>

International Training Network for Water and Waste Management (ITN)

Launched by the UNDP-World Bank Water and Sanitation Program in 1984 to support training in low-cost water supply and sanitation, the ITN is a network of local, regional, and international training institutions. The ITN has a comprehensive audiovisual series on low-cost technologies and approaches. Each center has adapted these materials to its own cultural and linguistic needs. Centers have also developed many of their own tools and materials. The ITN plays a key role in strengthening the capacity of people and institutions to absorb the substantial sector investments envisaged by developing countries to better serve the needs of their rural and urban poor populations. ITN Centers in Kenya, Burkina Faso, Ghana, Indonesia, Philippines, and Bangladesh provide training, disseminate information and promote local applied sector research on low-cost water supply and sanitation options.

<http://www.wsp.org/English/itn.html>

NETWAS

NETWAS strategy is to work in partnership with other organization in order to enhance its capacity and to facilitate the transfer of technology from the developed countries.

NETWAS International,
P.O. Box 15614, NAIROBI, KENYA.
Tel: 254-2-890555/6-9;
Fax: 254-2-890554/60
E-mail: netwas@nbnet.co.ke or netwas@ken.healthnet.org

The African Water Page

This is a page dedicated to the water sector in Africa. Issues addressed include water policy, water resource management, water supply and environmental sanitation, water conservation and demand management, and a variety of other issues. A primary objective of the page is information dissemination on water issues in Africa and to exchange views and ideas on water on the continent.

www.africanwater.org

SANDEC

SANDEC is the Department of Water and Sanitation in Developing Countries at the Swiss Federal Institute for Environmental Science and Technology (EAWAG) in Switzerland. Its mandate is to assist in developing appropriate and sustainable water and sanitation concepts and technologies adapted to the different physical and socio-economic conditions prevailing in developing countries.

www.sandec.ch

UNICEF Water, Environment and Sanitation Section (WES)

The site is part of UNICEF's Programme Division Web presentation, housed on the general UNICEF Web site. The UNICEF WES Site presents a variety of information about UNICEF's policies and activities in the WES sector. It also makes available electronic versions of a number of UNICEF's recent sectoral publications, including our WATERfront newsletter. Most publications are available in French, Spanish and English. The site also includes a guide to sectoral resources on the Web, including a selection of full-text electronic publications available from partners and agencies.

<http://www.unicef.org/programme/wes>

Water Environmental and Sanitation Division Division,
UNICEF
3 UN Plaza, New York, NY, USA 10017
Phone: (212) 824-6000
Fax: (212) 824-6480
email: wesinfo@unicef.org

GATE Information and Advisory Service on Appropriate Technology

GATE is a service provided by *Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ)*. For more than 15 years we have been involved in the development, adaptation and dissemination of Appropriate Technology (AT). ISAT is a GATE project. Our objective is the increased use of Appropriate Technology in developing countries. This depends on an exchange of experiences and a transfer of knowledge. We offer support for both North-South transfer and South-South exchange of technological knowledge.

<http://gate.gtz.de/isat>

WELL (Water and Environmental Health at London and Loughborough)

WELL is a resource centre funded by the Department for International Development (DFID) to promote environmental health and well-being in developing and transitional countries. It is managed by the London School of Hygiene & Tropical Medicine (LSHTM) and the Water, Engineering and Development Centre (WEDC), Loughborough University, UK.

www.lboro.ac.uk/well

WELL produce a series of technical briefs on Sanitation and waste disposal, which include :

- Summary of waste disposal options
- Review of anaerobic treatment processes
- Low-cost sanitation in areas with a high groundwater table
- Emptying latrine pits
- Surface water drainage

<http://www.lboro.ac.uk/well/services/tecbriefs/contents.htm>

WELL Immediate Technical Assistance

One of the services which WELL offers is immediate technical assistance to DFID field staff and British and Southern NGOs working in the water and sanitation sector in developing countries. Up to one day of technical advice can be provided per query free of charge (paid for by DFID). Frequently asked questions and other useful information is listed in the *WELL technical briefs* page. Some examples of queries which we have responded to in the past are:

- Advice on constructing pit latrines in weak soils and high water tables in Angola
- A review of the effect of paying for drinking water in Tanzania
- Recommendations for dealing with high salinity water supplies in the Aral Sea
- Advice on measures to control bilharzia in Kenya
- A days training on handpump maintenance for a VSO volunteer
- Information on suppliers of in-line chlorinators for Azerbaijan
- Information on perspectives on hygiene behaviour change in Asia

Qualifying Agencies

DFID funding for this service is intended for staff members of:

- DFID;
- Developing country governments;
- UN Agencies;
- UK NGOs; or
- Southern NGOs.

If you have a technical query please complete the 'Immediate Technical Assistance request form' or contact:

Sue Sherry (at LSHTM)

Keppel Street, London, WC1E 7HT, UK

tel: +44 (0) 20 7927 2214; fax: +44 (0) 20 7636 7843

e-mail: well@lshtm.ac.uk

Contact details and addresses of publishers

World Health Organization Publications

World Health Organization,
Distribution and Sales
CH-1211 Geneva 27
Switzerland
Fax address: +41 22 791 48 57
Telephone: +41 22 791 24 76

To place orders: bookorders@who.ch
For questions about publications: publications@who.ch

UNCHS HABITAT/CityNet Publications

Secretary General CityNet Secretariat
5F, International Organisations Centre
Pacifico-Yokohama, 1-1-1
Minato-Mirai, Nishi-ku,
Yokohama 220-0012, Japan

Telephone: (81-45) 223-2161
Fax: (81-45) 223-2162
E-Mail: citynet@po.ijinet.or.jp

<http://www2.itjit.ne.jp/~citynet/en/publist.html>

WEDC Publications

Loughborough University
Leicestershire LE11 3TU UK

Email: WEDC@lboro.ac.uk
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Fax: + 44 (0) 1509 211079

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103-105 Southampton Row,
London WC1B 4HH, UK
Tel +44 20 7436 9761
Fax +44 20 7436 2013
e-mail: itpubs@itpubs.org.uk

<http://www.oneworld.org/itdg/publications.html>

PACT Publications, Inc.,
777 United Nations Plaza
New York, NY 10017
Tel: (212) 6976222
Fax: (212) 6929748
E-mail: PACTNY@UNDP.org

A Guide for Strategic Planning for Municipal Sanitation

EVALUATION / FEED BACK FORM

The objective of the evaluation exercise is to enable us to identify the strengths and weakness of the guide. In future editions of guide we will develop further sections based upon the feedback and suggestions that we receive.

Please feel free to be critical where you feel that is justified. It is important that we receive your honest opinions.

The evaluation form is intended to provide you with guidance on how you might provide feedback. However, it is not essential that you follow the structure of the evaluation form.

It is preferable that you send us a few comments rather than none at all.

Thankyou for your assistance

PLEASE NOTE : WE DO NOT EXPECT THAT YOU WILL PROVIDE ANY DETAILED COMMENTS ON MORE THAN A FEW SECTIONS OR TOOLS AT THE MOST.

Information about you

Your Name : _____

Organisation : _____

Date : _____

In which country do you work ? _____

What is your profession and what do you do ? _____

Is English your first or second language? _____

PLEASE INDICATE WHICH SECTIONS YOU HAVE LOOKED AT :

Section / sub-section	Title of Section	Scanned	Read some sections	Read in detail
1	Urban Sanitation Problems and the Need for a Strategic Approach			
2	Characteristics of a Strategic Approach to Sanitation Planning			
3	Policy Development and Programme Planning			
4	Sanitation Planning at the Municipal Level			
5	Sanitation Planning at the Local Level			

PLEASE INDICATE WHICH TOOLS YOU HAVE LOOKED AT

Tool No.	Title of Planning Tool	Scanned	Read in detail
TOOLS FOR HEALTH AND SANITATION PROMOTION			
1.1	Sanitation, Drainage and Health		
1.2	Hygiene Education		
1.3	Sanitation Promotion		
TOOLS ON SANITATION TECHNOLOGIES AND SEWAGE TREATMENT			
2.1	Summaries of Sanitation Technologies		
2.2	Sewage Treatment Options		
TOOLS FOR SANITATION CHOICE			
3.1	Approach to Sanitation Choice		
3.2	Ordering Sanitation Choices		
3.3	How to Cost the Viable Options		
3.4	Estimating Willingness and Ability to Pay		
TOOLS FOR INFORMATION GATHERING, ANALYSING AND SHARING INFORMATION			
4.1	Introduction to information systems		
4.2	Information for policy making and programme planning		
4.3	Information collection and analysis at the municipal and local levels		
4.4	Techniques for assessing sanitation conditions at the local level		
4.5	How to share experience		
PLANNING AND MANAGEMENT TOOLS			
5.1	Prepare for and holding a participatory planning workshop		
5.2	Logical frameworks as an aid to decision-making		
NOTES FOR TRAINERS			
6.1	Introduction to Sanitation and Sanitation Problems		
6.2	Development of a Strategic Approach		
6.3	Policy Development and Programme Planning		
6.4	Planning at The Municipal Level		
6.5	Strategic Planning at The Local Level		

OVERALL ASSESMENT

Please circle Yes or No and add further comment / explanation if you wish

1. Are the objectives of the guide clear ? Yes / No

2. Is the overall structure presentation and layout of the guide clear ? Yes / No

3. Did the Guide meet your expectations ? Yes / No

4. Which topics / sections did you find most useful ?

5. Which topics or sections do you consider to be least useful or unclear ?

6. Did the guide explain ideas and concepts well ?

Yes / No

7. Will you use the Guide ?

Yes / No

What for? (e.g. sanitation planning, reference, teaching)

8. What other information would you like to see included in the guide ?

9. Do you think that the guide needs improving and or revising ?

Yes / No

If yes - please add brief comments

9. Would you be willing to contribute ideas and information towards future editions of the guide ?

Yes / No

Please give further information

10. Would you find it useful to have the Guide (or part of) translated into the local language ?

Yes / No

If you have any further comments, suggestions or wish to give further details of other sources of information that are complimentary to this Guide, please add them here :

Continue on a separate sheet if necessary

Do you know someone else who would be interested in this Guide ?

Name / Title / Organisation

Contact details

Please fax or post your form to Kevin Tayler or Jonathan Parkinson at :

GHK Research and Training

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London SW6 5NR

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If you wish to receive an electronic version of this evaluation form, please email us at :

email : taylerk@ghkint.com OR parkinsonj@ghkint.com