



Module 3: Organisation of Operations and Financing

Improvement of Sanitation and Solid Waste Management
in Urban Poor Settlements



Deutsche Gesellschaft für
Technische Zusammenarbeit (GTZ) GmbH

commissioned by:



Federal Ministry
for Economic Cooperation
and Development

Division 44
Environment and Infrastructure

Module 3: Organisation and Financing of Operations

**Improvement of Sanitation and Solid Waste Management
in Urban Poor Settlements**

Eschborn 2005

Published by:

Deutsche Gesellschaft für
Technische Zusammenarbeit (GTZ) GmbH
Postfach 5180, 65726 Eschborn, Deutschland
Internet: <http://www.gtz.de>

Sectoral Project

“Improvement of Sanitation and Solid Waste Management in Urban Poor Settlements”

Division 44 - Environment and Infrastructure
OU 4412 - Water, Wastewater and Solid Waste Management

and Division 42 - Governance and Democracy
OU 4223 - Regional and Local Governance, Urban Development, Decentralisation

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INTRODUCTION

0. INTRODUCTION

BACKGROUND AND CONTEXT



Fast growing informal settlement

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City planning, as a mechanism for controlling spatial development, is not feasible in poor districts. In these areas, land is traded illegally and built on without permission, and existing buildings are often extended or altered over long periods of time, with no official authorization. To “formalize” these settlements completely would entail costs that neither municipalities nor inhabitants could handle. Restrictive policies (when applied) have done little or nothing to change the precarious living conditions of the poor. At worst, they have inhibited rather than supported legal, economic and infrastructural improvement. The need for policies of decentralization and the strengthening of local self-government have therefore been voiced with ever increasing intensity ever since the 1996 United Nations Conference on Human Settlements in Istanbul (Habitat II).

Challenges of Urbanization

Today, worldwide urbanization is thought of as an unstoppable characteristic of global societal change. According to predictions, by the year 2025 at least two thirds of the world's population will live in cities. Most of this urban growth is taking place in the developing world, where two billion people already live in cities - about twice as many as in industrialized nations.

The dynamics of the urbanization process, and especially its economic, social and spatial consequences, are amongst the greatest challenges of our time. While cities offer an enormous and indispensable potential for the economic growth of developing countries in an increasingly globalized economy, the negative effects of urbanization are also alarmingly

apparent, and these include increasingly inadequate housing and working conditions for the poor and the ecological impact of virtually uncontrollable urban sprawl.

Failure of Conventional Urban Planning and Management Instruments

The emergence and expansion of poorly serviced illegal and informal settlements in peripheral areas within and outside urban agglomerations, have shown that conventional means of city planning and management are not able to cope with conditions of accelerated social change, high demographic growth rates and increasing urban poverty.

The Need for Flexibility and Pro-active Solutions

City planning, as well as the management of housing and urban services, demand pro-active, financially feasible strategies adapted to real conditions in order to take advantage of existing potentials; they need to be replicable, to show immediate effects and be sustainable. Although it is obviously not possible to equip informal settlements with extensive infrastructures overnight, they can be upgraded gradually. This requires procedures that take into account the potential for further future improvements.

BACKGROUND AND CONTEXT

New Partnerships between the Public and the Private Sector

The supposed dominance of public sector agencies in the supply of social and technical services, no longer holds true. Apart from partnerships with the private sector, often the only sensible alternative for achieving sustainable improvements depends on the cooperation of various different stakeholders, including the local population and non-governmental organizations (NGOs).

For this reason, the significance of the diverse local stakeholders as well as the variety of possible organizational and financial structures should be seriously taken into account during the conception of urban management projects.

Problem: Precarious Living and Housing Conditions in Urban Poor Settlements

Poor settlements, in their various forms, are especially vulnerable to the negative impacts of urbanization. In many cases, exclusion from legal protection, urban services and infrastructure leads to extremely unhealthy living conditions resulting in high child mortality rates, widespread epidemic illness and chronic disease.

The Lack of Waste Management Systems in Poor Settlements

The neglect of poor settlements by city administrations is often justified by the fact that they are “informal”. The term is used to describe not only their combination of uncertain legalities, ownership rights and illegal construction activities, but also their economic structures, which yield hardly any tax or revenues. City administrations cite these factors to explain their lack of input in social and technical infrastructure.

Whatever the case, the consequence is that in many African, Asian and Latin American cities, barely a third of the

population is connected to municipal waste management systems, while the rest of the population relies on private contracts or self-help.

Importance of Housing Rights as against Waste Management

Infrastructure, waste management and sewerage systems are usually of secondary importance to the inhabitants during the initial phases of informal settlement. Securing a plot with a right to stay there, and establishing networks for income generation are the primary concerns. Inward migration and continuous construction quickly lead to rising population densities. This establishes and consolidates the social structure and built environment of a settlement, but also inevitably results in increased refuse and sewage management problems. In settlements with population densities of more than 2000 inhabitants per hectare, uncollected garbage, stagnant water and lack of sanitary facilities can create serious health hazards, especially for women and children.

Settlement without security of tenure



BACKGROUND AND CONTEXT

Danger of Social and Economic Disintegration

Neglect can lead to social and economic disintegration, which can result in the area becoming marginalized as the better-off inhabitants try to leave.

In addition, there is the problem of deficient technical infrastructure and services, such as drainage or sewage disposal systems, which cannot be effectively tackled by public or self-help initiatives alone. Solutions often require intervention at many different operational levels and involvement across various existing areas of activity.

Potential: The Resourcefulness of the Urban Poor and their Commitment to Self-help

Despite the relatively unattractive living conditions they provide, poor settlements, particularly in cities, continue to grow in size and density. The social and economic value attached to an urban location apparently outweighs the numerous disadvantages. Moreover, people born and raised in an urban poor settlement frequently have no other option. Today's generation of urban poor has lost its ties to the countryside and survives, physically and economically, within the boundaries of the city or district.

However, these organizational possibilities only operate within the narrow confines of each isolated local situation, and this can produce problems. For example, a drainage facility that is not connected to the main sewage system may easily intensify potential flooding in adjacent districts. Many issues related to infrastructure and waste management can therefore only be resolved in a suitable and sustainable way, when they are coordinated in an overall system.

Various Forms of Organization

The majority of settlements, even including temporary settlements, possess some sort of waste disposal management. These range from individually arranged rubbish removals, to area-wide servicing through private contractors, to complex neighborhood organizations.

Decentralized Methods of Waste Management

During the past twenty years, a variety of methods for decentralized waste management have emerged from pure necessity - and, in part, without expensive subsidies. They have generally been characterized by their ability to adjust to specific social,

Refuse as a source of income

/3/



economic and cultural situations. Some were initiated within the context of international development co-operations; many innovative approaches were devised jointly by inhabitants and NGOs; and others were implemented through city administrations.

Alliance and Cooperation of Different Stakeholders

What these approaches have in common is that they not only pursue technical solutions, but they also incorporate organizational and financial aspects, and involve a variety of local interest groups.

Housing conditions without adequate waste management /4/



Future Challenges: The Improvement of Waste Management in Urban Poor Settlements

The improvement of technical and social infrastructure is of key importance in consolidated low-income settlements. Many such areas that originated in the 1950's and 1960's now have populations similar to those of a medium-sized city, and yet their infrastructures remains rudimentary. With steadily growing populations and increasing building densities, health hazards have increased disproportionately and living standards have plummeted.

The Importance of Improving Technical and Social Infrastructure for the Consolidation of Low-Income Settlements

Nowadays, many of the urban poor have access to potable water, although they usually pay more for it than middle-class citizens. Nonetheless, hygienic conditions in low-income settlements have become critically important to the quality of life of their inhabitants. In the long run, any advantages of location will not outweigh the lack of basic services in these areas.

The standard of supply and disposal systems tends to rank only third on the priority lists of inhabitants, behind income generation and security of tenure. Even so, the extent of under-served areas and the high proportion of the urban population affected have made the absence of functional systems the number one obstacle to overall development.

Integration of Poor Settlements into the Urban Fabric

Finding solutions for waste management deficits in low-income settlements has become a main element in strategies aimed at improving the general functionality of cities and developing their economic potential. The sustainable management of waste has acquired a significance that reaches far beyond its technical or sanitary dimensions. It encompasses fiscal aspects as well as the reorganization of the relationship between a city's administration and its people. What is required are, on the one hand, new forms of managing increasingly heterogeneous urban structures in an economically sound, yet fair and balanced way, and on the other, the effective coordination of the very diverse stakeholders involved in the development process.

0. INTRODUCTION

OBJECTIVES AND TARGET GROUPS

This publication intends to combine the scattered theoretical and practical knowledge acquired in the field of decentralized waste management, and make it available for practical use in development cooperation projects. The listings of waste management projects and the numerous individual project profiles available on the internet are not able to communicate the innovative core, nor the basic parameters of novel approaches in ways that enable comparisons and encourage their application in other contexts. Moreover, the practical experience gained in individual GTZ projects has not, as yet, been systematically brought together.

A treatment that deals only with the technical aspects of waste management in low-income settlements, will not tackle the issues effectively. In order to achieve the sustainable improvement of people's lives, financial and organizational

factors must be considered as equally important. Moreover, without the extensive participation of affected inhabitants in the planning, implementation, and maintenance of systems, sustainability cannot be achieved. Seemingly marginal themes, such as the organization of campaigns or the pricing of local services, are therefore also dealt with in this publication in so far as they relate to the main topic.

The various waste management tasks, i.e. refuse removal, rainwater drainage and wastewater and sewage disposal, are sometimes discussed together. Although these may require very different technical solutions, successful projects have shown that the organizational structures and financial mechanisms involved are closely related. Hence their thematic combination and the arising general conclusions.

All the volumes of this set of publications focus primarily on the substance and functional requirements of innovative approaches, and less on easily replicable formulas. The examples given are intended to encourage new solutions in specific situations.

The first volume deals with the topic of waste management in urban poor settlements in general, while the subsequent three modules offer more issue-specific recommendations for the development of local project approaches.

The solutions and approaches to operational set-ups and financing of waste management services presented in this volume do not claim to offer a complete picture, but are intended to provide an overview of experience to date, and thus serve as a basis for future project work.

OBJECTIVES OF THIS PUBLICATION

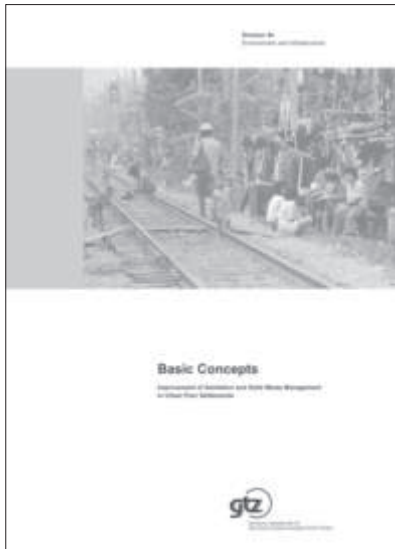
- **To appraise and document experience gathered in sectoral and cross-sectoral development cooperation projects**
- **To provide an overview of current international discussions on improving waste management in urban poor settlements**
- **To offer orientation and support for the initiation, planning and implementation of measures and activities for the improvement of waste management at the urban district or residential quarter levels**
- **To present exemplary solutions and their institutional, organizational, and financial contexts**

TARGET GROUPS

- **People working on projects dealing with housing supply, city development, and refuse and waste water management**
- **Interested laypersons and professionals from NGOs, local community initiatives and other grass roots organizations**
- **Professionals and decision-makers in communal and other responsible institutions involved with waste management in poor areas.**

0. INTRODUCTION

CONTENTS OUTLINE



Basic Concepts:

The introductory volume describes the basic information necessary for the conception, planning and implementation of measures to improve waste management in urban poor settlements. Sample case studies and their concrete experiences are used as references.

Module 1: Technical Concepts

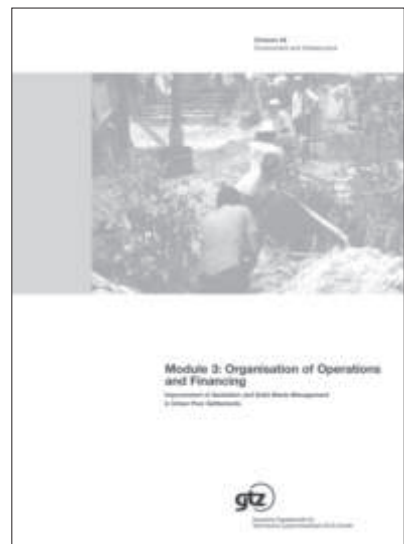
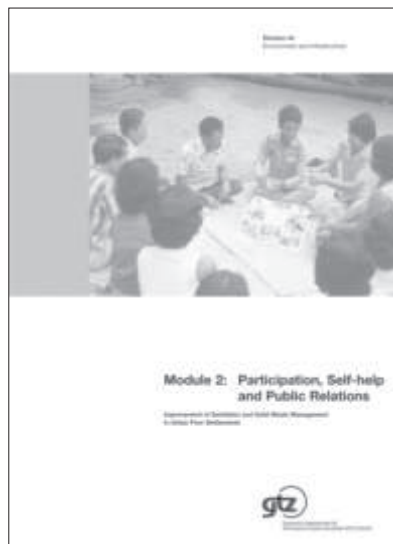
The first module documents proven technical solutions and develops criteria for assessing their suitability for use in different types of housing areas, and for dealing with different conditions and problems.

Module 2: Participation, Self-help and Public Relations

The second module is concerned with procedures, instruments, and methods for encouraging participation and self-help among inhabitants of urban poor settlements during waste management upgrading.

Module 3: Organisation of Operations and Financing

This third module describes and evaluates possible approaches to the organization, maintenance and financing of waste management systems at the housing area level.



Volume 3 in Detail

1. Operational and Financial Aspects of Waste Management

The first chapter relates the focus of this module to those of the other volumes of the series and provides an overview of the experience to-date of the operational set-ups and the financing of waste management solutions for urban poor settlements. Against the background of the objectives formulated in the international debate on sanitation and solid waste management in developing countries, it presents the main challenges facing the institutional and financial organisation of waste management solutions and their sustainability. As an introduction to the following chapters, it outlines the most important institutional, legal and economic conditions to be considered in the development of organisational set-ups and financing concepts.

2. Organisation and Operational Set-ups

The second chapter describes different alternatives for the operational and organisational set-ups of waste management projects or initiatives at settlement level. Its first section assesses typical solutions for the different waste management services (i.e. refuse, wastewater and rainwater) and their interfaces with city-wide systems.

The second section concerns the possible operators and stakeholders who could take on the operational functions of waste management at settlement level. It is augmented by short descriptions of different case studies.

3. Financing and Cost Recovery

The final chapter focuses on the possibilities of improving the cost recovery and economic viability of waste management services at settlement level, and the requirements for doing so. First, the basic principles and approaches on how to identify the investment and operation costs of waste management options are described, and the main factors determining the capacity and willingness of users to pay are outlined.

Next, the main aspects to be considered in the design of fee systems are presented. The types and determination bases of fees that can be applied appropriately in urban poor settlements are described. In addition to the recovery of waste management service costs through user fees, other possible sources of financing investment and operation costs are pointed to.

The final section of this chapter outlines the basic tasks and challenges for the financial management of waste management systems at settlement level.

Annex

The annex includes:

- tables and overviews on investment and operation costs, including the average total costs per year for different sanitation options;
- references to further literature and websites;
- an index of abbreviations and a list of photo and illustration credits.



OPERATIONAL AND FINANCIAL ASPECTS OF WASTE MANAGEMENT

1.

OPERATIONAL AND FINANCIAL ASPECTS

Overview

Relationship to Other Modules

The present volume, Module 3, focuses on organisational and financial management tasks relevant to the long-term operations of waste management systems at settlement level. These tasks normally reach beyond the duration of “projects”, which have limited time horizons and resources. In some cases, they may be part of a transition phase, lasting until a complete hand-over of managerial and operational responsibilities has taken place. A timely consideration of the functions of these tasks, if possible in the early planning phases of a project with a view to **building up appropriate operational structures**, must be considered an indispensable prerequisite for the success of any waste management project.

The chapter, “Financing and Cost Recovery”, emphasises the need to carefully identify both the investment and the operational costs of waste management solutions, since these provide the basis of **improving the level of cost recovery** of such services.

The other modules of this publication are primarily concerned with the **collaboration of various stakeholders** in innovative approaches (“Basic Concepts”), appropriate **technical solutions** (Module 1) and the scope for the **participation and self-help** of poor target groups in the different phases of the planning and implementation of waste management projects (Module 2).

► *Module 2 - Participation and Self-Help, Chapter. 3.1*

Previous Experience

Over the past two decades, the dominance of technically oriented solutions, which was characteristic for many waste management projects in the early stages of international development cooperation, has been replaced by more **holistic and complex approaches**: social and cultural conditions, as well as the particular conditions of a project environment, have been increasingly considered when selecting technical solutions. The case studies and project examples presented in the various parts of this publication show that a wide variety of situation- and context-specific approaches are now being used to promote target group participation and self-help in all phases of project identification, planning and implementation.

Compared to the wealth of appropriate technical solutions and participatory concepts, there is **significantly less experience and only a few successful models for the organisation and financing** of the long-term operations of waste management systems.

The **professional debate** on the economic viability and the financing of basic services in urban poor settlements has **chiefly focussed on the provision of water supplies**. Until now, this basic need has been given a significantly higher priority in international development cooperation than wastewater, refuse and storm-water drainage. Accordingly, tariff systems, financing tools and operational concepts are mainly being developed for technically more sophisticated and comprehensive systems of water supply, sewerage and quality control at citywide level.

Moreover, the longer-term **financing of operations of waste management systems** at settlement level is **far more challenging than that for water supply**: even poor target groups and households are usually willing to pay largely cost-recoverable tariffs for improved access to clean potable water, whereas willingness to pay for sanitation and refuse collection is rather an exception. In addition, user groups and residents' associations are less ready to contribute financially to the longer-term operations of waste management systems, or to embark on respective self-help programmes.

Sustainable models for the financing and operation of **household related sanitation and refuse collection** have evolved **only to a certain extent**, and these are limited to those services that are able to collect adequate user fees easily. In most cases, informal micro-enterprises or entrepreneurs render such services.

Sustainable concepts for the financing and operation of **more complex piped wastewater or storm-water drainage networks**, on the other hand, are **a rare exception**.

Furthermore, many measures for waste disposal at settlement level are conceived as individual projects, or “**island solutions**”, which are **not**, or are only insufficiently **integrated into city-wide systems, or into approaches for more comprehensive sectoral reform**. As a consequence, they often cannot be maintained when a project ends and external support stops.

OPERATIONAL AND FINANCIAL ASPECTS

Basic Information Available

Many “improvised” situation and context-specific approaches do not consider **basic operational and financial requirements** adequately:

- the need to **make appropriate technical solutions affordable for poor target groups**;
- the **availability of materials and spare parts** at local markets;
- **organisational structures with clear-cut responsibilities and functioning operational procedures**, in particular for disposal solutions involving a large number of interfaces and stakeholders;
- **a minimum level of qualification and / or experience** of all involved formal and informal actors and stakeholders **with regard to managerial and operational functions**.

Operational failures are often caused by decisions taken in the early phases of the planning and preparation of waste management projects by planners, governmental agencies or target groups, which later on prove to be inadequate for the financial and organisational challenges of operational routine.

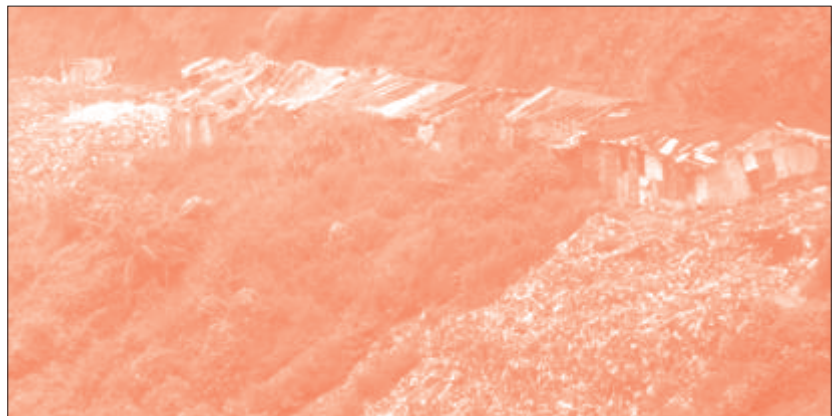
The present module thus addresses issues that, in spite of a growing awareness of the **importance of the institutional and financial sustainability** of waste management projects, are **still largely neglected in practice**. Information about experience, practical guidelines and tools for the operations of waste management at settlement level is scattered, and only some of their specifics are available or accessible. Well-documented project examples and specialised literature on the topic are rare.

This presentation is therefore limited, in the main, to **general conclusions and recommendations** derived from the authors' practical experience in the conceptualisation, implementation and evaluation of projects aimed at improving basic services in urban poor settlements. As far as possible, these general statements are illustrated by concrete and practical examples.

Lack of waste water management /5/



Uncontrolled refuse disposal /6/



1. OPERATIONAL AND FINANCIAL ASPECTS

Tasks and Challenges

Sector-Specific Objectives and Millenium Development Goals

The continued growth of urban poor settlements in most cities of the South and the growing needs to rehabilitate or renew those water supply and sanitation systems constructed during the first development decades, require massive investments. Present national and/or international development budgets are hardly sufficient to cope with these challenges.

The **New Delhi Statement** of the United Nations Development Program (UNDP) of 1990 called for a fivefold incremental increase of development finance for the water and sanitation sector over ten years in order to satisfy basic needs for clean potable water and adequate sanitation. This objective could not be reached as expected by the turn of the century and was therefore updated by the **Millennium Development Goals** agreed on by the United Nations in 2000. The headline of Goal No. 7, “Ensure Environmental Sustainability”, sets the

target to “**halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation**”.

To achieve this target, the **objectives for the operation and financing of basic infrastructure for water supply and sanitation** as formulated by the New Delhi Statement of 1990, still apply:

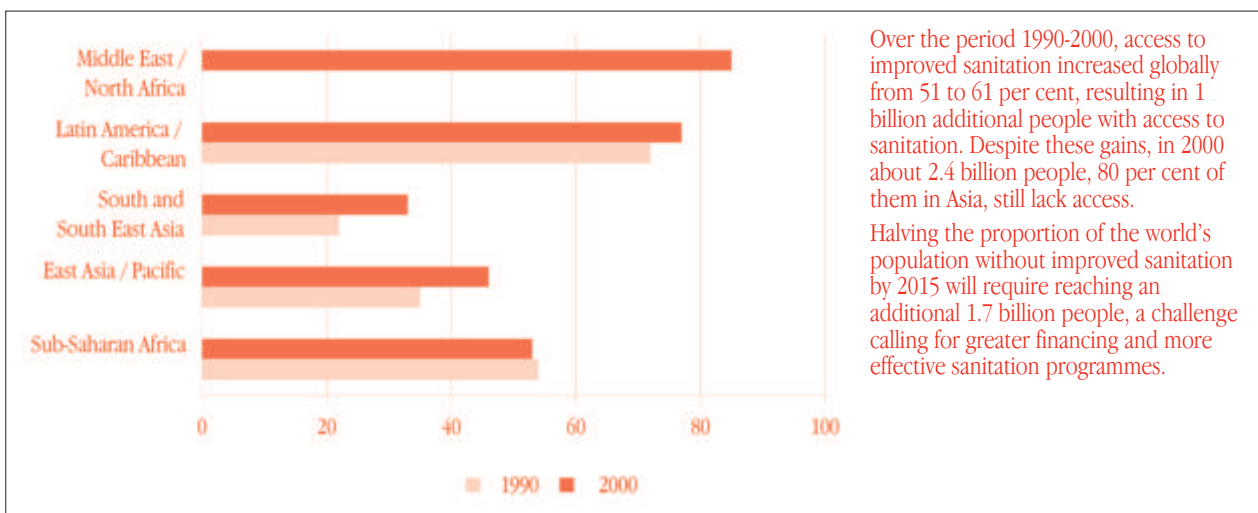
- **more participation and cooperation of users in the operation and management of basic infrastructure services**, as well as the more efficient promotion of such measures by broad national support programmes;
- more **solid** and professional **financial management** with, in particular, **improved management of existing facilities, networks and assets**;
- the use of appropriate and context-sensitive technologies.

Similarly, the strategies to reach the **key objectives** for the financing of water supply and sanitation also remain valid:

- **more sensible and efficient use of the financial resources** already **available** for the sector, with particular focus on increasing the awareness of responsible sector institutions in service costing and cost recovery;
- the **mobilisation of additional financial resources from existing and new sources**, consisting not only of those of national and international financing institutions, but also of financial contributions from the **consumers and users** of water supply and sanitation services.

To implement these strategies, the still common practice of **subsidizing** water supply and sanitation **services** from national or municipal budgets

Proportion of population with access to improved sanitation



OPERATIONAL AND FINANCIAL ASPECTS

Institutional and Financial Sustainability

needs to be restructured. This is also a matter of social equality, since well-off population groups living in consolidated neighbourhoods often benefit much more from such subsidies than poor households in marginalised settlements.

Since water supply and sanitation are economic goods with defined prices like other services, a high proportion of **operational and maintenance costs should be recovered** through the collection of appropriate fees and tariffs as a precondition to ensure their financial sustainability and to achieve more equality in basic service provision.

Against this background, and with regard to the two thematic issues of this module, waste management projects aiming to improve living and housing conditions in urban poor settlements face a number of fundamental challenges.

Operational Organisation

To ensure long-term sustainable operations and to identify appropriate operators and providers of waste management services, the following main aspects need to be considered:

- the possibility or need to **integrate measures** at settlement level **into** comprehensive networks or **systems at city level**, and the definition of the required interfaces;
- the **involvement and participation of all important** formal and informal **stakeholders** and actors;
- the creation of sufficient scope for user groups and community-based organisations **to take responsibility for operational tasks and procedures**;
- the clarification of the roles, **responsibilities and contributions** of the different actors and stakeholders involved **with regard to operations, servicing and maintenance**;
- the **professional and economic capacity of all involved actors**, and their need for advice and training in order to take over operational and management functions.

Finance and Cost Recovery

To safeguard sustainable operational financing and users' willingness to pay, it is essential to take the following into account:

- appropriate **technical standards and solutions**, which poor target groups can **afford**;
- possible **cost reductions by rehabilitating** or extending existing **systems** or installations;
- possible **user contributions** in the construction of installations and in their long-term operation;
- **introducing and collecting user fees** that poor target groups can afford;
- **communicating the reasons for raising cost related fees** through information and awareness campaigns;
- introducing both **incentives and sanctions** for the payment and collection of user fees;
- **appropriate procedures** and regulations **for fee collection**;
- adequate **information on and accountability** for the quality of waste management services, **including the possibility for users to appeal or complain** to service providers and/or supervisory bodies.

OPERATIONAL AND FINANCIAL ASPECTS

Institutional, Legal and Economic Framework Conditions

Waste management projects in urban poor settlements are usually planned and implemented within existing institutional structures, legal regulations and economic framework conditions. To a large extent, **country-specific characteristics determine the possible scopes** of financing and operating waste management initiatives or projects.

In the development and implementation of financing and operational concepts, the following conditions therefore need to be taken into consideration:

- political structures and decision-making processes with particular view to the possibilities for participatory and self-help approaches;
- institutional competences, responsibilities and functions;
- economic framework conditions;
- legal regulations for enterprises and the way they operate;
- sectoral policies and guidelines, and respective support programmes;
- current and/or mandatory technical standards for waste management;
- legal regulations for connections to services and their use, including incentives or sanctions;
- procedures and regulations for determining user charges and fees.

Political Structures and Decision-making Processes

As with any other economic activity, a stable political environment, a **minimum number of democratic structures and the rule of law** are important pre-requisites for the establishment of sound operational concepts in the context of waste management projects. It is particularly important that **managerial decision-making**, for example on adjusting user fees, capital investments, or the use of operating cash reserves, is sufficiently **autonomous** in order to **avoid political influence** from municipal or central government institutions. The preconditions for this autonomy are primarily **efficient local authority structures**, including functioning systems of checks and balances in government, public administration and the justice system.

In contrast, unstable political circumstances with frequent changes of government and/or social or ethnic conflicts, which prevail in many developing countries, can seriously threaten sustainable operations or even render them impossible. Moreover, clientelism, or systems of patronage, by which local or central government exert influence, are common in many countries.

Since factors such as these can hardly be addressed by projects at settlement or neighbourhood level, possible scopes of action should be assessed as realistically as possible. However, project-specific sustainable forms of operations and management can and do get implemented even in difficult political and institutional environments.

Institutional Competences and Functions

In most developing countries, as in most industrialised countries, waste management services are **predominantly** public, and sometimes even sovereign functions, and are provided by municipalities or local governments, or by national sector institutions.

The scope for waste management initiatives at settlement level is mainly defined by **the extent of decentralised decision-making possibilities** and by **the financial resources** available to the responsible service providers.

But, in most cases, waste management services can only be delegated to a limited extent or under special conditions, e.g. in the form of concessions to private sector providers. Even where such delegations are possible, the following responsibilities and functions usually remain with public sector institutions:

- the definition of standards and quality criteria for the services delegated;
- the supervision of the quality of the services rendered by the private sector providers;
- the fixing of user fees and charges, or the approval of fee adjustments proposed by private sector providers.

OPERATIONAL AND FINANCIAL ASPECTS

Economic Framework Conditions

Waste management projects at settlement level can be affected by volatile **global and national economic factors**, and there are not many ways project-specific measures can allow for them:

- Price increases for imported equipment or energy as a result of, for example, a devaluation of local currencies, can influence both the investment and operational costs of waste management projects significantly, and thus have a serious effect on the ability of the poor to pay for services.
- Similarly, economic crises or recessions, which result in a general decline of purchasing power, can reduce poor target groups' financial capacity critically, and thus threaten the sustainable operation of waste management systems.

These kinds of risk should therefore be carefully assessed in the concept and planning stages of waste management projects. To alleviate such risks, low-cost technical solutions with locally available material and equipment should be chosen. Solutions requiring substantial amounts of goods or services that are only available in international markets should be avoided.

Forms of Enterprises and Operational Set-ups

Depending on country-specific laws and legal systems, the possible types of enterprise and operational set-ups involved with waste management services can differ considerably.

In many cases, only public (national or municipal) institutions are entitled to provide such services. According to the applicable laws, the following organisational forms are possible:

- national sector institutions;
- departments or special service branches within municipal or city administrations;
- municipal or public enterprises.

However, with the global liberalisation of trade, sanitation and solid waste management services are being increasingly provided by private sector enterprises, particularly in the area of solid waste management in large cities and metropolitan areas, and their activities and organisational forms (corporations or joint stock companies, limited liability companies, joint ventures etc.) are normally governed by their respective country's company laws.

In contrast, there are usually only vaguely or no definable forms of operational set-ups for small informal enterprises, user associations or community based organisations who provide waste management services in urban poor settlements. This lack of regulation often offers significant leeway for developing and testing innovative and more appropriate solutions in waste management initiatives at settlement level.

Sectoral Guidelines / Policies and Support Programmes

So far, only a few countries have established specific sectoral guidelines or policies for waste management. Where such guidelines do exist, they have usually been developed in the context of other sectoral functions, such as water supply, pollution control or the protection of natural resources.

The opposite is the case with bilateral and multilateral donor organisations. They have produced a wealth of technical guidelines, policy papers and sectoral concepts that provide orientation and guidance for the development and implementation of operational and financing concepts for waste management projects.

Following the drafting of the Millennium Development Goals, many countries, often with external donor support (e.g. from the World Bank *Cities Alliance Programme*), have launched country-wide programmes for the improvement of living and housing conditions in urban poor settlements, and, in many cases, waste management measures are an integral part of them. The financial resources and the kind of assistance available largely depend on their scope and focus.

Such programmes, which can provide finance, training and technical assistance, can also facilitate the implementation of operational and financing concepts at the individual settlement level.

► see literature and websites in the annex to this module

1.

OPERATIONAL AND FINANCIAL ASPECTS

Technical Standards

Legally applied technical **standards** for waste management installations and operations have considerable impacts on both investment and operational costs, and thus on their affordability to poor target groups. In most developing or transformation countries, **two typical situations** can be described, both of which are problematic with regard to sound and sustainable operations and financing:

- Technical **standards** that may be appropriate for well-off residents of formal parts of cities are **too high and sophisticated** to be affordable for poor target groups (e.g. water-borne sewerage or individual household refuse collection). In these situations, it is usually necessary to negotiate exceptions with the responsible institutions in order to implement more appropriate measures, which, later on, might be adopted as new standards.
- The other typical situation, is quite different, and is when there is an almost complete **lack of standards**, and decisions are left to individual users or service providers. In many cities, for example, septic tanks are the normal sanitation option even in well-off formal housing areas. The final disposal of sewage and refuse in particular, is barely regulated by binding technical standards in most developing countries: hence, sewage treatment plants or sanitary landfills, when they do occur, are rare exceptions.

While flexibility in the selection of technical solutions is possible in either of these situations, it is more important to establish a consensus on appropriate standards between the users and the service providers.

Conditions for Connection and Use

Closely related to technical standards, the conditions for connection to and use of waste management systems also define their financing possibilities and operational arrangements. This is especially true for water-borne piped sewerage networks and for most refuse collection systems, both of which can only operate efficiently if enough users and/or households are connected to or use them.

Compulsory connections to formal systems with expensive and high technical standards, either **require significant levels of subvention**, which, if withdrawn, can threaten sustainable operations, or, because they are unaffordable, prevent urban poor settlements from connecting to such systems in the first place. Taking into consideration the usually scarce financial resources of public service providers, and hence their inability to make subventions, the latter is the most frequent reason for informal waste management solutions.

Sustainable operational concepts for urban poor settlements thus usually need to allow for adjusting any prevailing technical standards and/or mandatory connection conditions so that they are appropriate to users' expectations and ability to pay. Such concepts should also include service connection incentives, for example, allowing users to pay in instalments or offering them loans for house connections to sewerage networks or the construction of septic tanks or latrines etc.

Determination of User Fees and Charges

The regulations and procedures for fixing user fees and service charges are also important factors for the development and introduction of sustainable operational arrangements. In this context, the freedom for service providers to determine fees and tariffs according to operational requirements and actual service costs is particularly relevant.

In most countries, municipalities are responsible for determining user fees for waste management services, which they usually also provide. However, depending on the degree of local government autonomy, service charges set by municipalities may need to be approved by national supervisory or sector institutions. In general, municipalities or public sector bodies are only able to delegate these competences to private providers to a limited extent.

A functioning market for informal private waste management services, independent from formal legal regulation, has developed in most urban poor settlements that are not connected to formal systems. **Prices** for such services (e.g. for the emptying of pit latrines or septic tanks) are usually determined **by supply and demand**.

Waste management projects at settlement level that involve interfaces between local, usually informal providers and formal city level systems, need, therefore, to harmonise and coordinate their respective formal and informal fee structures.



ORGANISATION AND OPERATIONAL SET-UPS

OVERVIEW

Background and Context

The economic efficiency and cost effectiveness of waste management services largely depends on **capable providers** with **appropriate forms of organisation** and operational set-ups.

In more detail, the selection and introduction of appropriate operational set-ups has to deal with the following issues:

- How to **safeguard appropriate quality standards** that, on the one hand, reflect poor target groups' needs and capacity to pay, while, on the other, contribute to improved hygienic conditions and reduced environmental pollution?
- How to ensure the **long-term financial sustainability** of the envisaged organisational and operational concepts?
- How to make sure that **operational and organisational set-ups** will be **accepted** by users and customers?
- How to **connect** solutions and **systems at settlement level** suitably to **systems and networks at city level**?

This chapter presents and assesses the different options for **organisational and operational set-ups** for waste management measures at settlement level, and for their interfaces with city-wide systems.

The other parts and modules of this set of publications focus on other organisational and operational aspects, namely:

- **possible forms of organisation** and operational arrangements for specific **technical solutions** (Module 1);
- **technical challenges and tasks** involved **in the implementation**

and operations of **particular technical concepts** (Module 2);

- the **organisation** and management of planning and implementation processes **according to the project cycles** of waste management measures;
- the assessment of potential service providers and cooperation partners with respect to **possibilities for poor target groups' participation and self-help** in waste management projects (Module 2)

Forms of Organisation

Solutions and approaches to the organisation of waste management in urban poor settlements and how to connect them to city-wide systems and networks are determined by a number of **situation-specific** factors:

- the **degree of consolidation** of the settlement and its legal status;
- the **settlement's location** in relation to the city as a whole;
- the **responsible municipal or national institution's willingness** to provide services to urban poor settlements;
- the **capacity** of public sector (municipal or national) **service providers**;
- the **number of inhabitants**, the **population density** and the **built configuration** (blocks or scattered buildings, building heights, number of storeys, construction materials etc.);
- **geological, topographic and climatic conditions**.

Internal factors also influence the choice of organisational approach:

- the **interests, priorities and preferences of residents** concerning service quality, standards and costs;
- the capacity and **willingness** of users **to pay for waste management services**;

- the **degree of residents' self-organisation**, and their **willingness** to contribute to solutions and **to initiate or take part in self-help initiatives**;
- the kind and **level of (informal) economic activities** within the settlement;
- the **potential for mobilising private sector initiatives** for improving waste management.

Depending on the context and the specific local conditions, the **options for organisation and operational approaches** can in general be based on the following:

- **solutions at settlement level** (“island solutions”) with no connection to city-wide systems or networks: disposal of waste water or refuse takes place within the settlement itself, or close to it;
- **mixed solutions, with partial connections to city-wide systems** or networks: in developing countries, this is generally the most common and typical solutions;
- **complete integration in city-wide networks or systems**: services cover all parts of a city, or, in big cities or metropolitan regions, even larger areas: this is the typical solution in most industrial countries.

In order to provide **orientation** and guidance **for the selection of appropriate forms of organisation**, the main characteristics of these basic alternatives are described in the next section of this chapter. Their main advantages and potentials, as well as their limitations and disadvantages are also outlined and assessed.

In addition, **typical organisational solutions and operational set-ups** for specific services (wastewater, refuse and rainwater drainage) are pointed to in a summarised overview.

Service Providers and Operational Formats

To introduce appropriate, affordable and sustainable waste management solutions for urban poor target groups requires, in most cases, interaction and **cooperation between service providers and other actors and stakeholders**.

Depending on the kind service and the stakeholders and actors involved, different types of enterprise, with **different operational formats**, are possible.

Therefore, **important criteria for the selection** of service providers and appropriate operational formats are presented in an overview.

In addition, the different types of **service providers** are characterised and their potential to render or support waste management services in urban poor settlements are assessed.

The following types of service provider and operational set-ups are described:

- **grassroots organisations**, such as user associations, community based organisations, local NGOs, etc.;
- **municipal or other public sector providers**, such as local government departments and national sector institutions, as well as more independent kinds of public enterprise, with their own budgets;
- **private sector service providers**;
- **hybrid forms** of provision, via collaborations between public and private providers and/or other possible stakeholders.

2.2 ORGANISATION AND OPERATIONAL SET-UPS

SOLUTIONS AT SETTLEMENT LEVEL

Characteristics

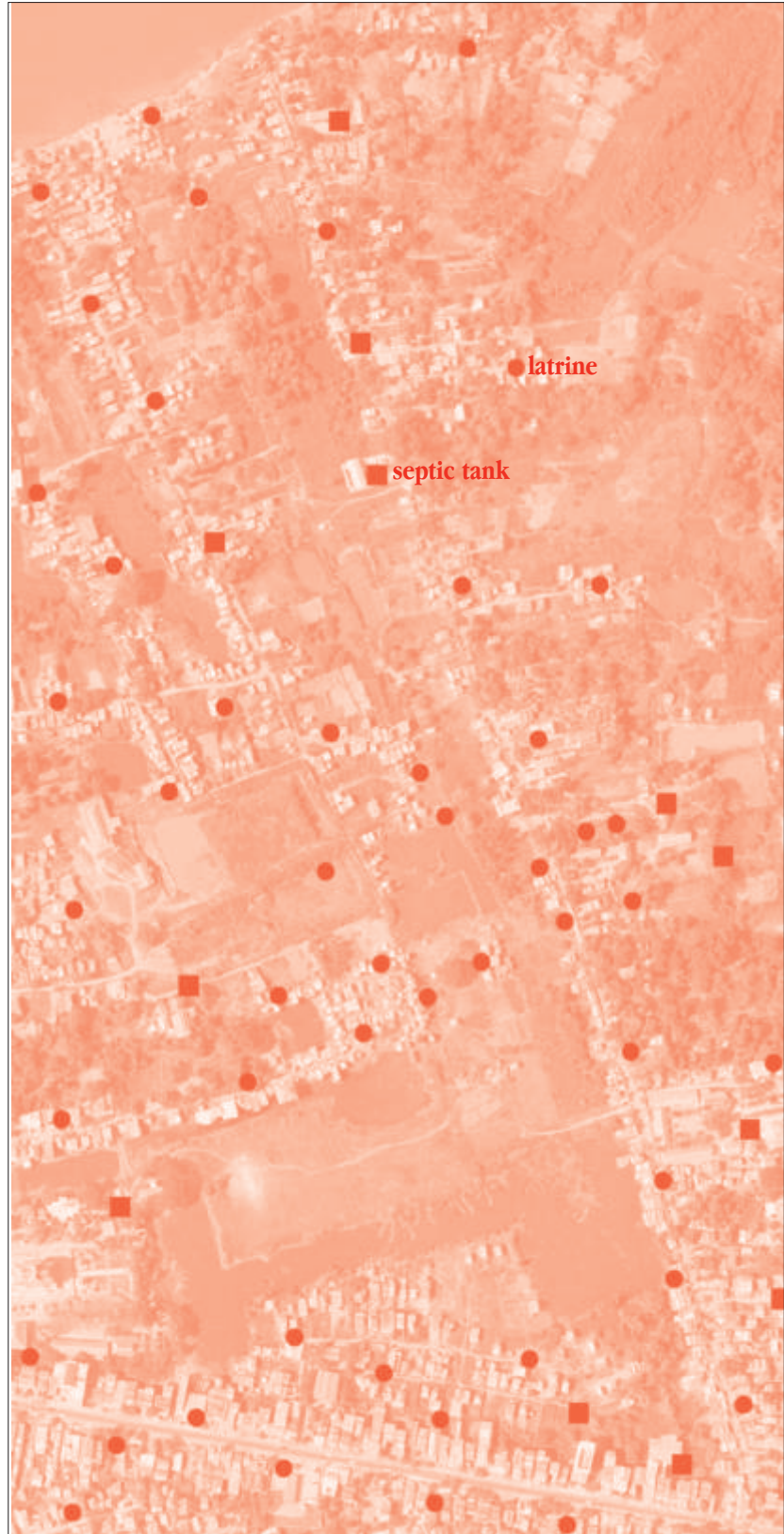
Independent, or quasi autonomous waste management solutions at settlement level, which have no connection to city-wide systems, are the exception in urban poor settlements. Where they do exist, they are usually **temporary or “emergency” measures** because there are no other options. They are, however, typical in the early phases of informal settlement processes, for instance in new extensions at the fringes of existing settlements, or in thinly settled peri-urban zones in transition from rural to urban areas.

With the progressive densification and consolidation of a settlement, connections to overall systems usually becomes essential, in particular for wastewater and refuse disposal. Consequently, municipalities or other responsible public institutions realise the need to invest in at least some basic waste management services in order to avoid major health hazards.

Self-sufficient “island solutions” for wastewater and refuse disposal usually develop:

- on the **initiative of individual households** in countries or regions with traditional or commonly accepted ways of dealing with these or similar matters (e.g. protection against erosion or rainwater drainage);
- or with the **support of local NGOs or CBOs**, who encourage and promote residents' self-help initiatives.

The participation or support of national or municipal institutions in such self-sufficient local solutions is unusual.



2.2 ORGANISATION AND OPERATIONAL SET-UPS

SOLUTIONS AT SETTLEMENT LEVEL

Advantages and Potentials

- **During the early stages of informal settlement** processes, or in thinly settled peri-urban areas, decentralised solutions are **often the only possible** waste management **option**.
- Local decentralised solutions are usually **relatively cost-effective** and affordable, and can often be part implemented through **self-help** without major capital investments (e.g. construction of pit latrines, recycling or composting of waste, etc.);
- Solutions at individual household level (latrines, rainwater harvesting, etc.) do **not** usually require **special operational concepts**: operation and maintenance can, in the main, be done by the users themselves;
- Local sorting and recycling of refuse, or emptying latrines can be **sources of income and generate jobs**.

Limitations

- Completely local solutions **can only be sustained when inhabitant densities remain low**.
With increasing densities, but also with growing prosperity, disposal solutions outside the settlement, in particular for wastewater and refuse, normally becomes indispensable.
- Individual, decentralised solutions without a coordinated operational structure, **often develop in haphazard and chaotic ways**.
It is thus often **difficult to introduce** and control **minimum standards of quality, hygiene and environmental protection**.
- Even simple solutions at individual household level (latrines, septic tanks, composting, etc.) require a **minimum of technical knowledge** and skill to be adequately operated and maintained.
Where such skills are lacking or insufficient, the introduction and long-term operation of household

level solutions will need to be supported by **complementary user training and technical assistance**.

- More complex local and decentralised solutions beyond the level of individual households, such as local landfills, treatment ponds or ecological sanitation (ECOSAN) approaches, which are to be operated by residents organisations or NGOs, require **stable organisational structures** and sound operational set-ups.
This usually also entails the need for complementary training and technical assistance, and for a certain amount of supervision of performance and quality standards (by, for example, municipalities).

ECOSAN-Workshop, Botswana

/8/



Emptying of latrines, Mali

/9/



2.2 ORGANISATION AND OPERATIONAL SET-UPS

SOLUTIONS AT SETTLEMENT LEVEL

Typical Solutions and Forms of Operational Set-up for Different Services

Refuse

The possibilities of completely local solutions for refuse collection and disposal can be described as follows:

- The **composting** and recycling of organic waste by individual households, community based organisations, NGOs or private small-scale enterprises is possible and feasible. However, it requires basic technical skills and social acceptance.
- Likewise, **sorting and recycling** refuse can be done by individual households, by residents' initiatives, NGOs or private small-scale enterprises.

However, possibilities for completely local recycling will be exceptions, and then only for particular materials (e.g. in larger settlements with diverse economic activities and a demand for such recycled material).

- **Local refuse collection systems with disposal at small dumps or landfills close to the settlement** can be operated both by resident initiatives and private small-scale enterprises.

However, to be sustained, they need stable organisational structures, technical skills and appropriate financing concepts.

► *Module 1 - Technical Concepts, Chapter 2*

Wastewater

Local decentralised solutions for wastewater disposal and who operates them can include:

- **Different types of latrines, including dry and composting toilets**, which can be built and managed by individual households and/or by the community. Compared to other latrines, a higher level of technical skill is needed to construct and operate dry or composting toilets.
- Ecological sanitation solutions (ECOSAN) also apply to individual households, but an overall waste management concept will be needed to ensure the safe disposal or re-use of their products.
- **Biogas installations, soak-aways or infiltration pits, and drainage fields** can, in principle, also be managed by individual households. However, joint initiatives of larger user groups organised by community associations or NGOs can be more appropriate and effective.

Household composting in oil barrels and toilet in Cape Town, South Africa

/10/



Dry latrine with duplex chamber and separation of urine, Mali

/11/



2.2 ORGANISATION AND OPERATIONAL SET-UPS

SOLUTIONS AT SETTLEMENT LEVEL

Rainwater Drainage

Biogas installations in particular, require regular and disciplined maintenance.

- Although it is feasible for **wastewater to be treated in small-scale plants at settlement level** (e.g. reed basin systems), its it is rarely done in practice. While such treatment solutions would be best managed by municipal or public sector operators, they could also be run by well-organised resident initiatives or user groups.

In the area of rainwater drainage and erosion control, different decentralised solutions can be applied:

- **Measures to prevent soil erosion and to protect slopes** can be implemented and maintained by different actors - individual households, user groups and NGOs, and municipal and other public sector institutions. Maintenance tasks for erosion control and slope protection can also be commissioned to (small) private enterprises.
- **Storm-water retention basins** are usually most efficiently constructed, managed and maintained by municipal or other public sector operators, but can also be operated by well-organised resident initiatives or NGOs. Again, maintenance tasks can be contracted to (small) private enterprises.

- **Simple local storm-water drainage systems** (canals, drains or trenches) are well-suited to be constructed and maintained (e.g. by regular cleaning) by self-help initiatives of neighbourhood groups or other community-based organisations.
- **Rainwater harvesting in underground or aboveground reservoirs** is generally best done by individual households. Larger installations should be constructed and maintained by user groups or NGOs.

► *Module 1 - Technical Concepts, Chapter 3*

► *Module 1 - Technical Concepts, Chapter 4*

ECOSAN-latrine and grey water irrigation
Mali /12/



Rainwater retention basin in Phnom Penh, Cambodia /13/



Rainwater harvesting in Phnom Penh, Cambodia /14/



PARTIAL CONNECTION TO CITY-WIDE SYSTEMS

Characteristics

Hybrid systems, consisting of decentralised components at settlement level partially connected to city-wide systems or networks, are the **most common way of dealing with waste management** in urban poor settlements.

In most cases, **decentralised informal solutions, often involving local small-scale enterprises, are linked to overall systems or networks, which are usually operated or supervised* by municipal or other public sector institutions.**

Such local informal solutions emerge because municipal or other public institutions:

- are rarely able to extend their services to densely populated urban poor settlements, which are often difficult to access;
- and/or frequently have little interest to do so, because of residents' limited capacity and willingness to pay.

As settlement patterns and structures become more diverse over time, a broad spectrum of informal and sometimes even formal providers of waste management services usually develops, particularly in the area of sorting and recycling refuse, which is generally closely linked to other informal economic activities, such as the paid-for disposal of faeces (e.g. from the emptying of pit latrines or septic tanks).

* e.g. of private sector enterprises contracted to undertake waste management services



2.3 ORGANISATION AND OPERATIONAL SET-UPS

PARTIAL CONNECTION TO CITY-WIDE SYSTEMS

Advantages and Potentials

- Local solutions with functioning connections to city-wide systems are **often the only option** for providing basic waste management services to urban poor settlements, which are usually densely populated and difficult to access.
- Such hybrid solutions offer **ample scope for self-help and other user initiatives** and contributions, which can help to reduce the operating costs of waste management services, and thus potentially improve the levels of cost recovery.
- Locally organised waste management services with transfer stations or other interfaces to overall systems can **generate income and jobs**, especially in sorting and recycling of refuse and the disposal of household faeces (e.g. from the emptying of pit latrines or septic tanks).

Limitations

- Functioning interfaces between local decentralised waste management components and main overall systems **need** not only a high level of **coordination and collaboration** between all the parties involved, but also **well-matching technical solutions**.
- Operations of hybrid solutions can only be sustainable when **stable and efficient organisational structures** can be built up for system components and operational arrangements at both settlement and city levels.
- **Fees related to cost recovery** or other cost benefiting approaches (e.g. contributions in the form of individual household or user group self-help) will be needed for all system or service components.
- It is more difficult to apply **consistent standards of service quality, hygiene and environmental protection** to local solutions at settlement level which have large numbers of various interfaces with city-wide systems.

Refuse collection, Namibia

/16/



Construction of sanitary facilities with 12 latrines, showers and washing rooms, Kigali

/17/



2.3 ORGANISATION AND OPERATIONAL SET-UPS

PARTIAL CONNECTION TO CITY-WIDE SYSTEMS

Typical Solutions and Forms of Operational Set-up for Different Services

Refuse

- The most common forms of refuse management in urban poor settlements are **drop-off or pick-up systems**, where refuse is collected in settlements or neighbourhoods and temporarily deposited at collection points to be then transferred to city-wide collection and disposal systems.

Refuse collection and transport to collection points can be organised and managed by individual households or by user groups, CBOs or small-scale enterprises. Collection and transportation methods can vary considerably, involving both motorised and non-motorised solutions. Similarly, a multitude of operational arrangements and local providers is possible - one-person enterprises, co-operative micro-enterprises, small or medium sized businesses, resident associations or NGOs.

In contrast, the transport from settlement collection points to final disposal at dumps or landfill sites is

usually undertaken by municipal or other public providers or by large private companies.

- **Refuse sorting and recycling** initiatives in which recycled materials are marketed beyond settlement boundaries and integrated into city-wide or even regional recycling systems, are more common in larger consolidated urban poor settlements, where, with the growing prosperity of residents, more recyclable waste materials are generated. Such initiatives can be developed both by small-scale enterprises and by community associations or NGOs.

Wastewater

- Services for emptying **pit latrines, aqua privies and septic tanks** and disposing of their contents outside the settlement can be undertaken by municipal or other public providers, and also by private operators. Since minimum sanitary conditions are indispensable to most residents, most households are usually willing to pay for such services. In many poor settlements, they are therefore provided for a fee by private operators ranging in size and type, from informal micro-enterprises to large formal companies.
- **Maintenance and repair** of conventional and/or unconventional **settlement sewerage systems** which are connected to city-wide systems, can be done by user groups or associations in order to reduce operating costs and user charges.

Door-to door refuse collection, Bangladesh

/18/



Composting in Bangalore, Indien

/19/



Private service provider in Dakar, Senegal

/20/



2.3 ORGANISATION AND OPERATIONAL SET-UPS

PARTIAL CONNECTION TO CITY-WIDE SYSTEMS

Rainwater Drainage

However, such self-help approaches can only work when users are sufficiently willing and motivated. In addition, user groups will, in most cases, need basic training and advisory assistance to be able to take over such maintenance tasks, and compliance with the agreed standards of maintenance and repair must be regularly checked.

- In most cases, **rainwater drainage canals, ditches and similar system components** inside urban poor settlements that discharge into city-wide networks or systems, are operated by the municipal or other public sector institutions responsible for these tasks. However, local drainage installations can also be maintained by user groups or community associations.
- As with the maintenance of local sewerage systems, user and resident self-help and mutual aid can reduce the overall operating costs of local rainwater drainage systems.

Moreover, as responsible public institutions are often negligent about maintenance at settlement level, user self-help initiatives can often considerably improve maintenance quality.

Again, basic training and capacity building will be needed, and appropriate supervision and control of maintenance standards has to be established.

As an alternative, maintenance and repair work can also be contracted to (small-scale) private enterprises.

Emptying of septic tank in Cairo, Egypt

/21/



Rainwater drainage canal in Maputo, Mozambique

/22/



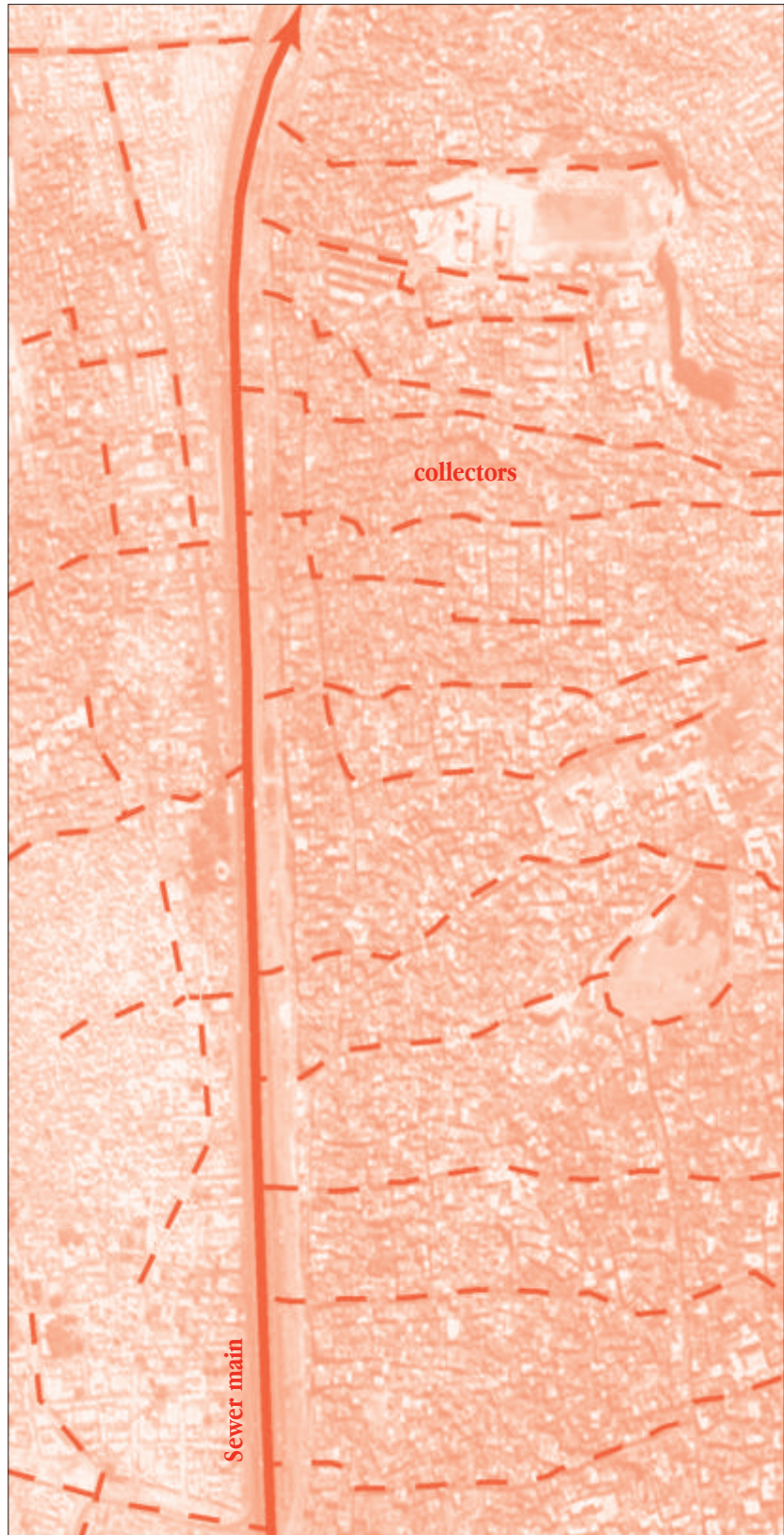
COMPLETE INTEGRATION INTO CITY-WIDE SYSTEMS

Characteristics

A complete integration of urban poor settlement waste management into overall city-wide systems is defined by the following main characteristics:

- **Waste management services** are provided **in a single comprehensive approach**, i.e. without any interfaces between the different providers or stakeholders who provide part services. Services are either rendered by providers operating at city-wide level or by providers covering larger parts of a city. This is a frequent solution in large cities or metropolitan regions, where refuse management, for example, is contracted to different private operators.
- There is a **direct relationship between the service provider and individual households** or business enterprises using the waste management service.
- Waste management is part of a **complete** and comprehensive **“chain” from collection at individual user level to final disposal** (dump, landfill or wastewater treatment plant):

However, the complete integration of urban poor settlements into city-wide systems of waste management is a **rare exception**. Even in older well-consolidated settlements, which have been formally acknowledged in some way and are no longer threatened by demolition or resettlement, there are usually some waste management services that are not provided by city-wide operators.



COMPLETE INTEGRATION INTO CITY-WIDE SYSTEMS

Advantages and Potentials

- “Interface-free” waste management rendered by one provider for a particular service **reduces the need for coordination and harmonisation**.
- A single comprehensive provision **facilitates** the introduction and **control of consistent standards of service quality, hygiene and environmental protection**.
- Integration into city-wide waste management systems is often **the only sensible option** (e.g. for water-borne sewerage), particularly **for settlements with high residential densities** in central locations.

Limitations

- **Connecting waste management networks**, particularly sewerage systems, **to existing urban poor settlements is usually costly and time-consuming**, and requires a great deal of coordination effort.
- Initial investment **costs for a complete integration** into city-wide systems **can be substantial**, particularly **for settlements with lower densities** and dispersed urban lay-outs (e.g. urban sprawl in peri-urban areas), and **even operational costs may be higher** (e.g. maintenance of piping, long transport distances for refuse collection, etc.).
- In most developing countries, **complete recovery of both initial investment and operational costs** through user charges is **an exception**, even in formal, comparatively well-off residential areas.

The difficult economic circumstances in urban poor settlements,

and residents' limited capacity to pay, inhibits financially sustainable operations even more.

- City-wide **providers**, therefore, usually have **limited interest in providing waste management services in urban poor settlements**.
- Complex city-wide systems can only be operated by **providers who are capable and efficient** (with regard to personnel and financial management, maintenance and repair work, quality control, etc.).

Laying of sewer pipes in Aswan-Nasriya, Egypt /24/



Digging a sewerage trench /25/



2.4 ORGANISATION AND OPERATIONAL SET-UPS

COMPLETE INTEGRATION INTO CITY-WIDE SYSTEMS

Typical Solutions and Forms of Operational Set-up for Different Services

Refuse

- Urban poor settlements are rarely **connected to city-wide refuse collection systems** without interfaces of some kind.

In most cases, **drop-off systems** are used in which refuse is transported more or less regularly from collection points or transfer stations within a settlement to outside dumps or landfill sites.

Fees for this form of refuse collection, if applied, are usually raised as flat rates in connection with other fees or levies (e.g. property tax, electricity or water). Hence, improving cost recovery by introducing more appropriate fees based on refuse weight or volume can be a major challenge.

City-wide refuse management services can be operated by municipal or other public sector providers, and by private companies.

However, private companies are usually only willing to cover urban poor areas when payment is secured through public sector

institutions (municipalities or central government agencies).

On the other hand, pick-up systems, with house-to-house collection, are rare in urban poor settlements, mainly due to the limited capacity and willingness of residents to pay for them. In addition, the often very narrow and unpaved internal streets in settlements can be difficult for larger refuse collection vehicles to access.

Wastewater

Typical solutions for integrating wastewater disposal into city-wide networks and systems consist of:

- Internal conventional and/or unconventional water-borne **pipaged sewage systems**, which discharge into sewerage mains outside the settlement and which are integrated into maintenance systems organised at city level (or, in metropolitan areas, at the level of large urban districts).

In most cases, such systems are operated by municipal or other public sector providers.

In the recent past, in a number of large capital cities, the operation of sewerage systems has also been commissioned or contracted to private companies, usually in combination with concessions for water supply (e.g. in Metro Manila, Buenos Aires, Mexico City, and elsewhere).

Municipal enterprise pick-up system in Cape Town, South Africa



/26/

Construction of a sewage system in Cairo, Egypt



/27/

2.4 ORGANISATION AND OPERATIONAL SET-UPS

COMPLETE INTERGRATION INTO CITY-WIDE SYSTEMS

Rainwater Drainage

As with refuse management, cost recovering fees for sewerage are also difficult to raise. Private providers are similarly unwilling to operate sewerage systems in urban poor areas, unless investment and operating costs are financed from public budgets.

- City-wide **rainwater drainage and retention systems**, including those that incorporate urban poor settlements, are almost exclusively operated by municipal or other public sector institutions.

When these functions are not covered by organisations responsible for sewerage, they are usually organised by municipal departments responsible for public works or construction, or by other public institutions in charge of hydraulic engineering, or irrigation and drainage.

There are hardly any private sector providers for these functions. However, the responsible public sector institutions do contract private enterprises for maintenance and repair work.

Since a direct recovery of costs for rainwater drainage through user charges is difficult, they are generally financed through municipal or other public sector budgets, or through general charges or levies related to

individual households or business enterprises (such as fees for street cleaning, property tax. etc.).

However, the actual investment and operating costs for rainwater drainage itself are rarely determined or calculated into such charges or levies.

Public sector institutions thus often neglect necessary maintenance and repair work, particularly in urban poor areas.

Sewage pumping station in Cairo, Egypt

/28/



Rainwater canal in Cotonou, Benin

/29/



TYPES OF OPERATIONAL SET-UPS AND SERVICE PROVIDERS

Criteria for Selecting Appropriate Forms of Operational Set-ups and Enterprises

On the background outlined by the previous sections, the following main aspects should be assessed and clarified in order to select appropriate operational concepts and service providers:

- legal framework conditions and formal pre-requisites;
- institutional set-ups, responsibilities and organisational structures;
- organisational, technical and financial capacities;
- objectives, interests, plans and expectations;
- acceptance by users and their willingness to cooperate with other stakeholders.

Potential service providers and types of operational set-ups are described in the following sections according to these criteria, and assessed with regard to different waste management services.

In many cases, external support for local waste management initiatives or projects will be necessary. The need for training, capacity building and technical assistance should thus be identified based on the above aspects.

Legal Framework Conditions and Formal Pre-requisites

As far as possible, the selection of appropriate operational set-ups and potential operators should be based on unambiguous **legal regulations** and agreements (such as municipal ordinances, contracts, etc.). In particular, the following should be clarified:

- the **kind and scope of services** to be rendered by the operator;
- the **relationship to** and needed level of interaction with **other institutions**, organisations or operators involved in waste management activities;
- regulations and procedures for **supervision and control** of service provision;
- responsibilities for **financial and budgetary planning** in connection to the services to be rendered;
- regulations and procedures used to determine and collect **user charges**.

Institutional Set-ups and Organisational Structures

It is important to consider the following two main aspects in the selection of potential service providers:

- **Organisational and administrative autonomy:** A minimum amount of autonomy in decision-making, e.g. with regard to internal organisation or the hiring of staff, is indispensable for operational efficiency and effectiveness. The degree to which operational and organisational decisions are affected by political or other interests groups, which often exert influence on municipal or other public sector service providers, is a particularly important factor.
- **Financial and budgetary autonomy:** The possibility of preparing financial plans and budgets, and determining user charges and tariffs independently is another important criterion in realistically assessing options for the financially sound and organisationally efficient operations of waste management services.

TYPES OF OPERATIONAL SET-UPS AND SERVICE PROVIDERS

Organisational, Technical and Financial Capacity

To assess the overall capacity of potential service providers, the following factors should be carefully taken into account:

- **Personnel and equipment:** Manpower resources, equipment and other assets are key indicators of professional capacities. They depend on experienced and well-qualified professional staff in management, technical and financial departments, and functioning technically appropriate equipment and installations.
- **Financial status:** Equally important is the financial status, which is mainly defined by indicators such as profitability, liquidity, capital reserves and debt level.
- **Service quality:** Further important indicators of professional capacity are the technical standards and the quality of service that can be achieved by particular providers and operational set-ups.
- **Customer orientation:** Another indicator is the willingness and ability to orient services to user interests and requirements. This involves providing customers with information (e.g. about necessary fee increases), and reporting on cost-effectiveness and service quality.

Objectives, Interests, Plans and Expectations

In addition to the assessment of the professional and financial capacities of potential service providers, their objectives, interests and plans for the future should also be analysed, because these can have both positive and negative impacts on operational concepts for waste management services.

- In spite of insufficient professional capacities and/or financial resources, national, municipal or other public sector service providers frequently have a particular **interest in maintaining their “monopolies”**, which are based on public sector regulations. They are often unwilling to give up financial transfers, staff positions or authority. This is also true of private enterprises, which fight against encroachments or intrusions into their areas of activity.
- On the other hand, both public and private sector providers can have interests in and expectations from **exploring and developing new business areas and opportunities**, including joint-ventures. Other interests or plans can involve improving service quality or **extending activities to other areas** or districts.

Since such **objectives, interests and plans are often not open to examination**, identifying and assessing them needs a high level of discretion and experience.

Acceptance, Willingness to Cooperate and Carrying-through

Important “soft” factors in assessing service providers and operational arrangements are:

- **Acceptance by target groups** and users: Providers of waste management services should be accepted and trusted by users. Adequate charges, a sufficient level of cost recovery and users' willingness to pay can only be achieved when target groups feel that the quality of service really is an improvement, and the provider operates professionally.
- The **willingness** of providers to **cooperate** with small-scale enterprises and user associations: Closely related to the degree of target group acceptance is the willingness and capacity of external providers, i.e. those that operate from outside the settlement, to interact and cooperate with local initiatives and small-scale enterprises.
- **Carrying-through:** Providers of waste management services must be able to communicate and advance their concerns and plans in the given political and institutional environment. If they lack the ability to carry through their plans, necessary tariff adjustments cannot be made, external budgetary support cannot be enlisted, and innovative forms of cooperation with target groups and other stakeholders cannot be embarked on.

2.6 ORGANISATION AND OPERATIONAL SET-UPS

USER ASSOCIATIONS

Background

In many urban poor settlements, and particularly in the older and more consolidated communities, a large variety of **self-help initiatives and residents associations** concerned with improving waste management have arisen over time. They have usually developed in connection with other initiatives for improving living and housing conditions, e.g. water supply or legalising and formalising tenure. Such activities are **often supported by NGOs or external donors**, but also increasingly by local and central government institutions.

These initiatives and organisations can consist of:

- **loose informal temporary self-help initiatives** by resident groups at neighbourhood or quarter level, which emerge to solve urgent problems (e.g. the protection of slopes threatened by landslides or clearing refuse from public open spaces);
- **tradition based groups and organisational structures**, according to geographic origin, ethnicity, religion etc. In addition to the social or cultural activities typical for such groups, they can

also be involved in waste management activities (e.g. the Zabaleen, the Coptic garbage collectors of Cairo);

- **resident associations, neighbourhood societies and local NGOs**, active at neighbourhood level with formally acknowledged status and corresponding organisational structures (e.g. official registered associations or NGOs), which have been established for a particular purpose and with long-term perspectives. These often can also be involved in waste management activities;
- **user associations or committees**, which take on operational tasks to do with waste management systems or installations (e.g. maintenance of sewerage pipework, local refuse collection, collection of user charges etc.);
- **formal representative bodies at settlement level**, such as elected local councils or committees (e.g. the “*Juntas de Vecinos*” in many Latin American countries, which are often involved in local waste management activities).

General experience with participatory **inhabitant self-help initiatives**, as presented in the different modules of this publication, illustrates that user groups and other community based organisations can take over a wide variety of the **operational functions of waste management** effectively. However, an important precondition for the sustainability of such initiatives is **a certain level of organisational stability**.

In urban poor settlements that are not yet connected to city-wide systems and are difficult to access, **self-help activities** organised by residents are **often**, at least for a transitional period, **the only option** to ensure a minimum level of hygiene and sanitary health.

Where local waste management services are connected to city-wide systems operated by municipal or other public or private sector providers, the participation and active involvement of user associations or similar organisations **can also be useful**:

- **Collectively organised and regularly carried out self-help measures** can make some waste management services **more affordable** to poor target groups, e.g. local refuse collection and transfer to city-wide disposal systems.
- **Operating costs can be saved**, when user associations **take over maintenance and repair work**.
- The **collection of waste management user charges** by user groups themselves can **encourage willingness to pay** and thus improve the level of cost recovery.

Refuse collection by resident's initiatives in Bangalore, India

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2.6 ORGANISATION AND OPERATIONAL SET-UPS

USER ASSOCIATIONS

In summary, self-help initiatives and user contributions can promote **user identification** with waste management approaches, and improve the level of ownership and the **acceptance** of operational arrangements.

Meeting of a wastewater committee in Bangalore, India

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Possible forms of organisation for user groups taking over operational functions

Depending on country-specific legal and institutional framework conditions, the following types of organisation are possible in order to involve user and community groups in waste management services (see also: Legal framework conditions and formal pre-requisites):

- **Resident and/or other community based associations:** Depending on their formal status and organisational structure, such associations can take over longer-term operational functions. To do this, they should, in general, have the status of a legal entity with adequate financial management capacity, stable organisational structures and a certain minimum number of full-time management and administrative staff.
- **Non-Governmental Organisations:** Depending on country-specific law, the activities of local NGOs operating at neighbourhood level are usually governed by similar regulation as those for residents associations. In some cases, they can also be organised as non-profit enterprises. In general, NGOs can thus take over similar operational functions as residents associations.
- **User associations:** Another option is the formation of user groups to take over task-specific operational functions (e.g. for maintenance and repair work). In order to sustain such functions, these initially often informal associations will need to acquire more stable organisational structures, with rules and clearly defined individual member contributions.
- **Committees or other representative bodies:** The formation of committees or similar representative bodies at settlement or neighbourhood level can help enable residents or others involved (e.g. local enterprises) to influence decisions on service standards and costs. They can also control and supervise the quality and reliability of service provision. If they are to take over administrative and coordination functions related to waste management services as well, they will need a stable organisational structures and efficient financial management. In larger urban poor settlements, it can be necessary or useful to establish more than one committee: While a main committee at overall settlement level focuses on general management and coordination tasks, other committees at neighbourhood or quarter level can look after more operational tasks, like maintenance or the collection of user charges.
- **Involvement of private sector actors:** User or resident associations can also enlist the support of local private sector actors (e.g. individual craftsmen, groups of workers or enterprises) and contract them for specific tasks to do with waste management activities. In such cases, user groups or community associations usually determine general procedures, prices and fees, while private sector actors take over specific operational tasks, e.g. fee collection or maintenance and repair work, and render their accounts to the “regulating” user or resident association.

2.6 ORGANISATION AND OPERATIONAL SET-UPS

USER ASSOCIATIONS

General Characteristics

Legal Framework Conditions and Formal Pre-requisites

In most countries, waste management services are “sovereign” functions, normally the responsibility of municipal or other public sector institutions. Hence **legal regulations or other formal requirements** to do with the participation of user associations and other community based organisations in waste management operations are usually **only vague, or not defined at all**.

The scope of user or resident organisations is thus mainly determined by the prevailing **legal regulations on setting up and registering civil society organisations** (NGOs, clubs, associations, etc.), and by the legally defined possibilities for such organisation to undertake economic activities and provide services.

Particularly in authoritarian systems, e.g. in many countries of the Arab World, the registration of civil society organisations is dealt with in a very restrictive way, and tightly controlled and supervised.

However, in spite of vague or restrictive legal conditions, there is often ample **“informal” scope** to promote the participation of community-based organisations in operational concepts for waste management services.

Depending on context-specific conditions, there may also be sufficient scope to informally define rules and procedures for the interaction of CBOs with other involved institutions or service providers, and for determining user charges and service quality standards.

However, with a view to longer-term operational sustainability, such informal arrangements will, at some later stage, need **to be formalised and acquire more stable organisational structures**.

Institutional Set-ups and Organisational Structures

As with the ambiguous and vague legal regulations for CBO activities in waste management operations, their requirements in terms of institutional set-up and their **integration into existing administrative and operational structures are usually unclear**, and this can often provide leeway for experimentation and testing innovative solutions.

But aside from their task-specific functions, certain forms of community organisations, e.g. officially registered NGOs or community development associations, may need to comply with generic regulations on organisational and executive structures (e.g. management and supervisory boards, membership registration, etc.). These will have to be adequately considered when supporting or developing such organisations.

Public toilet facilities in Mumbai, Indien

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2.6 ORGANISATION AND OPERATIONAL SET-UPS

USER ASSOCIATIONS

Organisational, Technical and Financial Capacity

Without external support, most community based organisations have **limited capacities**, not only for organising and managing operational procedures, but also in technical and financial areas. Technically more complex waste management systems (e.g. water-borne piped sewerage with pumping stations), which require professional management and a high levels of technical skill, cannot therefore usually be operated by CBOs on their own.

In general, the involvement of CBOs in operational functions will need **intensive complementary training and advisory assistance**.

► *Module 2 - Participation and Self-Help, Chapter 4.2*

Objectives, Interests and Expectations

The objectives, interests and expectations of user groups and community-based organisations are usually concerned with the **concrete improvement of their living and housing conditions**.

Members of such groups are often particularly motivated and committed when they see the **prospects of their actions** and when the first tangible results are achieved in the early stages of their involvement.

However, community groups and initiatives can also develop their own self-serving agendas to exploit possibilities in a negative way, or to become the “gate-keepers” of other groups. Such problems can arise, for example, in the allocation of financial resources, or on establishing or enforcing service standards or user charges for particular user groups.

Acceptance, willingness to Cooperate and Carrying-through

Due to their knowledge of local conditions and their proximity to target groups, the activities of settlement community organisations are usually **well-accepted by residents**. However, particularly in larger, densely built-up settlements with heterogeneous population, different community organisations can become rivals, which may end up with each questioning the representative legitimacy of the others.

In contrast to official institutions and governmental agencies, community based initiatives often have to fight for recognition. **Their acceptance and assertive power usually increases with the number of people they represent and with the first concrete achievements of their activities**.

Mumbai/India

Community-Operated Public Toilets

In the context of the *Slum Sanitation Program (SSP)* of the *Municipal Corporation of Greater Mumbai - BMC*, which was supported by the World Bank between 1995 and 2002, community-based organisations have taken over a lead role in the management and operation of public toilet clusters in slum areas. One of the first clusters implemented under the SSP was constructed with collaborative support from the NGO, SPARC (Society for the Promotion of Area Resources), and the *National Slum Dwellers' Federation*. It was opened in 2002 in Chikhawadi, and handed over for operation to a local CBO, the *Kranti Welfare Association*. In addition to 10 toilets each for women and men, the cluster comprises four bathrooms, 18 children's toilets and a public meeting hall, which is used for pre-school education activities.

The CBO organises regular cleaning and maintenance of the premises. It also carries out minor repair work, while necessary larger repairs are done by BMC. User charges of 1-2 Rupees per toilet use almost cover all the monthly operating costs of roughly USD 330 (nearly 50% of which is for water, which has to be purchased from private providers, and 30% is for staff salaries), and this even provides a small profit, which is transferred to a local bank as a reserve. Financial end-of-year balances are regularly submitted to a supervisory agency, the *Registrar of Charity Commissioner*.

USER ASSOCIATIONS

Important formal pre-requisites

With a view to the institutional sustainability of operational concepts for waste management services that are to be implemented with the active involvement of community organisations or user associations, some basic **formal pre-requisites** need to be taken into consideration. Many operational functions can only be taken over when the organisation in charge is a formal legal entity. Even ordering or purchasing material or equipment is usually only possible with **sufficient proof of legal status**. The specific legal requirements for, e.g. establishing and registering a committee, an association or a club, are usually determined by country-specific laws and other legal regulations.

The **legal status** of a user organisation and its functions should thus be defined by statutes and/or articles of association. The operational procedures and functions should be supplemented by appropriate work rules. The financial management functions and regulations for fee collection, as presented in Chapter 3 of this module, should be included in **the organisation's statutes and work rules**, and **a separate scale of charges and fees** should be included. In more detail, the organisation's statutes should define:

- Purpose and functions of the organisation;
- Membership and the rights and duties of members;
- Organisational structure and internal distribution of tasks and responsibilities;
- Type of organisation (e.g. committee, association, NGO, CBO, etc.);
- Election procedures for the board and other representative offices (e.g. sub-committees), including election periods;
- Procedures for reporting and rendering of accounts;
- Relationships between the board and operational units;
- Functions and competences of the board;
- Rules and regulations for the review and adjustment of user charges and fees;
- Membership fees and budgetary framework.

The statutes should be complemented by work rules, which should define the more practical aspects of operations, such as:

- the scope of the organisation's services and operations;
- the area(s) or district(s) the organisation is to cover;
- a register of users;
- the conditions for members and other users for connection to and use of services rendered by the organisation;
- scale of charges and fees;
- incentives for paying fees and sanctions for non-payers.

In most cases, **a meeting of all members** will be procedurally necessary **to approve the statutes and elect the board**.

Colombo/Sri Lanka

User Committees for the Management of Sanitation Services

Between 1993 and 1998, the Sri Lankan Government, with World Bank Support, implemented the countrywide *Community Water Supply and Sanitation Project* (CWSSP). In addition to water supply provisions, the project has carried out sanitation measures in 3,800 poor settlements, in both urban and rural areas.

After the construction of simple sanitation installations, such as pit latrines and *septic tanks* through reciprocal self-help, user committees at neighbourhood level have assumed operational responsibilities. Simple maintenance tasks, such as the emptying of latrines or the cleaning of sewerage pipes, are done by self-help, while more complex tasks, such as emptying *septic tanks* or fee collection have been commissioned to private or public providers.

As most user committees adhered to ad-hoc management practices and decision-making procedures, it was difficult to build up longer-term sustainable operational structures. Over time, the willingness of households to pay fees for the services declined considerably. Moreover, political support for introducing and building up fee-based sanitation services was feeble, as local governments generally preferred to maintain traditionally free provision of these services.

2.6 ORGANISATION AND OPERATIONAL SET-UPS

USER ASSOCIATIONS

Necessary Conditions and Pre-requisites

To successfully involve user associations or residents' initiatives in the operations of waste management services, the following conditions and pre-requisites have to be fulfilled:

- **Users need to be interested and willing** to support waste management activities (e.g. in the form of individual or mutual self-help in maintenance and repair work, financial contributions to investment costs or payment of fees for running costs).
- Target groups should have **access to all information relevant** to decisions on their possible participation in operations.
- **Municipal or other public sector institutions** responsible for waste management should be **willing to cooperate with community based organisations**.
- Prevailing **legal and political framework conditions** should be conducive to participative self-help initiatives.
- **Rules for the collection of user charges** should be **functional** and sufficiently transparent.
- **Technical standards and solutions** should be **compatible** with user demands and their capacity to finance, manage and maintain them.
- **Existing community organisations** can be used as a **starting point** for local waste management initiatives.
- **Organisational structures** should be sufficiently **stable** and **staff resources available** to take over operational tasks.
- Adequate **resources for complementary training, capacity building and advisory assistance** (from public institutions, NGOs, external donors, etc.) should be made available.

Door-to door refuse collection in Khulna City, Bangladesh /34/



Pick-up system with bicycle rickshaws in Khulna City, Bangladesh /35/



Khulna/Bangladesh Neighbourhood Committees for Refuse Management

In the context of a pilot project supported by Swiss Development Cooperation, 26 neighbourhood committees were established in six wards of the City of Khulna to take over operational functions of refuse management. Each committee has 10-15 members, the majority of whom are teachers, lawyers and community workers from the corresponding neighbourhoods, each of which comprises about 450 households.

Each neighbourhood committee contracted 2 persons, a driver and an assistant, who regularly collect refuse from individual households using locally produced motor rickshaws; they also collect user fees for this service.

The committees meet once a month to discuss operational issues with the driver and his assistant, and to find solutions to operational problems (e.g. non-participation of individual households). In addition, they decide on monthly user fees for refuse collection, which are differentiated according to the income and social status of participating households. The regular revision of user fees aims to gradually improve cost recovery, and, at the same time, increase residents' acceptance and willingness to pay.

MUNICIPAL AND OTHER PUBLIC SECTOR SERVICE PROVIDERS

Background

Waste management in urban areas is a **public service in most countries**. It is usually rendered by municipal or other public sector institutions or enterprises.

Only in the recent past, and in the context of discussions which began in the 1980s on the mobilisation of private sector participation and investment in public infrastructure provision, have waste management services been commissioned, albeit if only minimally, to private sector providers, mostly in the form of concessions (see also section 2.8 - Private Sector Providers).

However, **in the majority of countries and cities** waste management still remains a **public function**. Even when concessions are given to private sector providers or other forms of privatisation have been introduced, the regulation and supervision of waste management services (determination of fees and tariffs, definition of service standards, quality control, etc.) remain with municipal or public sector institutions.

In most cases, waste management is a responsibility of **governmental bodies**. Different situations exist for the different types of waste management task:

- **Refuse management is a municipal function, almost throughout the world.** Even in highly centralised countries without any local self-government, refuse collection and disposal are mostly carried out by municipalities.
- Similarly, **wastewater management is predominantly a municipal service** rendered by the local administration or municipal enterprises. However, in many countries, wastewater management can also be a function of specialised sectoral institutions operating either at city, regional or national level. This is particularly common where water supply and sanitation are carried out by large public sector / national organisations.
- **Rainwater drainage** is likewise a predominantly municipal service carried out **by local**

governments. However, in some cases, mainly at urban fringes and in peri-urban zones, other governmental agencies (e.g. ministries of water and irrigation, agricultural ministries, etc.) can be responsible.

Construction of sewer mains in Siem Reap, Cambodia

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MUNICIPAL AND OTHER PUBLIC SECTOR SERVICE PROVIDERS

Public sector waste management provision can be based on **various operational set-ups**:

- **Municipal departments or offices:** This is the most common form for **rainwater drainage**, which is usually assigned to public works or civil engineering departments. Similarly, **refuse management** is often assigned to special departments or offices within municipal administrations. This kind of arrangement is **typical for smaller cities and towns** with simple administrative structures.
- **Municipal or other public enterprises:** Such enterprises can be organised **either according to corporate law** (e.g. limited liability companies, joint stock companies, etc.) **or public law**, as a state or municipality run company or an independent public enterprise. Such enterprises usually have their own budgets and assets, and generally operate outside normal local or central governmental structures.

Municipal enterprises as providers are **more frequent in larger cities**, and often operate **wastewater services** (usually in combination with water supply) **or refuse management systems**.

Other public sector or national enterprises often provide water supply and sanitation services in large metropolitan areas, or at regional or even countrywide level.

- **Specialised sector agencies or institutions:** These are generally autonomous entities (e.g. General Organisations for Sewerage and Drainage in Arabic Countries or *Institutos de Agua y Alcantarillado* in Latin America) and are usually similar to public enterprises, both in terms of their functions and their organisational structure.

In contrast to most entrepreneurial forms, they normally do not own assets, but are more an integral part of public sector or national government administrations.

The services of most public sector providers are **normally available to formal, better-off urban areas**, while urban poor settlements, and in particular informal areas, are usually neglected and only partially covered, if at all.

► *Module 2 - Participation and Self-Help, Chapter 4.4 and 4.5*

Refuse containers, El Salvador

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MUNICIPAL AND OTHER PUBLIC SECTOR SERVICE PROVIDERS

General Characteristics

Legal Framework Conditions and Formal Pre-requisites

Depending on the type of municipal or other public sector operators, the legal bases for their services can differ considerably:

- The scopes and functions of **municipal departments**, offices and enterprises is largely determined by prevailing country-specific **local government law** or similar legal regulations.

In countries with more developed local self-government, cities and municipalities usually also have a certain freedom to determine the kind and range of service provision within their constituency (e.g. through **municipal ordinances**). In contrast, in highly centralised countries, local governments' decision-making possibilities are generally very limited.

- The legal bases for service provision by **public sector institutions** or enterprises are normally government regulations on the constitution of such entities. In some cases, important national sector institutions (in particular in the field of water supply and sanitation) can be subject to special laws. **Government regulations or special laws** can also define their ranges of activity, functions and competences, as well as their organisational and operational set-ups.
- All **entrepreneurial kinds of service** provision are usually organised according to **corporate or public law**, which defines their possible forms.

Institutional Set-ups and Organisational Structures

Institutional and organisational structures are largely determined by their respective operational set-ups:

- The **scope of action of municipal or other public sector departments** or offices is mainly defined by **public sector regulations** and procedures, which are rarely oriented to efficiency and cost-effectiveness. This is also the case for public sector institutions. Moreover, public sector operators are often subject to **political influence** and pressure **from local or central government**.
- In contrast, **entrepreneurial types** of operational set-up usually have a **higher level of autonomy** and more possibilities of aiming for efficiency and cost-effectiveness. In practice however, this theoretical autonomy is again often limited by political influence and clientelism in the public sector.

Organisational, Technical and Financial Capacity

In many developing countries, overall public sector capacity and efficiency is limited by scarce financial resources, clientelism and political influence, and ill-paid and ill-motivated staff.

This is particularly true for **municipal and city governments**. Even in countries with decentralised structures of authority, **opportunities for effective action are limited**.

Moreover, as waste management services generally have a low image both among the population and politicians, municipal departments or enterprises responsible for them are usually very badly staffed and equipped. So much so, that they can even have difficulties with providing services to formal urban areas.

In many countries, particularly in Latin America, changes of government after elections usually lead to major personnel changes within administrations. But even when technical staff is not replaced, the short duration of political appointments, especially of mayors, often disrupts or threatens the continuity of operational strategies.

MUNICIPAL AND OTHER PUBLIC SECTOR SERVICE PROVIDERS

Objectives, Interests and Expectations

Municipal or public providers of waste management services normally have **little interest in extending their services to urban poor settlements**, which are usually hard to access and where residents are not particularly willing to pay for services.

Because of their difficult economic situation and bad financial status, many public sector providers operate on a short-term emergency basis, and need to improvise to solve day-to-day problems such as procuring spare parts or undertaking repairs. This hardly allows them to develop and follow-up longer-term operational or economic objectives.

On this background, **informal waste management practices** that fill the vacuums left by public institutions, are widely **tolerated**, and sometimes even encouraged.

Acceptance, Willingness to Cooperate and Carrying-through

Acceptance: Many citizens, even in formal areas, are unwilling to pay levies or fees for bad or completely missing services, which can come about because many public waste management operators lack the capacities to properly provide them. In urban poor settlements, which are usually not covered by such services in the first place, and where residents **generally do not trust** local or central government institutions, the willingness to pay for waste management services is usually even less.

Willingness to cooperate with other actors: In spite of their insufficient capacities, municipal or other public operators often want to maintain their legally based “monopoly” in service provision.

And when this monopoly translates into influencing financial transfers, staff positions and other resource allocations, public sector institutions can have **major reservations on the involvement of other stakeholders** (such as private operators or user associations).

Carrying-through: Given their generally **limited capacities** and resources, public sector operators usually face difficulties in communicating and hence **carrying through their operational interests** and objectives from both supervising or financing bodies and users.

On the other hand, large public sector provider organisations in bigger cities or metropolitan regions can be important “power centres”, in particular, when they are also responsible for water supply. They often control considerable funds, both from national budgets or external donor funding.

The same holds true for countrywide sector institutions. In addition to the control of financial resources, they often have considerable influence on legal and financial framework conditions, especially on fees and tariffs, and sectoral policies.

Public relation activities to promote payment of refuse collection fees in Maputo, Mozambique

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2.7 ORGANISATION AND OPERATIONAL SET-UPS

MUNICIPAL AND OTHER PUBLIC SECTOR SERVICE PROVIDERS

Chiclayo/Peru

Sanitation Services operated by a Municipal Enterprise

In the city of Chiclayo in the North of Peru, water supply and sanitation services are operated by the municipal enterprise EPSEL (*Entidad Prestadora de Servicios de Saneamiento de Lambayeque S.A.*). As in other Peruvian cities, only a few urban poor settlements had been connected to municipal sewerage systems. Moreover, only 25% of wastewater had been treated.

With support from German financial and technical cooperation, the municipal enterprise constructed new sewer connections for around 10,000 households in 14 peri-urban settlements (*pueblos jóvenes*) between 1995 and 2000. In addition, four new pond treatment plants have been constructed, which can treat all the wastewater of the city of Chiclayo. In this way, hygienic conditions in urban poor settlements have been substantially improved. The treated wastewater is safe enough to be used for irrigation in surrounding agricultural areas. To strengthen management capacities, to improve efficiency and cost-effectiveness and to sustain and maintain the newly constructed system components, the enterprise, supported by technical assistance, has embarked on a process of comprehensive organisational development. In addition to the training of personnel, including the further training of professional staff, the focus was on the introduction of new working approaches, such as teamwork. As a result of long-term technical assistance, major changes in corporate culture and management practices have been brought about, and these are reflected in the enterprise's improved management indicators.

The independence of entrepreneurial decision-making was, however, already severely compromised by political influence exerted by the local government and by a high level of debt before technical cooperation activities began. Given the background of continued deficits in the city's budget, the enterprise's revenues were used to finance other municipal services. As a result, the scope for new investments and the financing of operational costs remained limited. Moreover, staff changes at senior management level (managing director and division heads) had negative repercussions for the successes achieved in the changes of corporate culture and management styles. Further restrictions on more autonomous, efficient and cost-effective operations were imposed by tedious and bureaucratic public sector regulations (e.g. for procurement, accounting, salaries, etc.), which have to be observed by the enterprise although its legal status is that of a private joint stock company complying with corporate law.

In spite of a strong interest at local government level, alternative operational concepts involving private sector participation could not be followed up because of resistance at central government level. A major point of conflict, which has not yet been resolved, was the definition of decision-making competences.

Pueblos jóvenes in Chiclayo, Peru /39/



Laying of sewer mains in Chiclayo, Peru

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MUNICIPAL AND OTHER PUBLIC SECTOR SERVICE PROVIDERS

Necessary Conditions and Pre-requisites

The following conditions and pre-requisites should be taken into account in order to improve the coverage and performance of public sector operators, to work towards more sustainable public provider operational set-ups, or to embark on cooperations with public operators in the context of waste management services:

- the level of **clarity and transparency in laws or other regulations** governing their activities, including:
 - functions and range of services,
 - competences and responsibilities for budgetary planning and tariff setting, and internal management and operational decisions,
 - procedures and responsibilities for control and supervision,
 - rules and procedures for collaboration and interaction with other operators or stakeholders involved in waste management activities;
- a certain minimum amount of **autonomy to decide on various financial, organisational and**

management issues (e.g. determination of user charges and fees, internal working procedures, staffing, etc.) free from the political influence of local or central governments;

- a **sound financial status** (financial balance, capital reserves, liquidity, debt level etc.);
- **adequate personal resources** (professional and experienced staff in administrative, technical and financial departments);
- appropriate **technical equipment** (installations and other assets) with adequate maintenance systems and procedures;
- appropriate service quality and standards;
- sufficiently clear and **transparent objectives** (“mission and vision”) with regard to the improvement of technical and financial operations, and the **willingness to extend services to urban poor settlements**;
- **capacities** to communicate and carry-through necessary **operational and financial improvements**, particularly cost

recovery, and with regards to supervisory and financing political bodies;

- adequate levels of **user acceptance and trust**, especially from poor target groups;
- the **willingness to cooperate with other partners** and actors, with both the private sector and residents (e.g. in public-private-partnerships).

Since most of these **conditions** will **only** be met **in exceptional cases**, complementary training and advisory assistance will most probably be necessary to improve the capacity of municipal or other public sector operators.

Waste Wise campaign of the City of Cape Town, South Africa /42/



Awareness campaign in informal settlements on the possibilities of reducing household refuse, Cape Town, South Africa /43/



2.8 ORGANISATION AND OPERATIONAL SET-UPS

PRIVATE SERVICE PROVIDERS

Background

In many cities, waste management services provided by **public sector institutions** or enterprises are largely characterised by **inefficiency and serious deficiencies** in quality and range of service. Over the past years, **new initiatives** have therefore arisen to mobilise and increase the participation of **private sector operators** in this area.

Private operators and formal enterprises, and in particular joint-ventures between large international companies and local or national partners, have taken over **waste management services** in many large cities **via concession contracts**. But, as common experience shows, large private companies usually have **little interest in extending their services to urban poor settlements**.

Meanwhile, **a wide range of private small-scale enterprises** offering various waste management services has developed in most urban poor settlements. The following presentation, whilst providing an overview of the role of large formal operators, emphasises the importance of small-scale and micro-enterprises for waste management at settlement level.

Large Private Service Providers

Until now, large private waste management service providers have been **active** in urban poor settlements **only in a few exceptional cases**.

Recent experience is mainly limited to **concessions for refuse management** in large or capital cities of the South, or to water and sanitation services in a few metropolitan areas, such as those of Manila, Buenos Aires or Mexico City.

It has **only** been **possible** for large formal providers to cover urban poor settlements **under specific conditions** or pre-requisites:

- **specific stipulations to extend services to urban poor settlements in large concession contracts**: the provider then has to somehow **balance risks and/or cross-subsidise** uneconomic services to poor target groups;
- **guarantees** from public sector institutions (local or national government) **to reimburse service costs**.

In such cases, the **public sector commissioning institutions** (local or national government) usually **pay the concessionaire** for his services in full, and try to collect user fees, which are generally not cost-recovering, to get back at least part of the costs.

Sometimes, and particularly for refuse management, no user fees are collected at all, and services are completely financed from general tax revenues.

To date, large private operators have, in the main, only been **willing to extend** their services to urban poor settlements **in large cities and metropolitan areas**, where economies of scale can provide for at least some minimum profitability.

In smaller cities and towns, and in sparsely settled peri-urban areas, waste management services rendered exclusively by large and formal private operators, are **hardly a realistic option**.

► *Module 2 - Participation and Self-Help, Chapter 4.6*

2.8 ORGANISATION AND OPERATIONAL SET-UPS

PRIVATE SERVICE PROVIDERS

Formal and Informal Small-Scale Enterprises

In the absence of other alternatives, urban households in informal and marginalized settlements world-wide have opted for **waste management standards that are affordable** and, given specific settlement characteristics and climatic and topographic conditions, provide basic hygiene and sanitation. In many instances, informal waste management service providers have filled the gap left by inefficient public sector institutions. They thus effectively help cities avoid becoming completely overwhelmed by refuse and sewage.

A study, co-funded by the GTZ, on the range of services rendered by private small-scale operators in ten African Cities, clearly shows an almost complete absence of public sector service providers, and describes **how important private sector initiatives are** to ensure a minimum of waste management provision in urban poor settlements and informal neighbourhoods*.

In almost all larger urban poor settlements, **small local enterprises**, both formal and informal, **offer** a wide range of **waste management services**, which are usually **well-tailored to settlement-specific conditions and problems**, such as population density, plot sizes, location within the overall urban structure and users' capacity to pay. In more detail, demand-oriented services provided by small-scale enterprises can consist of:

- **Sanitation options** at individual household level, **ranging from simple pit-latrines to flush toilets with aqua privies or septic tanks**.

Different approaches to operations and maintenance are possible for these solutions:

- individual and mutual self-help in the construction and emptying of simple latrines in sparsely settled urban fringe areas,
 - manual emptying of latrines by private service providers in more densely settled urban areas,
 - pumping out and transporting sludge from septic tanks.
- The construction and operation of **public toilet facilities**, which private small-scale enterprises often undertake;
 - A similarly broad spectrum of private **refuse management** services has developed:
 - the collection and transport of refuse by micro-enterprises or cooperatives, as a house-to-house pick-up service and/or as part of a drop-off system, where refuse is transported

- from central collection points,
- the sorting and recycling of valuable waste materials.

While in many settlements economically and institutionally sustainable systems have developed, with functioning networks of many small-scale enterprises and service providers, there are also cases where informal waste management activities have also led to the emergence of powerful, mafia-like structures.

* Collignon: Independent Water and Sanitation Providers in African Cities (see also bibliography)

Emptying of latrines by a private service provider in Maputo, Mozambique

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2.8 ORGANISATION AND OPERATIONAL SET-UPS

PRIVATE SERVICE PROVIDERS

General Characteristics

Legal Framework Conditions and Formal Pre-requisites

Since waste management services are a public function in most countries, an explicit legal framework with clear-cut regulations for the involvement of private service providers is often missing.

However, within the context of the international debate on the needs to improve public sector efficiency by privatising inefficient public services, many countries have developed **specific laws on privatisation and service concessions**, which also allow the delegation of waste management functions to private operators. But most of these legal reforms are oriented to commissioning large private providers or joint ventures between local private sector enterprises and big international companies.

However, there are **hardly any legal regulations or other formal pre-requisites on** how to involve **small-scale enterprises** in waste management provision. In most cases, they operate in a legal vacuum, making use of niches and loopholes created by the inefficiency of the public sector. At the same time, the “informality” of small-scale operators can be an important source of income for public administration, as “informal fees” are often levied in return for tolerating their activities.

Institutional Set-ups and Organisational Structures

The services of large **formal sector operators** can be rendered through a **wide variety of different possible enterprise formats**, according to the prevailing corporate laws - as joint stock companies, joint ventures, limited liability companies etc., with corresponding organisational and operational structures. They generally operate on the basis of clear contractual arrangements, which also define their relationship to and interaction with their public sector employers and their customers.

Small-scale enterprises operating in urban poor settlements, especially informal enterprises, usually **have** rather **flexible entrepreneurial structures**, aimed more at operational necessities than legal conformity. While they usually have good relations to their customers, they tend to avoid contact with public administrations.

Organisational, Technical and Financial Capacity

Large private providers of waste management services are usually highly competent and often have international experience. In developing countries, their service quality is typically much better than that of public sector providers. However, in spite of their general efficiency, they can also face serious problems in urban poor settlements when they **fail to win the trust** of their customers, as shown in recent experiences with privatisation schemes and concessions in Manila, Buenos Aires and La Paz. Moreover, the technical solutions applied by large operators are not always appropriate for urban poor settlements.

On the other hand, **small-scale enterprises** usually render services that are **well-tailored** to specific demands and their customers' ability to pay; and their services are generally cost-effective. However, due to their often “**im-provised**” **operational methods**, they **rarely comply with environmental standards or professional technical criteria**. Moreover, many small-scale providers have severe deficiencies in their financial management.

Private wastewater treatment ponds in Cotonou, Benin

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2.8 ORGANISATION AND OPERATIONAL SET-UPS

PRIVATE SERVICE PROVIDERS

Objectives, Interests and Expectations

Large private operators and small-scale informal providers alike, are principally interested in operating efficiently and profitably, but with different consequences for service provision in urban poor settlements:

- **Large formal sector enterprises** generally **refrain from the risks of involvement** in urban poor settlements with customers they perceive as having a **limited capacity and willingness to pay**. They therefore only embark on service provision to poor areas when their financial risk is limited by guarantees or financial compensation from their public sector employers.
- In contrast, **informal sector providers** look less at the risks, but more to the **“business opportunities”** offered by potential customers in urban poor settlements. Their main concern is to render services with a minimum of interference from public sector (supervisory) institutions.

Acceptance, Willingness to Cooperate and Carrying-Through

It is difficult to assess poor target groups' acceptance of large formal sector service providers due to limited practical experience of their involvement in urban poor settlements. However, since privatisation, with accompanying improved service quality, usually entails higher costs and user fees, it has to be expected that service provision by large private enterprises, motivated more by financial gain than social recompense, will face reservations and resistance from users.

Similarly, it is difficult to assess large private operators' willingness to cooperate with other local service providers and other actors at settlement level.

Large private enterprises, especially when they have sizeable concessions, can have **considerable powers to negotiate and carry their interests through**, e.g. in adjusting or increasing user fees.

Informal **small-scale enterprises**, on the other hand, usually receive a high level of acceptance, so long as they **offer reliable services at affordable prices**.

They are usually willing to cooperate with public institutions or other partners when it offers **new business opportunities** and the prospect of more stable incomes or higher profits.

However, they usually have only **limited power to carry their interests through with municipal or other governmental institutions**.

Cotonou/Benin

Private Sector Sewage Disposal and Treatment

Cotonou, the capital of Benin, does not yet have a water-borne piped sewerage system. The main forms of sanitation, used by about 77% of all households, are pit latrines or septic tanks. They are emptied mainly by private service providers, while the city's sanitation department, which offers similar services, empties only 10% of them.

Since 1994, the private company SIBEAU (*Société Industrielle d'Équipement et d'Assainissement Urbain*) has been operating a sewage and wastewater treatment plant, which was built about 20 km outside of Cotonou by a private investor at the cost of some hundred million CFAF (USD 160,000). Wastewater is treated and purified in a natural lagoon with different treatment ponds and then discharged into the sea.

The treatment plant processes sludge, which is collected and transported to the plant by the company's own trucks, or by trucks from other private enterprises or the city's sanitation department. The discharging of sludge costs CFAF 27,500 (USD 44) per vehicle load, which has to be paid in cash on spot by the drivers.

2.8 ORGANISATION AND OPERATIONAL SET-UPS

PRIVATE SECTOR PROVIDERS

Potentials of private small-scale enterprises in waste management

- The services offered are tailored to the special demands of poor target groups who have no or only limited access to public waste management services.
- Services can be quickly and flexibly adjusted or extended according to demand. Financing for equipment and/or other small investments can usually be obtained quickly and easily.
- Small-scale enterprises are often able to develop and offer appropriate services even in difficult situations (e.g. difficult to access sloping sites, flood-prone areas, settlements with seasonal demands or low turn-overs etc.).
- Poor target groups are willing to pay cost-recovering fees when service quality and charges correspond with their expectations and capacity to pay.
- Profits are generally re-invested to extend or diversify services, or to explore new business opportunities.

Limitations and restrictions for private small-scale enterprises in waste management

- Insecure service continuity: Services are only maintained as long as they are profitable or so long as the service provider does not develop other more profitable business opportunities.
- Potentially high user fees: In order to operate profitably, fully cost-recovering fees are necessary. Fees must also include a profit margin to hedge against operational risks and to allow for future investment.
- Poor household may distrust private service providers who are primarily profit-oriented.
- Service commissions and orders are often insecure, temporarily and only informally agreed upon; written contractual arrangements are the exception. Long-term continuity and reliability of service provision is thus difficult to guarantee.
- Public sector supervisory bodies often do not acknowledge or hinder investment by small-scale enterprises, especially those by informal enterprises.
- Difficult access to formal sector financial services, especially to credit, hinders investment for service extensions and/or the maintenance and repair of equipment.
- Small-scale enterprises are often disadvantaged in public tenders for waste management services.
- A lack of dialogue and communication between responsible public sector institutions and small-scale enterprises impedes the development of specific service offers for poor target groups.

Bamako/Mali

Operation of Sludge Trucks by a Private Initiative

The Sema Sanyia Group in Bamako was founded by three young people in 1991 as a private initiative. It comprises a number of different enterprises providing various waste management services.

The group's first activity was to collect and sort household refuse for recycling and resale. The next step was to sell refuse bins and to take over the operation of public sanitary facilities (with 2 latrines, 3 urinals and 6 showers) close to Bamako's main railway station.

In 1995, a used sludge truck was bought with financial support from a donor agency in order to start in a new field of business, the emptying of latrines and septic tanks. Sema Sanyia's customers are mainly private households, who pay between CFAF 8,000 (USD 13) and CFAF 15,000 (USD 24) for the emptying of a latrine, usually in cash. The prices vary according to the distances the sludge truck has to travel.

Two years later, it was possible to purchase a second sludge truck financed by accumulated cash reserves and with a loan from a Mali development bank. The loan was fully repaid within one year. The sanitation business continues to flourish, and the group is considering the purchase of another sludge truck.

2.8 ORGANISATION AND OPERATIONAL SET-UPS

PRIVATE SERVICE PROVIDERS

Necessary Conditions and Pre-requisites

The involvement of private sector providers, particularly of small-scale and micro-enterprises in long-term operational concepts for waste management services at settlement level, can be facilitated by a number of conditions and pre-requisites:

- a **formal and legally reliable acknowledgement** of private sector initiatives (e.g. service contracts, service concessions, etc.);
- **agreements on appropriate fees and other functions**, and the **rights and duties** of the involved contract partners (commissioning body or employer, concessionaire or contractor, end user / customer);
- **regulations** and procedures for **customer complaints**, and for the introduction of customer information services;
- the introduction of **procedures for the regulation and supervision** of private sector service provision, and for the monitoring of service standards;
- **complementary training and technical assistance**, particularly for small-scale enterprises.

In addition to the creation of positive conditions at settlement level, the broader mobilisation of private sector participation in waste management services requires improvements to the overall regulatory framework with regard to:

- reliable and **transparent legal regulations** (with foreseeable legal consequences) for private sector involvement;
- procedures and **regulations for public tendering and procurement**;
- **definitions of service efficiency criteria** and quality standards, and of regulations for supervision and control;
- the transparent **definition of licensing or concession fees**, and of other necessary contractual arrangements.

Where possible, legal and other regulations should be designed in ways that adequately consider the specific interests, demands and possibilities of those small-scale and micro-enterprises that are suited to operate local waste management services.

Dakar/Senegal

Sanitation Services by “Shovel Men”

In the Senegalese capital Dakar, only around a quarter of households is connected to water-borne piped sewerage. In the city's large urban poor settlements, latrines and septic tanks are thus the predominant sanitation solution. The disposal of sewage sludge is mainly undertaken by private informal service providers, the so-called “shovel men”. In total, between 800 and 1,200 workers provide the following services to 30-50% of all urban households:

- emptying of sludge from latrines and septic tanks;
- disposal of sludge either by burying it on the plot or by removal by hand cart or small trucks;
- maintenance and repair of latrines and septic tanks.

Yearly latrine emptying for an 8m³ container costs about CFAF 15,000 (USD 24); alternatively, emptying every two to three months costs CFAF 3,000 (USD 4.8). Workers make around CFAF 40,000 to 60,000 (USD 65 - 95) a month by covering about 20 households.

The shovel men generally work in teams of two, and usually have a reliable customer base of 200-300 households in a fixed “sanitation district”. For a small commission fee, many shovel men also act as brokers for further services, such as the emptying of larger septic tanks by sludge trucks operated by larger informal or formal service providers.

“Shovel Man” in Dakar, Senegal

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HYBRID FORMS

Background

Due to the massive deficiencies of waste management in fast growing urban poor settlements, **a wide variety of cooperation between all kinds of public and private sector service providers** has developed over the past 15 to 20 years. By and large, such collaborative initiatives have emerged **in situation- or project-specific contexts, often spontaneously** or in connection with externally supported programmes.

In most cases, public sector institutions responsible for waste management have not actively sought cooperation with resident associations or small private sector service providers, but have merely reacted to initiatives from residents, NGOs or private small-scale enterprises. For their part, local actors at settlement level have generally only embarked on cooperation with public sector institutions when there was a need to connect local waste management components to overall city-wide systems or networks.

More recently however, a growing numbers of city administrations and municipal service providers have realised the potential benefits of

partnerships with the private sector and resident organisations, and hence have developed initiatives to **mobilise** and tap **this potential**.

In most cases, such partnerships are based on a partial or complete delegation of service tasks which, due to their limited capacities, public sector institutions are not able to cope with or extend to urban poor settlements. These **tasks** are **undertaken by private operators**, such as:

- **user associations or other community based organisations**, as described in section 2.6, or
- **formal and informal small-scale private enterprises**, as described in section 2.8.

The degree and **scope of delegated financial and operational responsibilities** can be defined in a **flexible** ways and tailored to specific local conditions and requirements.

In addition to **“bilateral” agreements between public agencies and private providers** or user associations, there are also **“multilateral forms” of cooperation**, involving a larger

number of actors, such as municipal or governmental institutions, private small-scale enterprises and various community based organisation, who team-up to work on waste management initiatives. However, the more informal such cooperations are, the less likely that initial commitments and agreements will be complied with.

Compared to cooperation between public sector institutions and local partners at settlement level, **partnerships between large formal private sector companies** and local operators in waste management in urban poor areas **are rare**. They are usually only feasible in the context of citywide waste management solutions, which would then make them interesting enough for large private operators.

Refuse collection, India

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Types of cooperation between public and private service providers

Longer-term partnerships in waste management services between public and private providers can be based on different contractual and organisational arrangements. In general, the parties will have to enter into contractual agreements for a specific time, usually a few years. Depending on the type and range of services involved, the legal status of the private partner(s) and the prevailing legal frameworks, a public tender can be necessary and also sensible, in particular for assessing cost-effectiveness and other criteria.

- **Simple Management Contracts:** The responsibility for waste management investments (e.g. for constructing networks or facilities, purchase of equipment etc.) and for determining user charges remains with the public provider, i.e. the municipality or other public institution. All fees raised for the service accrue to the public provider.

Under the contractual agreement, all operational and management functions for a waste management service, including fee collection, are delegated to a user association, a private enterprise, or even an individual person. A contractually agreed management fee for this is paid to the private operator.

- **Special Management Contracts:** Similar to a simple management contract, but instead of fixed management fees, private operators receive an agreed share of the user charges they collect, which is an incentive to operate cost-effectively and collect fees efficiently.
- **Rental or Lease Arrangement** (partial concession): Again, the public provider remains responsible for investments and fee determination.

The private operator (user association, committee or private enterprise), possibly against payment of a one-time or regular fee, takes over all operations, maintenance and repair functions, which are completely financed by the fees collected. The incentive to operate cost-effectively and efficiently is thus even higher. However, interest in this kind of arrangement can fall off when there are many poor households with only limited capacity to pay.

- (Full) **Concession:** This type of arrangement involves a complete delegation of responsibilities for a particular service to a private operator who takes over all functions necessary to render the service, including investments. All operational and other management decisions, including the determination of user fees, are left to the private operator. In some cases, cost and revenue sharing can be agreed upon between the partners.

As both user associations and small-scale private enterprises would need to have the status of a legal entity, have stable organisational structures and capital to finance necessary investments, full concessions will only be possible in exceptional cases and where very limited investments are needed. Full concessions for more complex waste management services can, in general, only be given to larger, financially sound private companies with a formal legal status.

- **Cooperative Association:** This form of cooperation involves the establishment of an association with its own legal status, consisting of the municipality and other partners, such as local NGOs or CBOs.

The association's general assembly decides on all important operational issues, including user charges, level of cost recovery and service standards, and this facilitates consensus between the different partners and stakeholders. An association can also take over operational functions if this is allowed by its constitution and by the prevailing legal frameworks. Alternatively, the association can delegate operational functions according to the contractual arrangements described above.

HYBRID FORMS

General Characteristics

Legal Framework Conditions and Formal Pre-requisites

As with the involvement of user associations or community-based organisations in the provision of waste management services (described in section 2.6), there are generally **no clearly defined regulations or conditions** for cooperation between different kinds of public and private service providers.

It will therefore usually be necessary to develop and test appropriate rules and procedures in concrete cases of cooperation at settlement level, **taking advantage of any existing legal loopholes or ambiguous regulations.**

However, with a view to longer-term institutional and financial sustainability, such informally developed **operational concepts** will eventually need to be **formalised and translated into more stable regulations** and contractual agreements (see box page 57).

Informing the public about refuse collection in Bangalore, India

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Institutional Set-ups and Organisational Structures

The institutional set-up of public-private partnerships at settlement level is mainly **determined by the type of cooperation** envisaged, and by **the distribution of responsibilities, tasks and functions** between the different partners.

Similar criteria apply to organisational and operational set-ups, and different options are possible according to the distribution of labour among the partners involved. (see box page 57). Again, there is usually **ample scope to develop and test innovative and context specific concepts and approaches.**

Organisational, Technical and Financial Capacity

The efficiency of public-private partnerships largely depends on the agreed **type and extent of cooperation expected**, and on the **managerial and professional capacity of each of the individual partners involved.**

Public-private partnership arrangements for waste management at settlement level can make use of possible synergies arising from the **complementary advantages** of the different partners:

- **Public partners** can make sure that important **matters of public concern** and welfare are adequately considered and **appropriate service standards are complied with.**
- **User associations** and community-based organisations can effectively contribute to the appropriate consideration of the **interests of residents and service users.**
- **Private operators** and enterprises can contribute **aspects of profitability and efficiency**, as well as technical and professional know-how.

However, in order to really make use of these potentials and to establish a functioning cooperation between partners, who will generally have only limited capacities (as outlined in the previous sections), it will usually be necessary to foresee a need for **intensive complementary training and advisory assistance.**

Objectives, Interests and Expectations

Objectives and expectations of the different actors involved in public-private partnership arrangements can be quite different:

- **Municipal or other public sector agents** often want to delegate or “get rid of” of difficult waste management services for urban poor settlements which they cannot adequately deliver with their own resources and capacities.
- Often, the main objective of **user associations** is to get access to services at affordable prices.
- **Private enterprises** are usually mainly interested in profitability and cost-effectiveness, and extending their customer base and the range and coverage of their services.

To avoid possible misunderstandings and subsequent operational problems, the different interest and expectations of all involved partners should be made transparent and coordinated in the early stages of joint activity planning.

Acceptance, Willingness to Cooperate and Carrying-through

As the case studies in the different parts of this publications amply demonstrate, partnerships between public and private providers in waste management services have proven to be successful in many cases and different environments.

They have been **accepted by poor target groups**, who have willingly become involved in operational functions when they have been involved in the establishment of such partnerships from the very beginning, and when their interests and operational capacities have been adequately considered.

On the other hand, the level of **acceptance** of such partnerships **by regulating, supervising and financing public institutions** largely depends on the status and importance of the public and private partners involved, and on the demonstrable proof of tangible results achieved by collaborative efforts.

This is also true for the **operational concerns** of partnerships with regard

to their customers and supervising bodies. Concrete improvements of service quality and reliability achieved by partnership efforts can help improve acceptance of **fee increases or adjustments**. Moreover, they can facilitate **reforms in legal regulations** and other (institutional) framework conditions, which normally, rather than promoting such partnerships, restrict them (for example, by stipulating inappropriately high service standards or over-regulating small-scale informal enterprises).

Mutual control of contributions and commitments agreed between the different partners can also support compliance with quality and service standards. However, to avoid conflicts, clear-cut and transparent agreements on procedures and instruments for monitoring and control will be needed.

Bangalore/India

Integrated and Sustainable Refuse Management

In the Indian city of Bangalore over the past two decades, a broad spectrum of cooperations between various private and public stakeholders has developed to provide refuse management services. However, most partnerships between resident organisations, NGOs, private small-scale enterprises and municipal departments responsible for refuse management were not able to cover their operating costs and largely depended on external financial support. In 1999, the *Bangalore Municipal Corporation*, BMC, with support from Dutch development cooperation, therefore started a pilot project involving all the different actors and stakeholders in an integrated approach to gradually improve cost recovery.

Focus areas of project intervention were the improvement of quality and reliability of refuse management, the active participation of residents in all phases of planning and implementation, and the improvement of coordination between community based organisations and private and public service providers.

2.9 ORGANISATION AND OPERATIONAL SET-UPS

HYBRID FORMS

Windhoek/Namibia

Refuse Collection through Cooperation of Municipal Administration, Private Small-Scale Enterprises and Resident Initiatives

In 2002, the Namibian capital city of Windhoek embarked on a new refuse management policy to improve hygienic conditions in the large number of informal settlements where around 30% of the city's 250,000 inhabitants live. In the previous system, introduced after independence in 1991, household refuse was collected by one-person enterprises in plastic bags, which were then transported from central collection points to landfill sites. Since payment for this service was based on the number of refuse bags collected, the system led to a growing "refuse theft" between individual collectors, and a kind of "refuse trade" at settlement level, resulting in increased refuse pollution in public open spaces.

Because of this experience, the city was divided into a total of 15 "refuse wards", five of which covered the city's major informal settlements. At the same time, 30% of the municipality's personnel and material resources, instead of previously only 10%, were allocated to refuse collection in informal settlements. In each "refuse ward", 15 to 17 private collectors are contracted to collect household refuse in bags, to clean public open spaces and to regularly maintain storm-water drainage systems. Instead of payment for the numbers of bags collected, collectors are now paid on the level of cleanliness achieved, thus making financial compensation depend on visible results. Moreover, to control performance better, contracts are only awarded for one year.

In each ward, the quality of service delivered by private collectors is supervised by "ward coordinators" employed by the city. These are also responsible for transporting the collected refuse bags to central collection points or directly to adjacent landfill sites in small trucks. Transport from central collection points is done by larger municipal refuse trucks. For each informal settlement, around 1,000 refuse bags have to be disposed of.

The ward coordinators are also responsible for organising information and awareness raising campaigns for residents on waste reduction, hygiene and environmental protection, and for mobilising and supporting resident initiatives, so-called "community waste control volunteers", for monitoring the quality of refuse management. It is envisaged that these functions, which are currently carried out by municipal staff, will be gradually handed over to private small-scale enterprises.

Since refuse collection fees are raised in informal settlements in connection with fees for other municipal services, they are not yet cost recovering, but are subsidised by refuse collection in wealthier parts of the city.

**Refuse collection in plastic bags,
Namibia**

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**Refuse collection in bins,
Namibia**

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**Refuse collection in Containers,
Namibia**

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2.9 ORGANISATION AND OPERATIONAL SET-UPS

HYBRID FORMS

Necessary Conditions and Pre-requisites

Successful cooperation between public and private providers in waste management initiatives at settlement level largely depends on the following conditions and pre-requisites:

- a sufficient level of trust between the different partners and stakeholders involved;
- a clear-cut distribution of the operational responsibilities and contributions of public sector institutions, user associations and small-scale enterprises;
- unambiguous and transparent contractual arrangements between the different partners;
- clear-cut rules for financial compensation for services to be rendered;
- transparent rules for the determination and collection of user charges;
- the creation of functioning bodies for supervision and control, as well as agreements on rules and procedures on how to monitor service quality and reliability;
- adequate information for users and customers on the modes of cooperation between the service

providers involved and their contributions, possibly including information on their operational functions and other operational specifics;

- appropriate rules and procedures on how to deal with customer complaints.

Partnership arrangements between public and private providers can also be facilitated by improvements in overall regulatory frameworks, such as:

- consideration of public-private partnership arrangements in corresponding legal regulations (local government laws and other legal regulations for public service provision);
- legal definitions of partnership types and operational set-ups that are conducive to public-private cooperation in waste management service provision;
- the introduction of appropriate standards, which facilitate the involvement of user associations and small-scale enterprises.

Public toilet facilities operated by the women's cooperative COFESFA in Bamako, Mali

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Bamako/Mali

Operations of Public Latrines

In Bamako, the capital city of Mali, many public sanitation services are operated by private small-scale enterprises or cooperatives. Privately operated sanitary facilities (toilets, showers and water taps) are usually located close to highly populated markets, railway stations and bus stations. While many of these facilities have been constructed by the municipal administration or railway and bus companies, some of them have also been established by the private operators themselves. Depending on the individual facility and its owner, private operations usually require public permits and contractual rental or leasing agreements.

A successful example of a private operator is the Women's Cooperative for Education, Family Health and Sanitation, COFESFA. Based on an initiative by previously unemployed young women, it has been operating public toilets and showers at a railway station since 1989.

The cooperative's sanitary facilities are used by 300-600 customers per day. With a fee of CFAF 10 - 50 (USD 0.016 - 0.08) per use, it generates an annual turnover of about CFAF 5.2 million (USD 8,300). While the cooperative pays a fixed monthly leasing fee to the city administration, 30% of monthly turnover is paid into a special bank account with a view to financing the construction of new facilities.



FINANCING AND COST RECOVERY

OVERVIEW

Improvement of Cost Recovery as Main Challenge

This chapter describes important basic conditions to be considered in the development and implementation of sound and sustainable waste management measures in urban poor settlements.

It focuses on a **main challenge**, namely to identify **waste management options that poor target groups can afford** so that high levels of **cost recovery can be achieved**. Specific limitations in coping with this challenge in the context of urban poor settlements are explained and analysed.

Taking into consideration the broad range of conditions and problems in different countries and environments, **various conceptual approaches, procedures and criteria for assessing financing concepts and the financial management** of waste management in urban poor settlements **are developed**.

The chapter consists of the following main sections:

- **Costs and determination of costs;**
- **Capacity and willingness to pay;**
- **Financing by user charges;**
- **Other sources of financing;**
- **Financial management.**

These are complemented by descriptions of **various case studies** and practical examples, and, in the annex, by information on the **costs of different waste management options**.

Costs

The first section describes the different **types of costs** that need to be considered in determining the expenditure needed for different waste management options. In addition to providing an overview of **investment and operation costs**, particular emphasis is given to operating costs as the decisive factor for long-term operational sustainability.

For operational and financial management purposes, **liquidity-relevant costs and supplementary costs** will have to be distinguished. Supplementary costs should also take into account the **costs of smaller systems extensions, and of maintenance and replacement investments**.

For a sound **comparison** of different options, both **unit costs** and **user-specific costs** for a particular waste management service will have to be identified.

The results of **cost calculations** and **cost comparison** provide the basis for selecting appropriate waste management options and assessing their potential level of **cost recovery**. The importance of covering at least the operational costs of a waste management service from regularly collected user fees is specifically emphasised as the crucial precondition for the operational sustainability of the selected option.

Capacity and Willingness to Pay

Closely related to costs, users' capacity and willingness to pay are further important factors in determining the economic feasibility and sustainability of waste management services. In order to identify appropriate financing concepts, it will thus be indispensable to carefully assess the **financial capacities of users**, as well as their **expectations and demands** with regard to service standards. This section therefore describes the **main factors and parameters** that influence the capacity and willingness of users in urban poor settlements to pay.

To assess the long-term operational perspectives of waste management services realistically, the actual **willingness to pay** will, in general, be much more **important** than a "theoretical" capacity to pay, which is usually based on assumptions about the economic situation and income of users. Even poor target groups are often ready to provide **substantial contributions**, also in financial terms, if they clearly recognise the potential benefits of waste management services and expect tangible improvements in their living and housing conditions. The participation of target groups in all phases of planning and implementation of waste management measures will thus be important to promote user acceptance and willingness to pay.

Financing through User Charges

This section describes basic concepts and approaches to raising and collecting user charges, which is the **most common** and appropriate way of financing waste management services. In order to achieve a maximum level of operating cost recovery, the selection of **suitable service options and standards** that poor target groups can afford will be a major challenge. However, in addition to criteria for financial sustainability, **social factors, environmental impacts** and other issues will have to be considered in the design of fee systems and tariffs.

Taking the above basic conceptual aspects into account, appropriate **principles of assessment and types of fee** that can be applied in urban poor settlements are described. As information on users of waste management services, and on the amounts of waste to be disposed of is particularly difficult to obtain in urban poor settlements, the possibilities for identifying appropriate principles of assessment in a **simple and uncomplicated way are important** in selecting applicable types of fee.

Moreover, the methods and **time schedules of fee collection** should be defined in a way that corresponds to the interests and possibilities of poor target groups, who often have no regular income or access to banking services.

Other Financing Sources

Considering the **limited possibilities of completely recovering the costs through user charges**, and the high demand for better waste management and improved hygienic conditions in urban poor settlements, this section points to other potential financing sources. They relate in particular to the **financing of investment costs**, which can only be covered by user fees in exceptional cases.

In addition to **financial and user contributions** in kind, e.g. in the form of self-help, additional finance can be provided through **subsidies** from municipal or other public sector institutions or by **external donor funding**.

A special form of investment cost financing is micro-credits, e.g. for house connections to sewer systems or for small-scale enterprises. While loans to finance waste service components for private households are predominantly provided through public programmes or external donor projects, the financing demands of small-scale enterprises are often met by micro-finance institutions and private moneylenders in special “markets”.

Further **financing options are private donations, private capital investments, or partnerships** between public and private sector actors. However, to achieve the expected results, the roles and contributions of private partners need to be carefully defined and supervised.

Financial Management

The final section outlines **basic requirements for financial management** that should be considered even for simple waste management solutions at settlement level.

Efficient budgetary planning, based on a realistic estimate of expected expenses and revenue, is a core function of financial management. Moreover, to avoid liquidity problems, estimates of expenses and revenues as they may develop over time will need to be made.

The **introduction of functioning systems for billing and payment** is another important aspect described in this section. They should include both incentives for fee payment and sanctions against non-payers.

Even simple waste management solutions will require **systematic and efficient accounting** that documents all relevant revenues and expenses, and thus provides the basis for **monthly, quarterly and annual financial reporting**.

Well-defined **competences** of financial staff and clear-cut **regulations** on how to manage financial resources and how to pay bills are described, and they are important conditions for efficient financial management.

Finally, appropriate procedures and tools for **monitoring and auditing** cost-effectiveness and service quality, as well as proper financial management practices, are described, as they are further important components of financial management, and can have considerable impact on users' willingness to pay.

3.2 FINANCING AND COST RECOVERY

COSTS

Types of Cost

Ascertaining the costs of waste management services to be covered by user fees or other financing sources (see also section 3.4 and 3.5), is one of the most important preconditions for efficient and financially sustainable operations.

The expenditures and costs necessary to plan, implement or construct and operate a waste management project are **important factors in selecting** appropriate technical solutions and standards. In more detail, this will require:

- **appraising economic feasibilities**, taking into account both available and potential sources of finance;
- **assessing** potential customers' or target groups' **willingness and capacity to pay**;
- **identifying** the possible **level of cost recovery** and determining respective user charges.

To analyse and assess the cost of different service options, the following main types of cost should be distinguished:

- investment costs;
- operating costs;
- unit costs;
- user-specific costs.

Investment Costs and Operating Costs

Investment and operating costs comprise all costs and expenditures that are needed to plan, construct or implement, and operate a waste management project. While **investment costs** usually occur as **one-off payments** for construction, equipment etc. during the initial phase of a project, **operating costs** recur regularly **over the project's or system's whole life-time**. Depending on the distribution of fixed and variable outgoings, operating costs can vary considerably over different periods of time.

Both the investment and operating costs of different waste management options should be **calculated** and appraised as **early** as possible **in project planning and preparation**. Both cost types can vary considerably according to the technical standards chosen and location- or project-specific factors (topography, geology, population density, accessibility, salary and price levels, etc.).

Typical **investment costs** for waste management measures arise from, for example:

- the construction of:
 - decentralised sanitation solutions (e.g. latrines, septic tanks, dry toilets, etc.),
 - conventional or unconventional sewerage systems (sewer mains, collectors, treatment plants or ponds, pumping stations, etc.),
 - storm or rainwater drainage systems (e.g. canals and ditches, pipes, retention basins, etc.),
 - landfills;
- the procurement of:
 - mobile service components (refuse collection trucks, compactor carts, tricycles, etc.),
 - other technical equipment and installations;
- the purchase and development of sites needed for waste management facilities (e.g. treatment plants, landfill sites, etc.);
- planning, building permits, engineering and other consultancy services.

Typical waste management **operating costs** consist of costs of, for example:

- material and consumables;
- spare parts and small pieces of equipment;
- staff (operational, administrative, maintenance etc.);
- administration and management;
- energy;
- repair work and replacement of equipment;
- external consultancy and engineering services (e.g. technical assistance, accounting, auditing, coaching, etc.);
- supplementary depreciations;
- financing (e.g. interest on loans, other capital cost).

Unit Costs and Outputs

In order to analyse and compare the investment and operating costs of different waste management options, it is useful to relate them to specific service components or outputs in the form of unit costs. However, compared to water supply, where the classic output is the metered amount of water delivered, waste management services are more difficult to quantify and hence more difficult to relate to a specific output.

Reference bases and outputs used to **determine unit costs** also largely depend on the kind of waste management solution and technology selected. **Typical reference bases and outputs** of waste management services include:

- **Quantity of wastewater in volume units:** In piped sewerage systems, the volume of wastewater disposed of (e.g. m³ or litres) is usually determined by the metered water consumption of households.
- **Quantity of sludge in weight or volume units:** For decentralised sanitation options such as latrines or septic tanks, the quantity of sludge disposed of can be determined by weight (e.g. kg or tonne) or volume units (e.g. m³ or litres).
- **Quantity of refuse in weight or volume units:** In refuse management, the usual reference base for metering refuse quantities disposed of is also weight units (e.g. per kg) or volume units (e.g. per litre or per refuse bin or bag). However, in urban poor settlements, where drop-off systems are prevalent, it is usually

difficult to relate refuse quantities to individual households. Unit costs can thus usually only be defined approximately, or estimated.

For storm and **rainwater drainage**, an accurate determination of outputs and unit costs is generally not possible as the quantity of water to be disposed of can vary considerably according to rainfalls and seasons. Whether determining of unit costs for rainwater drainage is useful or necessary is debateable, but if it is to be done, it can only be based, in most cases, on the average or maximum rainwater amounts for which the drainage has been planned.

User-specific Costs

The costs of waste management services are usually also related to their users or customers:

- For the population in residential areas, the most common economic and social reference units are **households or families**.
- For industry and commerce, service costs are generally related to individual **enterprises, companies** or other economic entities.

For target groups in urban poor areas, the actual cost **levels of services** and the **frequency** of their delivery are, for residents and entrepreneurs alike, important factors for affordability.

In addition to unit costs (e.g. wastewater costs per m³ or refuse costs per kg), the **average** (total) **costs per household or enterprise over particular periods of time** (a month or a year) are important indicators for the selection of waste management solutions and/or technologies.

As with unit costs, the **average costs per user** (household or enterprise) are largely **determined by the technical standards and number of connections**.

COSTS

Investment Costs

Investment costs for the different types of waste management services (wastewater, refuse, rainwater drainage) usually accrue from a large number of different material components, as well as engineering and other support and assistance provisions. The most important factors are:

- **location and project-specific factors:**
 - topography and geology,
 - climatic conditions,
 - population and settlement density,
 - accessibility;
- **economic framework conditions**, e.g.:
 - level of salaries, wages and general prices,
 - capacities of building companies,
 - local availability of materials and equipment,
 - inflation and interest rates;
- **the willingness and capacities of target groups to provide self-help contributions.**

Depending on these factors, **investments costs** for similar technical solutions and standards **can vary considerably**. A generally **valid estimate** of investment costs for particular technical solutions is therefore **difficult to make**. Investment costs for waste management services in different cities, countries or regions are similarly difficult to compare directly.

Basic Concepts to Determine Investment Costs

To determine investment costs as carefully and accurately as possible, the following information will have to be collected and analysed in the early stages of project identification and preparation:

- average unit costs for **material and equipment** (e.g. costs per running metre of sewer pipes or per house connection, cost of pumps or refuse collection trucks, etc.);
- **labour costs** and corresponding wage levels (as far as possible, labour costs should also be translated into appropriate unit costs for specific types of work, e.g. for laying sewer pipes per running m, or per house connection);
- the **baseline year** used for cost determination (usually the date of planning, or a reference year for a construction cost index);
- the **division of costs into national and international costs** in the cases when material or equipment has to be imported, which entails the risk of currency fluctuations;
- **customs and other levies** that may incur for importing material, equipment or other installations;
- **expected local inflation rates**, in cases when the investment costs will be spread over several years;
- **contingencies** for unforeseen risks in construction and implementation.

This information is not, however, always easily available or accessible. In

particular, material and labour costs can often only be roughly estimated based on the previous project experience of other implementing agencies. More detailed and exact cost estimates will thus usually call for more detailed technical planning and, if necessary, obtaining initial price offers from construction firms or other suppliers.

In most cases, a **stepwise determination and detailing** of investment costs during the different preparation stages of waste management projects will be needed (during project identification and appraisal, detailed technical and financial planning, work planning and tendering etc.).

To compare costs and to determine financing requirements, it will be useful to **allocate costs to the total number of users** or households (see also previous section on user-specific costs).

A practical time horizon for planning will usually be defined by the expected date (month and/or year) of completion of works and hand-over of operations.

Rehabilitation and Extension of Existing Systems or Installations

It is often a particular challenge to determine investment costs needed for repairing or rehabilitating defunct or **deficient existing waste management systems or installations**, e.g. repairing existing sewerage networks. Depending on context and situation, complete replacement or a new construction can be more cost-effective than repair or rehabilitation. The actual expenditures involved should thus be calculated as exactly as possible: the information and experience required to do this is, however, frequently lacking. Therefore the costs of necessary repair and rehabilitation works can often only be roughly estimated. In any case, **contingency sums** should be calculated to be **considerably higher** than for any new construction or new installations.

Another major challenge is the issue of **possible future extensions**, which need **to be considered** in the early phases of planning. As urban poor settlements, particularly those in urban fringe areas, often expand dynamically, waste management systems designed to deal with their current situation, may need to be quickly extended to new expansion areas. However, since appropriate reference bases or parameters for such extensions are difficult to obtain, expected expenditures for them can usually only be roughly assessed.

San Salvador/El Salvador

High Investment Costs caused by Difficult Topographic Conditions

The integrated upgrading project for the informal settlement of *Las Palmas*, which is centrally located in the city of San Salvador in El Salvador, was implemented between 1997 and 2000 by a local NGO with support from German financial assistance. In addition to rehabilitating water and electricity supplies, constructing new community facilities and obtaining legal tenures, the project also implemented a number of different waste management measures to improve hygienic and sanitary conditions. These involved the construction of a new sewerage system, replacing existing pit latrines with new flush toilets, improvements to stormwater drainage and extensive works to protect slopes and to prevent landslides. It further involved the reorganisation of refuse management with an interface between a locally organised drop-off system and municipal refuse collection and disposal services.

While the investment costs of USD 625 per household for the new piped sewerage system, and USD 17 per household for improved refuse management were roughly comparable to those of similar projects, the investment for stormwater drainage and slope protection of about USD 1,400 per household, was extremely high.

However, due to the settlement's difficult topographic location in a narrow valley prone to frequent flooding and landslides, there was no real option other than to construct expensive protection walls and stormwater canals.

The total investment costs for all different waste management components of USD 2,000 per household were thus rather high. On the other hand, the only possible alternative solution, a complete resettlement of all 5,300 inhabitants, with the construction of new houses and infrastructure, would have been even more expensive and socially unacceptable to the residents.

The financing of such high investment costs was only possible with a large grant from external financial assistance (which covered about 85% of all costs) and additional local subsidies from the implementing agency and governmental institutions. Due to the need to employ professional construction firms for technically difficult work, and the limited financial capacities of the poor target group, the contribution of residents in the form of mutually organised labour, covered only 6% of total costs.

► *This case study is presented in more detail in the module “Basic Concepts” (Waste Management as Component of an Integrated Slum-Upgrading Project, San Salvador)*

3.2 FINANCING AND COST RECOVERY

COSTS

Operating Costs

Compared to investment costs, **operating costs are generally more difficult to determine** because they are influenced by a multitude of factors, the majority of them non-technical.

As with investment cost, the parameters determining operating costs can vary considerably according to country or project-specific conditions. Moreover, depending on the type of technology selected, different kinds of cost may need to be considered. But even for technologically similar solutions, the specific environmental conditions of a project location can cause very different operating costs. Currency fluctuations and other economic conditions (e.g. high inflation rates) may lead to further distortions.

In most cases, it will **not be possible to refer to reliable rules of thumb** or a comparison of similar projects in different countries or regions.

The operating costs of individual projects presented by some of the case studies can therefore only provide a rough orientation and illustrate the importance of different cost types. Reference to percentile estimates (estimates of operating costs as a certain percentage of investment costs) as sometime practiced, usually leads to **underestimating** actual operating costs.

Basic Concepts for Determining Operating Costs

To determine the expected operating costs of waste management options in a reliable way, planners and target groups should carefully analyse and assess the following factors:

Technical Factors

- technical norms and technical standards;
- material and equipment (e.g. pipe-work and suitable diameters, connection fittings, materials for household connections, basic tools, etc.);
- quality and durability of available material;
- energy consumption and dependency on specific combustibles or energy sources;
- availability and costs of spare parts and material;
- operating and maintenance requirement.

Personnel Factors

- qualification and skill level of staff (number and professional qualifications of full and part time staff);
- personnel costs (level of salaries and wages, other employee outlays, numbers of staff with temporary contracts and corresponding salary levels).

Financial Factors

- capital costs, interest and inflation rates;
- availability of budgetary transfers and other subsidies, and overall fiscal policies;
- possible fees or charges to be paid in connection with waste management services (e.g. for discharging of sewage, disposal of refuse at dumps or landfills, supervision of hygienic conditions, etc.).

User-specific Factors

- service demand (present and future expected consumption patterns), and user preferences (of residents and businesses);
- economic situations and standards of living (household income, seasonal fluctuations, etc.);
- financial contributions of users, and their capacity and willingness to pay;
- professional and managerial skills for taking over operating functions.

Institutional Factors

- legal frameworks and institutional responsibilities for waste management services;
- capacities of responsible institutions;
- possibilities of cooperation between different actors and stakeholders in service operations.

Environmental Factors

- climatic conditions;
- topography and geology;
- availability of alternative or traditional materials, and possibilities to use them in service operations;
- availability of suitable rivers, lakes, lagoons etc. for discharging (treated) wastewater.

Liquidity-relevant and Supplementary Costs

When determining operating costs, liquidity-relevant and supplementary costs should be differentiated:

Liquidity-relevant costs are expenses that need to be paid for by liquid financial resources. For sustainable operations, sufficient liquidity should be assured at all times. The following main liquidity-relevant costs involve direct expenses and should thus be carefully determined in early planning phases:

- **work materials and commodities** (tools, chemicals, lubricants, detergents etc.);
- **spare parts and consumables** (e.g. for machines and installations, office and computer equipment, etc.);
- direct **personnel costs** for operations and maintenance (salaries, wages, insurance contributions);
- **administrative and management costs** (personnel overhead costs: salaries and wages for operational management, accounting, monitoring etc.);
- **energy costs**, e.g. electricity or fuel costs for pumps, heating systems, electrical and electronic equipment, etc.);
- **support costs** (these should include all costs for support measures, such as NGO activities in awareness raising and community mobilisation, external technical assistance in planning and implementation, etc.);
- **miscellaneous costs** (e.g. for staff transport, basic and further training of staff, third party services, etc.);

- **financing costs** (interest payments (monthly or yearly) and loan redemption, i.e. complete debt servicing, in those cases where investment and/or initial operating costs need to be financed with credit. If applicable, arranging for initial repayment-free periods should also be considered, in order to ease debt servicing.).

Liquidity-relevant operating costs can be further distinguished in the following ways, and these are particularly relevant for financial management (see section 3.6):

- **Fixed costs**, which cannot be influenced in the short-term, and thus have to be covered by regular income.
- **Variable costs**, which depend on the utilization rates of a specific service. They can therefore be influenced positively or negatively by decreases or increases in the use or consumption of service provisions.
- Some costs only occur **sporadically** (e.g. labour costs for temporary personnel for specific irregular maintenance or repair work) and can thus be influenced.
- The costs of those equipment spare parts or maintenance works that occur only **at larger time intervals**.
- Interest payments, which usually incur **at specific dates** (monthly, quarterly or yearly).

Supplementary costs are based on the consumption of assets over specific periods of time. For this purpose, the total investment costs for a piece of equipment or other asset are distributed over its assumed life time and **written off** as a supplementary cost. The investment itself can either be financed by loans, grants or subsidies, or from the project's own funds, although in most cases, a combination of these financing options would be applied. In the case of borrowing from external sources, expenditures (interest and redemption) would have to be considered as liquidity-relevant costs.

Small-scale extension measures should be considered in the determination of supplementary costs, as should costs for **repairs and replacements**. As these investments are difficult to determine beforehand, allowances for them should be made in fee and tariff calculations.

Depreciations do not incur actual expenditure and thus do not influence operational liquidity. Although they are of lesser importance in assessing short-term operational feasibility, they will have to be considered in the calculation of overall costs in order to allow for sustainable operations beyond the life cycles of equipment and other assets.

3.2 FINANCING AND COST RECOVERY

COSTS

Comparison of Costs per User

Investments Costs

The allocation of all expenses for construction, equipment and other installations to the individual users (per person, household or enterprise) of a waste management service, can be used to make a **simple comparison of the investment costs** of different solutions. However, it does not enable any conclusions to be drawn with regard to the financing of operating costs, and the corresponding cost implications for operators and users. As a rule, merely comparing investment costs is, therefore, rarely useful.

However, a separate comparison of investment costs may be practical when a part of the investment is to be co-financed by users, e.g. by connection or development fees. Moreover, where investments do not need to be refinanced by user charges, as is often the case in projects funded by external donors, a comparison of investment costs can be used to select the most cost-effective solution for the funding agency.

Operating Costs

Determining the average annual or **monthly operating costs** per person, household or enterprise makes the expected financial burden on customers **for** the use or consumption of a particular waste management service transparent. Due to limited and unstable incomes of **poor target groups** in informal settlements, which often fluctuate seasonally, the monthly, as apart from yearly, operating costs are generally more relevant, and their impact on users' living expenses **can be better assessed**.

A comparison of operating costs should also take into consideration that external influences, such as inflation and currency fluctuations, which are difficult to anticipate and hedge against, can lead to substantial cost increases for equipment or consumables or to additional taxes or levies. Such influences can thus have considerable effects on the level of operating costs.

Total Costs

The determination of **total average** annual or monthly **costs** per user (person, household or enterprise) provides the soundest comparison of different waste management solutions with regards to cost-effectiveness, overall economic feasibility and long-term sustainability. However, it also requires **special effort and experience in cost assessment** and cost calculation. Large-scale investments over long time periods will, in particular, require dynamic cost-benefit analyses in most cases.

The determination of total annual or monthly costs is generally **indispensable when** large parts or all of the **costs are to be recovered** through user charges or other user contributions.

Cost-Benefit Analyses

Cost calculations and cost-benefit analyses based on expected investment and operating costs are important tools for comparing and developing appropriate operational and financing concepts for waste management services, and for determining adequate user fees and tariffs. Two different methods, static or dynamic cost-benefit analyses, can be applied:

- **Static cost calculations** basically provide a simplified preview of nominal income or revenue and expenses over a fixed period.
- **Dynamic cost calculations**, in contrast, **describe more complex operational models**, and also **take into account possible risks** that can influence operating costs and the write-off of investment costs over the course of time. They are thus usually applied to large-scale projects, where capital costs and their development over time need to be considered.

Costs of Different Technical Standards

In order to select technically sound and economically feasible solutions and operational concepts for waste management services, it will usually be necessary to compare different **alternatives with their specific investment and operating costs**. In this context, all possible options **to reduce operating costs** should be assessed and analysed. Such options can involve for instance:

- saving **energy costs** by selecting the least energy-intensive technical solutions;
- reducing **costs for material and equipment** by selecting for durability, life span and limited maintenance needs, and by giving preference to local supply;
- **preventive maintenance** to reduce interruptions of operations and prolong the life spans of equipment.

In addition, less obvious aspects, such as ensuring the availability of spare parts, planning for regular repair work or possible system extensions or rehabilitations, should be adequately taken into account.

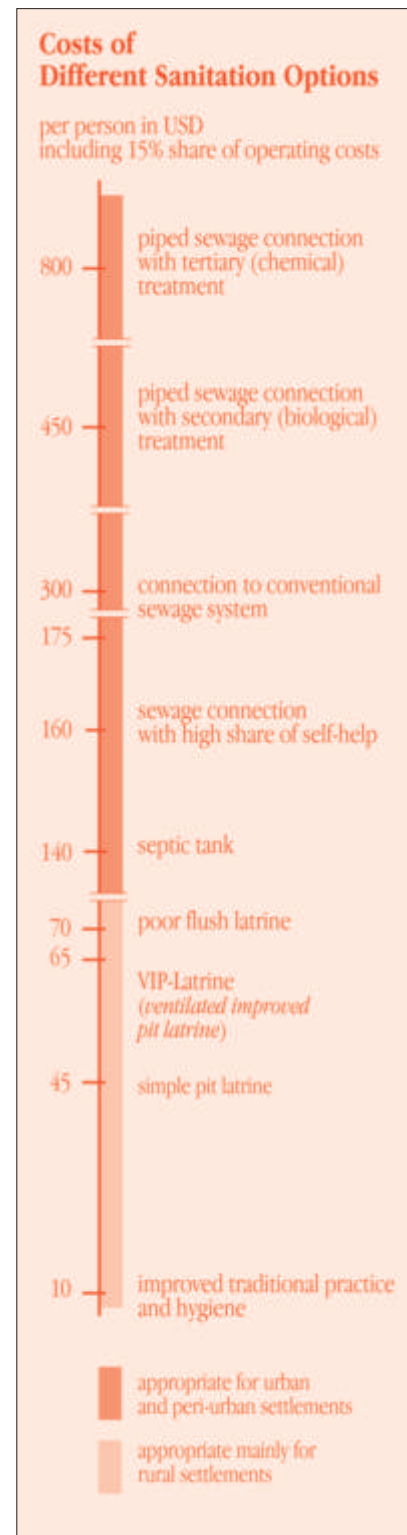
In all, the mutual interdependencies between the technical standards and the overall costs of waste management measures will need to be carefully assessed and balanced. The high costs of most conventional waste management technologies can easily make them unaffordable to poor target groups. Generally, only a few low-cost solutions will be really financially feasible.

This is amply illustrated by comparing the costs of different basic sanitation solutions. Depending on technology and technical standard, these can range **from USD 50 to USD 1,200**

per household and year (based on 2000 figures):

- More sophisticated decentralised sanitation solutions, such as dry or composting toilets, produce average annual costs per household ranging from USD 100 to 150. Most poor households would need to be in a good financial position to afford such solutions.
- The most expensive solutions are individual household connections to a conventional central water-borne sewerage system with full waste-water treatment. However, costs for water-borne sewerage can be considerably reduced by more appropriate, unconventional systems, such as simplified communal, or “condominial”, sewerage systems that users can maintain and repair themselves.

As this comparison shows, the costs of conventional water-borne sewerage are 15 to 20 times higher than the costs of a simple pit latrine.



3.2 FINANCING AND COST RECOVERY

COSTS

Possible Level of Cost Recovery

In addition to a careful determination of investment and operating costs, and a comparison of unit costs and costs per user, it will also be necessary to assess **possible levels of cost recovery**, i.e. the degree to which the costs of waste management services can be covered **by fees or other levies**.

The **objectives** and benchmarks that will be realistic and feasible **in a given context** should be chosen on the basis of the different levels of cost recovery described below.

Despite appropriate and reduced technical standards, only a part of the total costs - for day-to-day operations, maintenance and repair, replacement of equipment, and of initial investments in systems or installations - can be financed by fees or other user contributions. Other sources of finance that could cover the deficit will have to be identified early on. Such complementary finance could be provided through municipal or governmental subsidies or transfers, or by external donors, in the form of grants or other funding (see also section 3.5)

Recovery of Operating Costs

The recovery of operating costs through **regular revenue from fees for services** is a **basic pre-requisite** and minimum condition for financial and institutional (operational) sustainability of waste management measures. If the fees that target groups can accept and afford are not enough to cover basic operating expenses, e.g. for energy costs of sewerage system pumping stations or fuel for refuse collection trucks, the long-term **sustainability** of the project will be **under threat** even before the start of operations since there are very few examples of governments, external donors or others providing subsidies for operating costs over long periods of time.

The **necessity to subsidise** operating costs usually **indicates that the chosen service standard is** either too high and hence **unaffordable to users**, or that users are unwilling to accept or pay for it. If the operating costs of a particular technical solution cannot be paid for by their users, less expensive options will have to be identified.

Given this background, the **basic preconditions for a recovery of operating costs** can be outlined as follows:

- selection of **technical solutions** and standards **that correspond** to the capacity and willingness to pay of users (see also Module 1: Technical Concepts);
- careful assessment of the **capacity and willingness** of users **to pay fees** that cover operating expenses (see also section 3.3);

- introduction of **transparent fee systems** based on acceptable and understandable tariffs (see also section 3.4);
- establishment of **efficient operational and organisational structures** with particular view to effective financial management, with functioning billing and fee collection procedures (see also Chapter 2 and section 3.6 of this chapter).

As far as possible, these basic requirements should be made clear to both potential service operators and their customers in the early stages of waste management project identification and planning.

Binding agreements on fee levels, billing and collection procedures, including sanctions for cases of non-payment, as well as on operational financial management set-ups and procedures, should be concluded in due time, before the actual start of operations.

Recovery of Costs for Maintenance and Replacement of Equipment

The **costs of larger repair work or replacement of equipment**, which are usually not part of normal operating costs, can have a far reaching effect.

If repair work and replacement needed for operations cannot be financed, this can quickly lead to **service interruptions**, and a rapid and tangible **deterioration of service quality**. Defunct or dilapidated installations or pieces of equipment (e.g. refuse collection trucks, refuse containers, etc.) can be found in many urban poor settlements. This can seriously **affect** the development of **trust in the professional capacity** of a service operator.

These costs should also be covered, as far as possible, by regular operational income, i.e. from **reserves** built-up for such purposes from the fees collected. This should therefore be considered in the early stages of development and coordination of fee systems and operational concepts.

In addition, efforts should be made to reduce the need for **repair and replacement** by regular and preventive maintenance.

Complete Cost Recovery

The **biggest challenge** with regard to users' **capacity and willingness to pay**, and **to the financial management** of service providers is the complete recovery of all investment and operating costs.

However, due to the limited financial capacities of target groups in urban poor settlements, **complete cost recovery will only be possible in exceptional cases**, or only for particular services with comparatively low investment needs, e.g. refuse management.

The need for full cost-recovery is also difficult to communicate, as the benefits of including capital costs in user charges only become obvious after some years, when worn-out written-off assets have to be replaced. In urban poor settlements, where service providers usually operate on meagre budgets, such precautionary thinking often fades into the background when compared to the daily struggle for survival.

The main preconditions for a high level of cost recovery can be summarised as follows:

- **affordable technical standards, with limited investment** needed for construction, equipment and installations;
- operators and users **understanding the need to build up reserves** for the replacement of equipment and installations at the end of their life spans;
- a **high level of target group interest in service provision**, and sufficient capacity and

willingness to pay for it;

- a certain amount of **target group homogeneity**, with similar income levels, to enable realistic assessments of long-term payment performance;
- the possibility of cross-subsidising services, e.g. by progressively increasing user fees in better-off formal urban areas that can be used to partly finance services in urban poor settlements.

In most cases, only partial recovery of investment costs through fees or other user contributions will be **possible**.

The most common way of doing this is with a one-off connection charge or development fee, which often can be financed by credits to be repaid over a limited time period, usually within 1-3 years.

Another option is to **gradually increase** user fees over time and incrementally work **towards full cost recovery**. Investments to improve basic technical infrastructure and services in urban poor settlements often lead to significant consolidation and development, which frequently results in an improvement of economic conditions and the incomes of residents. Such positive consequences can increase users' capacity to pay higher charges and, combined with their getting used to better waste management standards, their willingness to do so.

CAPACITY AND WILLINGNESS TO PAY

Factors Determining the Capacity and Willingness to Pay

Users' capacity and willingness to pay for waste management services must be considered one of the most important pre-requisites for long-term sustainable operations.

While the **capacity to pay** mainly depends on users' economic circumstances, i.e. their disposable household incomes, **willingness to pay** is largely determined by service quality and its impact on living and housing conditions. Users of waste management services are usually only willing to pay fees or make other contributions, when they see a tangible improvement of service quality as a result of investment or rehabilitation measures.

The following are the main factors in assessing capacity and willingness to pay:

Household Income

Although a **minimum monetary income** is indispensable for paying user fees, general practical experience shows that there is no direct correlation between a household's financial capacity and its willingness to pay. The figure of 5% of disposable income, frequently referred to in the planning of water and sanitation projects as the maximum financial burden poor households could bear, can only be used as a general guideline:

- There are numerous examples of households in informal settlements paying more than 5% of their income for waste management services. Even very poor households are often willing to pay relatively large parts of their income for sanitation services when they expect really significant and tangible improvements in their living and housing conditions.
- However, there are many other cases where it has not been possible to introduce or sustain user charges or fees even at levels considerably lower than 5% of household income.

Service Quality

Another significantly influence on willingness to pay, is the **value users give to the waste management services** rendered. Users will generally assess the **practical benefits of a particular service** according to the following criteria:

- availability, accessibility and convenience (e.g. individual as against communal toilets, drop-off as against pick-up refuse collection systems etc.);
- continuity and reliability (e.g. regular refuse collection or emptying of pit latrines);
- the impacts of improved hygienic conditions on health (e.g. reduction of medical costs or income loss due to illness);
- customer orientation and communication policy of operators (e.g. processing of complaints, efficiency and speed of repair work etc.);
- the transparency and clarity of fee systems and billing procedures.

Kampala/Uganda

Willingness to Pay for Public Sanitation Facilities

In the capital of Uganda, Kampala, a donor agency offered a private small-scale entrepreneur a concession for the rehabilitation and operation of public toilet facilities. Use of the toilets had previously been free of charge, but because of insufficient maintenance by the municipal sanitation department that used to be responsible for them, the facilities were seriously dilapidated, and their hygienic conditions made them virtually unusable.

The entrepreneur invested USD 38,000 to rehabilitate public sanitary facilities located both in the inner city and in urban fringe areas. Depending on the location, user fees were set between USD 0.10 and 0.05 per use. At the beginning of the project, general public opinion was that that would be unacceptable and unaffordable to predominantly poor users. However, acceptance improved significantly over the first two years of operations, and the asked-for fees were generally paid. The facilities are currently maintained by staff employed by the private entrepreneur: toilet paper, soap and tap water are being offered as additional services. Because they are clean and hygienic, the facilities are highly accepted, even among the poor. In addition to the better service quality, a public awareness campaign to inform the population about the operations and costs of the improved sanitary facilities helped to achieve this high level of public acceptance.

3.3 FINANCING AND COST RECOVERY

CAPACITY AND WILLINGNESS TO PAY

Social and Cultural Factors

In many cultures, waste management and disposal procedures are determined by specific traditions, taboos or behaviour patterns that can have significant impacts both on possible technical solutions and on the willingness of users to pay. As a general rule, **technical solutions**, and their specific costs and fee systems, will **only be accepted by users when they do not conflict with socio-cultural and location-specific traditions and customs**. Intensive information and awareness campaigns will thus generally be needed to ensure an adequate level of user acceptance and willingness to pay when technical and operational solutions are completely new or “innovative” in certain socio-cultural contexts.

Moreover, operators, municipal administration, other political bodies and users can assess the suitability of service quality and costs quite differently. Their judgements and acceptance will generally mainly depend on:

- social status and position;
- awareness of health, hygiene and environmental issues, in particular, knowledge of the relationship between sanitation deficiencies and causes of illness;
- demands and expectations regarding the privacy of sanitation options;
- other specific socio-cultural factors (e.g. with regard to the handling of refuse and faeces).

Scope for Participation

Another further important factor influencing users willingness to pay is their level of identification, or sense of ownership in the implementation, operation and maintenance of waste management services.

The early involvement and participation of potential users in the planning and implementation of waste management measures can usually be the most effective way to encourage identification and instil a sense of ownership, and thereby promote willingness to pay user charges for the subsequent services. In addition to participation in the selection of appropriate technical solutions, users should be especially involved in the discussion and coordination of affordable cost levels and options for recovering costs through fees or other user contributions.

► *Module 2: Participation and Self-Help, Chapter 3.3 - Planning and Financing*

Willingness for Self-Help or Other Material Contributions

An important indicator of the sense of ownership and long-term willingness to pay is the readiness of target groups to become involved in the construction and setting up of waste management installations with financial or material contributions. In most cases, such involvement during early stages of project implementation translates into a higher sense of ownership in later operations, and thus positively influences willingness to pay the user charges needed to finance operational costs, repairs and extensions.

The possible scope and kind of financial and other material user contributions should therefore be identified as early as possible. However, self-help and other user contributions usually call for substantial efforts in awareness raising, mobilisation and organisation. Moreover, participatory approaches often require time, and can thus lead to longer implementation periods with possibly higher costs.

► *Module 2: Participation and Self-Help, chapter 3.4 - Implementation*

Different tools and procedures (e.g. household surveys, rapid appraisal techniques, planning workshops, etc.) can be used **to assess the capacity and willingness to pay** in quantitative and qualitative terms. As all these instruments have specific advantages or disadvantages, it will usually be helpful to combine different approaches and tools in order to obtain a realistic and reliable assessment. In any case, the following aspects should be clarified and analysed:

- household incomes and general economic situation;
- current behaviour patterns of payment for services supplied by municipal or private providers;
- the deficits caused by insufficient sanitation and refuse management;
- the willingness to provide financial or other material contributions;
- payment patterns to be expected in the future.

FINANCING BY FEES

Basic Concepts and Requirements for Fee Systems

Waste management services are typically financed by user fees collected usually by the operators of the particular service. The determination of acceptable and affordable fees, and the assessment of appropriate levels of cost recovery, both of which adequately reflect specific local conditions, must be considered a major challenge, and cannot be addressed by global reference values.

The level and structure of fees for waste management services should be oriented to the following **objectives and aspects**.

- **An acceptable fee is the price a consumer is willing to pay for a particular service.**
- **A fee should cover all or at least the major part of the outgoings needed to render a service.**
- **If only a partial recovery of service costs is possible, realistic and sustainable resources to close the financing gap should be identified.**
- **Fees can influence demand and supply for a particular service, and thus can regulate or guide the use or consumption of resources.**
- **The collection of fees from poor target group should take into account that their incomes are often unreliable and can fluctuate seasonally. To facilitate fee payment, appropriate timing and procedures for collection should be identified and used.**

Financial Sustainability

In order to ensure sustainable operations, fees should be determined and set so that the highest possible level of cost recovery is achieved. Ideally, fees should cover waste management services' marginal costs completely. Such fees would raise sufficient revenue not only for normal operating and maintenance costs, but also for financing investments in necessary repairs and replacements.

However, in urban poor settlements, full and comprehensive cost recovery will rarely be possible. A realistic **minimum** should, in any event, cover all **running and recurrent operating costs**. From this starting point, attempts can be made to gradually work towards full cost recovery.

If the level of recovery from fees can only cover part of the operating costs, the financing shortfall will have to be met from other financing sources, e.g. from local or central governments. The lower the level of cost recovery, the higher, as a general rule, the risk of service interruptions and of depending on usually tight governmental budgets or external financial assistance.

► *Chapter 3.2 - Possible Scope of Cost Recovery*

Social Criteria

Fees should be designed and determined in ways that enable target groups in urban poor settlements to have access to **basic sanitation and hygiene standards** (covering basic waste management needs) without overburdening them financially.

Technically appropriate standards should be defined bearing in mind capacities and willingness to pay, in order not only to make the financial contributions of users bearable, but also to facilitate cost recovery through fees.

According to global practical experience, the costs of waste management services that poor target groups are willing to pay can range between 1% and 10% of their monthly household income. However, fees at that level usually cover only a part of the total costs (investment plus operating costs). When fees for services are not accepted by target groups, or difficulties occur in their collection (e.g. high levels of arrears), it usually indicates that the financial burden is too high, or that target groups have not been sufficiently informed, or that the service quality is too low.

Fees for waste management services beyond the basic level, typically for wealthier population groups, should be fully cost recovering, especially when services entail high investment and operating costs (such as water-borne piped sewerage systems or refuse pick-up systems with technically well-equipped refuse collection trucks etc.).

Partial subsidisation of recurring operating costs should be avoided for

3.4 FINANCING AND COST RECOVERY

FINANCING BY FEES

Environmental Criteria

reasons of social equality, as wealthier households benefit more from unspecific general subsidies than poorer target groups. In most cases where waste management services are subsidised, a small number of households benefit from relative high standards at low prices, while large population groups are serviced badly or not at all.

Low levels of cost recovery for basic services therefore often result in more social inequality and aggravate existing service imbalances. In such circumstances, scarce available financial resources are usually allocated to the maintenance or rehabilitation of existing installations and systems, rather than the extension of services to marginalized and disadvantaged poor city districts.

The determination of fee levels and structures should consider environmental aspects, and promote environmentally friendly methods of wastewater and refuse disposal. Progressive tariffs, with fees increasing according to consumption or use, can provide incentives to reduce the quantities of refuse or wastewater produced (and thus also encourage water saving).

Sustainable operational concepts with intelligent fee systems can therefore significantly contribute to the reduction of air, water and soil pollution from wastewater and refuse, both at settlement level and beyond.

Queenstown / South Africa

Unaffordable Fees for Poor Target Groups

High fees for basic services in formerly black townships in the South African city of Queenstown, as in many other South African cities, had led to serious problems and social unrest. The city had fixed monthly water charges at a minimum of ZAR 24 per household for a consumption of 10 kiloliters per month (330 litres per day). Other monthly municipal service charges were flat rates of ZAR 30 for wastewater disposal and ZAR 27 for refuse collection: in addition, there was a property tax of another ZAR 27. In spite of a 40% social discount, the average total financial burden on poor households with monthly incomes below ZAR 1,300 (USD 214), i.e. around 70% of the population, was around ZAR 65 (USD 11), or 5% of household income. Households living in absolute poverty with less than ZAR 800 (USD 132) per month, which was around 50% of the population, had to pay as much as 8% of their income for municipal services.

High fees for services, which often were not even used by poor families, led to growing arrears and subsequently to an almost complete cancellation of services by the operator commissioned by the city. To reduce the potential for social unrest and conflict, most municipalities have meanwhile embarked on new fee systems based on a free basic provision for all households, but steeply progressive tariffs for higher consumption or use, which put a higher financial burden on better-off households.

If the correlation between technical standards and their costs is not adequately considered, two **typical problem situations** can develop in waste management projects in urban poor settlements:

- The first case is when fees have been set to fully cover operating costs. Due to the high financial burden, the majority of users does not pay at all, or only irregularly. The revenue expected from fee collection can thus not be achieved. As a result, repair and maintenance is neglected, which leads to a deterioration of service quality. This in turn impacts negatively on users' willingness to pay, and so revenue further declines.
- The second case is when fees cover operating costs only partially. The resulting deficit is covered by public subsidies. However, these are not guaranteed in the long run and are not adjusted to inflation. A common reason for low fees and service subsidies is the populist politics of local or central governments.

With changes in political majorities or budgetary problems, subsidies are often cancelled, and consequently services cannot be continued or sustained.

Both situations are common and can result in serious operational problems and crises.

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FINANCING BY FEES

Fee Types, Determination Bases and Possible Applications

The determination of user fees for waste management services should take into account the specific characteristics of the particular service and the possibilities of metering or verifying service use or consumption. The following **main determination bases** can be used:

- **User-related determination bases:** Type and number of users of a particular service (e.g. person, household, apartment, plot, enterprise etc.).
- **Volume related determination bases:** Amount or volume of service consumed or used (e.g. cubic metres, litres, kilograms, tonnes etc.).

The setting of fees can be based on different **tariff levels**, which can be user or consumption related in a linear or progressive way, or according to other criteria (e.g. in scaled steps).

For the specific conditions in urban poor settlement, where user registers or cadastres are often incomplete or missing, and metering of wastewater or refuse disposal is difficult, **user-related flat rates** are often the most practical and appropriate solution*. Quantity related fees can be better applied for services such as emptying latrines or septic tanks, or collecting refuse in household containers (bins, bags, etc.).

The following table provides an overview of the main fee types and their determination bases, with an assessment of their possible application in the specific context of waste management in urban poor settlements.

* If flat rates are collected in combination with other levies (e.g. property taxes), there is a danger that the connection between the service and the fee is no longer clearly recognisable.

Basic charges	Flat rates
Collection of a basic fixed charge that is independent from the actual use of a service	Fees are collected per user (unit) in the form of a unified lump-sum independent from use or consumption
Determination bases	
<ul style="list-style-type: none"> • per connection or subscriber (usually per household or plot) 	<ul style="list-style-type: none"> • per person or household member • per household or apartment • per plot
Advantages	
<ul style="list-style-type: none"> • relatively easy to collect • permits distinctions between fixed costs and volume or consumption based costs • can be based on linear or progressive tariffs 	<ul style="list-style-type: none"> • relatively easy to collect • is like a tax; has no direct relation to the actual utilization of a service
Pre-requisites	
<ul style="list-style-type: none"> • simple user register or cadastre 	<ul style="list-style-type: none"> • comparable user consumption patterns • simple user register or cadastre
Possible application(s) in urban poor settlements	
<ul style="list-style-type: none"> • share of costs or neighbourhood fee for rainwater drainage and erosion control • share of costs for refuse collection in simple drop-off systems; • share of costs for piped sewerage systems 	<ul style="list-style-type: none"> • simple drop-off systems of refuse collection • emptying of latrines and septic tanks • simple piped sewerage systems • rainwater drainage and erosion control

3.4 FINANCING AND COST RECOVERY

FINANCING BY FEES

Scaled flat rates	Volume-based fees	Hybrid fee systems
Fees are collected as lump-sums based on linear or progressive tariff scales	Fee collection based on metering volumes disposed of per period (usually per month) and user unit (usually per household) and appropriate tariffs	Combination of basic charges with user-related (normally scaled) flat rates or volume-based fees
Determination bases		
<ul style="list-style-type: none"> persons per household living area or plot size (m²) Length of street frontage 	<ul style="list-style-type: none"> <u>refuse</u>: weight (kg) or volume (m³ or litres; bins, bags or similar receptacles) <u>wastewater</u>: volume (m³ or litres) of sludge (latrines / septic tanks) or wastewater (usually based on water consumption) 	<i>same as for scaled flat rates or volume-based fees</i>
Advantages		
<ul style="list-style-type: none"> relatively easy to collect enables a certain degree of consumption or utilization related differentiation to be made (e.g. when the number of household members is used as determination base) 	<ul style="list-style-type: none"> enables utilization related differentiation provides incentives to reduce wastewater or refuse possibility of regulating consumption with progressive or scaled tariffs 	<ul style="list-style-type: none"> enables utilization related differentiation provides incentives to reduce wastewater or refuse possibility of regulating consumption with progressive or scaled tariffs
Pre-requisites		
<ul style="list-style-type: none"> more differentiated user register or cadastre with additional information on the determination basis used for rate scales 	<ul style="list-style-type: none"> detailed user register or cadastre with regular identification or metering of volumes disposed of 	<ul style="list-style-type: none"> detailed user register or cadastre with information according to the determination base applied or with regular identification or metering of volumes disposed of
Possible application(s) in urban poor settlements		
<ul style="list-style-type: none"> drop-off and pick-up systems of refuse collection emptying of latrines and septic tanks piped sewerage systems rainwater drainage and erosion control 	<ul style="list-style-type: none"> refuse collection from individual households or plots in pick-up systems emptying of latrines and septic tanks piped sewerage systems 	<i>same as for scaled flat rates or volume-based fees</i>

OTHER POSSIBILITIES OF FINANCING

Other Forms of Financing

Apart from fee collection, there are a number of other possibilities for financing the necessary investments and, with certain qualifications and usually on a temporary basis, the operational costs of waste management services also.

Against the background of high demand for better sanitation and hygiene in urban poor settlements, and the limited possibilities for fully cost recovering fees, the **mobilisation and use of additional financial resources** is usually **an indispensable pre-requisite for planning and implementing waste management projects at settlement level**.

The range of potential further financing sources includes the following:

- user contributions and self-help;
- municipal or governmental subsidies or transfers;
- external donor funding;
- micro-credit;
- private donations;
- private sector investment;
- hybrid forms (public-private-partnerships).

User Contributions and Self-Help

One-time financial contributions of users of waste management services can be applied to finance household- or plot-related investments such as:

- house connections to piped sewerage systems;
- the construction of septic tanks or latrines;
- the procurement of receptacles for refuse collection (containers, bins, etc.).

Other kinds of user contribution are **general “development fees”**, which partially finance the costs of general waste management components, if target groups are willing and capable of shouldering these costs.

Such **contributions** can, in principal, be **financial and/or in the form of self-help or mutual help**, e.g. in the construction of house connections or for other works (such as the digging of trenches for sewerage pipes).

With regard to operating costs, these can be reduced by **user self-help or mutual help contributions**, e.g. in maintenance and repair, or in the collection and administration of fees.

In all cases, such contributions will have to **well coordinated with the interests, expectations and capacities of target groups**. To do this, the following aspects will need to be considered:

- **One-time payments** to finance investment costs can be much more than a household's monthly income, and thus **require a loan** (see also Micro-credit). In such cases, loan repayment can mean that a considerable financial burden has to be shouldered in

addition to the payment of user fees.

If this exceeds the target group's financial capacity, it usually indicates that the technical standards used are unaffordable.

- **Self-help or mutual aid in the construction of waste management installations** can also be a serious problem for poor target groups, as the time and energy needed may impinge on the possibilities of working for direly needed income. Moreover, additional **efforts and inputs** may be necessary to organise and coordinate self-help activities, and **to ensure appropriate quality standards**.
- **Self-help in operations** can similarly put additional strains on poor users in their daily struggle for survival, and thus is **not be applicable or favourable in all cases**. It also usually requires **stable organisational structures with long-term perspectives**.

► *Module 2: Participation and Self-Help*

OTHER POSSIBILITIES OF FINANCING

Municipal and Governmental Subsidies and Transfers

Municipal or governmental subsidies are another possibility for **financing the investment and operating costs** of waste management services. They can either come **from the regular budgets** of institutions responsible for waste management services, **or from special support programmes** or funding facilities (e.g. municipal development funds, social funds or infrastructure funds).

Funding from regular budgets of governmental institutions is usually financed from general tax revenue or, in the case of local government budgets, from governmental financial transfers. Special development funds are often supplied or co-financed by loans or grants from external donors (see also External Donor Funding).

As regular public **budgets** are generally limited, funding is often only made available **for urgently needed maintenance or repair work**. Larger investments in the construction or extension of waste management services from this source are only possible in exceptional cases. Moreover, urban poor settlements are often neglected by public sector institutions in favour of other more popular or more prominent infrastructure projects. Funding from regular budgets is thus often only made available when neglect leads to open social unrest, or before elections, in order to enlist the support of poor voters.

In contrast to investment costs, governmental or municipal **budget funding** is often used **to finance operating costs**, primarily the personnel costs of public service operators who rarely collect cost-recovering fees.

Special **public support programmes** or funding facilities are usually available **to finance project-specific investments** in waste management systems or installations in line with their respective funding objectives and guidelines.

Subsidies can also be made available **in indirect forms**, e.g. **by custom duty exemptions or tax relief** on specific forms of investment.

Changes in political or economic conditions, e.g. changes of political majorities following elections, or a decline in tax revenue, can threaten the continuity of subsidies and their longer-term availability. **Subsidies** are therefore not a reliable form of financing, and **should be included in financial and operational concepts only in exceptional cases**.

Where subsidies are indispensable for financing service operations, or when financing by user fees is difficult, e.g. for rainwater drainage or erosion control, attempts should be made to have them included in the **most reliable and sustainable way in the budgetary planning** of the responsible institutions.

External Donor Funding

Waste management initiatives and projects in urban poor settlements are often financed by external bi- or multilateral governmental and non-governmental donor agencies, through grants or loans at favourable conditions. In most cases, donor support is provided **for specific projects** at specific locations, **or in the context of broader, countrywide support programmes** for municipal or regional development, often in combination with national contributions or financial resources.

Grants or loans with favourable interest rates are mainly provided **to finance investment costs** and/or complementary advisory assistance services (e.g. for community mobilisation, participatory planning, organisational development, etc.).

In contrast, **operating costs** are usually only subsidised by external donor funding **in exceptional cases**, and **on a temporary basis**, e.g. to build up initial operational structures or for urgently required maintenance work. Long-term operations are usually handed over to a capable operator as early as possible, usually with the stipulation that operating costs are to be covered from user fees.

External donor grants or loans are often provided in order to demonstrate how **investment costs can be financed** and how sustainable financing concepts can be established, with a view to anchor such concepts in national support programmes and policies.

OTHER POSSIBILITIES OF FINANCING

Micro-credit

Micro-credits can be important tools for financing waste management services in urban poor settlements. Two basic forms of micro-credit for this purpose can be distinguished:

- **Loans to individual households or users** to finance household- or plot-related investments like house connections to sewerage system, or the construction of latrines or septic tanks. Such loans are usually offered by public institutions or external donors **in the context of urban upgrading projects**. Common forms of financing these are **revolving funds**. With seed funding from public sources or external donors, an initial number of small loans with relatively short terms (generally 1 to max. 3 years) is given to a limited number of beneficiaries. Loan repayments are then used to provide further loans to a growing number of beneficiaries over time. However, **in practice** such funds have **often failed to work**, as many borrowers do not comply with the stipulations for repayment. As a result, re-investment is hindered and fund sustainability threatened. Due to the high risks entailed, the involvement of private sector financing institutions (banks, cooperatives or private money lenders) in micro-credit for private waste management investments is rare.
- **Loans to local formal or informal small-scale enterprises** to finance investments in waste management services, such as the procurement of equipment (vehicles, machines, recycling equipment, etc.). In most countries and cities, **a wide range of providers** of such financial services has developed over the course of time. In addition to public sector institutions or donor agencies, who offer small business loans in the context of upgrading projects, or projects to promote small and medium sized enterprises, there is usually a large “market” of private sector credit providers. Private micro-finance institutions, cooperatives and private moneylenders offer a large variety of financial products specifically for informal small-scale enterprises. In contrast, larger formal sector banks usually refrain from the risks and high administrative efforts involved with micro-credits. Small loans to informal service providers are usually offered **with short terms** (sometimes only a few months). Due to the high risk involved, **interest rates**, especially those of private lenders, are generally **significantly higher than “formal” market rates**. However, with limited loan amounts and short repayment periods, they are still affordable and attractive to their target groups.

El Alto and La Paz / Bolivia Micro-credit for House Connections and Sanitation

In the context of the *El Alto Condominial Pilot Project*, supported by Swedish Development Cooperation in three phases since 1998, around 3,700 households in different urban poor settlements of the Bolivian cities of El Alto and La Paz have been connected to simple communal, or “condominial” sewerage systems.

The total house connection costs of USD 311 (USD 139 for water and USD 172 for sewerage) were financed by micro-credits to be repaid over two years, with subsidised interest rates of 1,02% per month. With average family incomes of USD 122 per month, the financial burden for loan repayment of USD 15 per month was around 12% of household income. However, no information on repayment compliance is available.

In addition to the financing of house connections for water and sewage, micro-loans to be repaid over 32 months were available for in-house sanitary installations (toilets and bathrooms). However, only a few households were interested in such additional loans, which were, on average, for USD 400. Most households opted for other kinds of financing, such as private savings or borrowing from family relatives.

OTHER POSSIBILITIES OF FINANCING

Private Donations

Even in urban poor settlements, significant differences in income levels and financial capacities of residents can be found. Depending on the specific conditions, it can thus be possible to raise donations or contributions from residents or local businesses to **finance repair work or the purchase of equipment** through local fund raising activities, social events or campaigns.

However, such donations or fund-raising activities are **not a reliable source of financing**. They are therefore usually only relevant to finance specific smaller actions or measures that may be needed to deal with unexpected problems or bottlenecks.

Private Capital

Private capital for investment in waste management services in urban poor settlements is generally **difficult to mobilise**, as private investors usually expect some level of profitability and security. Private sector investment is typically only considered when **governmental or municipal institutions provide guarantees** and incentives. Even then, preference is normally given to investments in larger scale citywide systems, since waste managements projects that are limited to individual settlements are perceived as too risky and difficult.

In contrast, **private operators** get involved in waste management services for profit more frequently, also in urban poor settlements.

Hybrid Forms (Public-Private-Partnerships)

Compared to exclusively private investments, there is generally significantly more scope for **cooperation** and interaction **between public and private partners** in the financing of waste management services.

In the context of project- or programme-specific partnerships at settlement or city level, it can be possible to raise contributions from the local formal sector business community. In particular, companies located directly in neighbourhood of urban poor settlements where a large number of their employees live, can be interested in supporting upgrading activities and projects.

▶ *Chapter 2.8 - Private Operators*

▶ *Chapter 2.9 - Hybrid Forms*

Ahmedabad / India

Establishment of a Municipal Fund with User Contributions and Private Sponsoring

In the mid 1990s in the Indian city of Ahmedabad, the city administration launched an intensive programme for upgrading different informal settlements with 40,000 households spread all over the city through the collaborative efforts of private sector actors, the inhabitants and themselves. Waste management measures consisted of individual sanitation connections, and sewerage and rainwater drainage. The average cost of these upgrades was USD 150 per household, which was shared equally between the city administration, residents and private sponsors. To finance their contribution, users had to first save for the needed amount. Savings were deposited at a bank managed by a local NGO, which also took over community mobilisation and organisation functions. In addition to their contributions to investment costs, users also had to pay USD 2.5 to cover initial maintenance costs.

After carrying out a pilot project with financial support from a private enterprise, the city administration has been implementing and coordinating the programme since 1999. The city's own financial resources were supplemented by contributions from various international donor agencies (UNDP, USAID and DFID). An important element of the programme was the enlistment of private sponsoring from the local business community. However, this support largely depended on the overall economic situation and was not a stable or reliable source of finance.

▶ *A more detailed project description is given in the first volume of this publication, Basic Concepts, under Case Studies, Ahmedabad (Waste Management as Part of a City-Wide Urban Upgrading Programme)*

FINANCIAL MANAGEMENT

Tasks and Functions

The **tasks** and functions of **financial management depend primarily on the complexity of the chosen operational and organisational set-up**:

- **Large operators who provide city-wide services** (e.g. sewerage or refuse management) with large numbers of customers, large operational expenditure and high turn-over, need corresponding sound and professional financial management.
- Even **small operational units** providing simple waste management services **at settlement level**, such as informal small-scale enterprises or user associations who render specialised services (e.g. emptying septic tanks or refuse collection at neighbourhood level), need to have **basic functioning financial management structures** in order to be profitable and financially sustainable.

While some basic tasks and functions generally apply to all operational set-ups and enterprise types, they will need to be appropriately scaled to the specific conditions and size of different operators. Such generic tasks relate to the following areas:

- budgetary planning and budget management;
- billing and fee collection;
- accounting;
- controlling and monitoring.

Depending on the specific operational set-up and context, these tasks will have to be further detailed and differentiated. Moreover, appropriate organisational structures with sufficiently qualified personnel will have to be established.

Budgetary Planning and Budget Management

Sound and professional financial management should be based on realistic budgetary planning with a clear anticipation of expected revenue and expenses. For practical reasons, budget plans should be prepared on an annual basis and should allow for operational management:

- to define both the liquidity-relevant and supplementary costs to be expected;
- to identify the revenue needed over time to cover costs, in order to do cash-flow planning;
- to assess the possible level of revenue from fees or other contributions;
- to compare the actual revenues and expenditures over time with the planned for revenues and expenditures, and to possibly take action to prevent liquidity problems;
- to compile all relevant information for reporting at the end of the financial year, with a view to analysing operational performance and the overall development of revenue and expenditure.

For these purposes, a number of basic tasks will have to be undertaken, which are described in more detail in the following.

Determination of Costs and their Development over Time

To provide an overview of operational costs, it is useful to first **list all operational activities and then allocate respective costs** to them, distinguishing between:

- expenditure with respect to liquidity-relevant costs;
- supplementary costs (e.g. for depreciation, reserves for expected necessary repair work, contingencies and supplementary profit);
- financing costs (interest and redemption payments in those cases where loans have been taken out).

Since operations can only be maintained when all needed expenditures can be paid for regularly and within their terms of payment, expected costs and other expenditure should be planned for in detail for short periods of time (usually a month), and then compiled into an overview **of the whole year according to their occurrence**. One time annual expenditures (e.g. tax payments or licence fees) should be included in this overview, but separately.

► *Section 3.2 - Costs*

3.6 FINANCING AND COST RECOVERY

FINANCIAL MANAGEMENT

Revenue Estimate

In parallel with the **determination of costs**, the expected operational revenue should be compiled according to the following categories:

- fees and charges for services rendered;
- other user contributions;
- possible external subsidies of operational costs (e.g. from local governments or external donors).

Again, as a basis to plan liquidity, the **development** of revenue **over time** should be carefully assessed on a monthly basis and compiled in an annual overview.

► *Section 3.4 - Financing by Fees, and 3.5 - Other Sources of Finance*

Budgetary Planning and Preview of Liquidity

The comparison of all expenditure and revenue for appropriate time periods over the course of the financial year provides the basis for annual budgetary planning and a preview of liquidity or cash flow. In this context, supplementary profits and contingency reserves should be considered and included. The **annual budget** should be **balanced** and should make sure that **operational liquidity** will be **assured** over the course of the whole year.

If this is not the case, and liquidity bottlenecks are foreseen, the planning should be adjusted. If costs and other expenditure cannot be reduced, the only other options to prevent liquidity problems are increases in fees, the mobilisation of additional user contributions or higher external subsidies.

Analysis of Budget Performance and Forward Projection

The comparison of the operating results at the end of the financial year with the original planning, should be used by operational management and/or possible supervisory bodies (e.g. local councils, boards or user committees) to assess the original budget's quality and sense of reality.

This provides the basis for forward projection and planning for subsequent budget years. Forward projections of budgets should also consider and include costs for replacement of equipment or installations, or investments needed to extend or improve services.

Customer service and accounting department of a service provider in Oran, Algeria

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Accounting department of a service provider in Kota Tandes, Indonesia

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3.6 FINANCING AND COST RECOVERY

FINANCIAL MANAGEMENT

Billing and Fee Collection

Billing

Another important function of operational financial management is the efficient collection of user fees for the service rendered, which have been agreed upon and approved by possible supervisory bodies and/or the service users.

Even for simple waste management services, it will general be useful **to issue bills** to users in order to support and facilitate both fee collection and accounting. Bills should show the following **basic information**:

- name and address of the user;
- user category or tariff (for scaled flat rates or volume-based fees);
- service consumption or use (only for volume-based fees);
- billing period and amount due;
- acknowledgement of receipt (in the case of cash payment).

An important pre-requisite for billing and fee collection is a functioning **register or cadastre** of all users of the service rendered, which should be regularly updated. Workable and practical **billing periods** (monthly, quarterly or similar) will have to be defined and agreed on, as will appropriate **ways of delivering the bills**.

Fee Collection

Appropriate procedures and dates for fee collection will have to be established. In urban poor settlements, the most suitable collection will usually be either **door-to-door or at central points** (preferably within the settlement). The payment of fees into a service provider's bank account will be an exception.

The collection of fees for waste management services can possibly be **facilitated** if it is done **in combination with other fees** with relatively high collection efficiency due to possible sanctions (e.g. electricity fees), or with other well-established municipal levies (e.g. property tax).

If fees are collected and processed locally within the settlement, an adequate level of security should assured by, for example, putting them into the operator's safe or into a bank account, as soon as possible.

Incentives and Sanctions

The **disposable income** of poor target groups often **fluctuates** significantly in the course of a month or seasonally, and this should be taken into account when determining the dates for collection.

Possibilities for offering **incentives for fee payment** should be explored and tested, e.g. giving **discounts for punctual and full payment**. If it is relevant or possible to do this, it should be considered in the determination of fee levels.

On the other hand, procedures and possible **sanctions in cases of arrears or non-payment** should be made clear to users. To promote payment culture, these sanctions will need to be applied in a **credible and consistent** way.

Basic aspects to be considered for fee collection

- form and content of bills;
- delivery of bills to users: date, form of delivery, acknowledgement of receipt;
- collection procedure: door-to-door collection, central collection points, at the provider's premises;
- collection date: monthly at set dates, or at intervals when users are likely to have enough money to pay;
- responsibilities for collection: employees of the operator, user representatives, representatives of neighbourhood committees;
- procedures and sanctions in case of non-payment: documentation of non-payment, procedures for warnings and overdue notices, including the terms and procedures in cases of refusal to pay, communicating to operators the need and preconditions for sanctions.

Accounting

Requirements

Professional financial management also requires systematic and efficient accounting. Depending on country-specific legal regulations, requirements for accounting can differ considerably. For smaller service operators, in particular for informal enterprises, there are often no specific or only simple requirements with regard to their accounting. On the other hand, quite specific accounting systems or approaches may be needed for larger providers, depending on their form of operational set-up and legal status (e.g. municipal enterprise, corporation, limited liability company, etc.). They can range from a simple cash based accounting or double entry book-keeping, to full accrual accounting and balancing with cost-centres.

As it is impossible to cover all enterprise- or country-specific forms of accounting, what follows is limited to **basic concepts for simple accounting systems** for waste management initiatives or enterprises at settlement level.

Basic concepts for simple accounting systems

The minimum form of book-keeping for simple cash transactions is a listing of all income and expenditure. This requires keeping a cash journal into which all transactions are entered. Revenue and expenses should generally be entered and listed separately, and should be balanced at regular intervals (generally at the end of each month).

Each entry should include the following minimum information:

- voucher number;
- date;
- description of revenue or expense;
- amount of revenue or expense;
- the type of revenue or cost (account).

An up-to-date list of all billed invoices, including **outstanding invoices** (unpaid bills and arrears) will be needed, and should be prepared as a special list, separate from the cash journal.

All revenue and expenses **vouchers** should be **archived** in an appropriate form.

For more complex operational set-ups and enterprises, which often manage their transactions through bank accounts, **simple computer-based cash accounting systems** can be useful and appropriate. In addition to revenue and expense accounts, such systems also make it easier to distinguish between cash and bank accounts. Computer-based systems can also easily register **outstanding items** (outstanding and payable bills), and this can facilitate following-up arrears and non-payments considerably.

Regular (monthly, quarterly or annual) financial statements should also document **available liquid resources** and provide **proof of the use of any accumulated reserves**.

Simple cash journal of a waste service provider in Accra, Ghana

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FINANCIAL MANAGEMENT

Management Competences

Efficient financial management also requires clear-cut rules and competences for the **payment of bills** and the use of **financial resources available** in cash or in the bank.

Simple and transparent rules should be established, in particular for waste management initiatives at settlement level that are operated with user involvement and participation:

- The **operational management** should be authorised to pay invoices or make other payments **up to certain fixed amounts**.
- Payments or financial outgoings beyond these amounts should be **approved by a supervisory body** (user committee or other representative bodies).
- As it is difficult to tell users and supervisory bodies about future tasks and investments that are not yet clearly identifiable, and the necessity to build-up appropriate financial reserves to deal with them, decisions on **the use of available liquid financial resources** or surpluses, if any, e.g. resulting from depreciations or other supplementary costs, **should be taken** jointly by operational management and supervisory bodies **at the end of the financial year**, when all liabilities have been met.

Any operational surpluses should preferably be used to finance replacements or larger necessary repairs of equipment that would otherwise need to be financed from built-up financial reserves.

Controlling and Monitoring

Appropriate procedures and instruments for controlling and monitoring are the final important components of functioning financial management. The following aspects will need to be monitored and controlled:

- the **quality and reliability** of the services rendered;
- **cost-effectiveness**, profitability and financial sustainability;
- the **correctness** of the operator's **economic management** and financial conduct.

For controlling and monitoring efficiency, appropriate kinds of reporting and rendering accounts should be developed, which should be based on simple indicators that are easy to establish and verify, such as:

- range and coverage of services rendered (number of household or users subscribing to the service, amounts of wastewater or refuse disposed of etc.);
- billed services;
- outstanding payments (amount of outstanding bills, their share of the total number of bills issued and the length of time they been outstanding, e.g. one month, two months, more than three months);
- unit costs of the services rendered (differentiated, if possible, by operating or production costs and billed costs), or average costs per household or user (if volume-based record keeping is not possible);
- level of cost recovery achieved (if necessary or feasible, differentiating between operating and total costs);
- total amount of revenue and expenditure per controlling or reporting period;

- total operational turn-over, and operational surpluses or losses for the reporting period.

Reporting and rendering of accounts to responsible supervising bodies, depending on their operational set-up (e.g. supervisory board, local council, user committee, etc.) should be done at regular intervals, preferably by the quarter and/or year.

In addition to controlling and reporting on the operational efficiency of waste management operators internally, **regular external auditing** of the economic performance and status, and on **the correctness of financial management and accounting** will usually be necessary. For smaller service providers operating at settlement level, sample checks of book-keeping and financial (bank and cash) accounts by supervising bodies or user committees may be sufficient. For larger operators, depending on their formal status and the prevailing legal regulations, professional audits of accounting and financial balances by external private or governmental auditors may be needed.

Special attention should be paid to **providing users** and customers **with appropriate information** so as to **make costs transparent** to them. Particularly in urban poor settlements, where a payment of fees for waste management services is not a common practice, such transparency, together with consistent proof of proper operations and financial management, is important to sustaining or improving users' willingness to regularly pay fees and possibly provide other financial or in-kind contributions.

It can also be important to be able to properly **communicate the need for fee increases** that can occur in service operations.



ANNEX

SMALL-SCALE PRIVATE SERVICE PROVIDERS

Provision of Sanitation Services in 10 African Cities

Most important forms of service provision **in bold letters**. Blank columns indicate that no example case studies were available.

Type of Service	Cotonou/ Benin	Ouagadougou/ Burkina Faso	Abidjan/ Cote de Ivoire	Conakry/ Guinea
Manual emptying of latrines	Common service that is used by most poor households. ...			
Mechanically supported emptying of latrines				
Sludge pumping trucks	well-organised market; unified flat rates	well-organised market, 80% private	well-organised market, 90% private	well-organised market, one main operator
Treatment of sludge from latrines and septic tanks	private operator of a treatment plant			
Privately operated public toilet facilities	sporadic	close to railway stations or public markets	close to railway stations or public markets	
Latrine construction	promoted by licensing			
Cleaning of piped sewerage systems	mainly operated by public sector institutions, often by municipal operators ...			

Simple Sanitation Options in African Cities and their Costs

Sanitation Options	Target Groups	Construct- ion costs in USD	Maintenance		
			procedure/actors	Frequency	Yearly Costs in USD
Simple pit latrines	residents of rural or peri-urban areas with relatively large plots	30-60	family members or commissioned day-labourers	every 2 years	10 per day-labourer
Unlined latrine with platform and soak-pit	households in urban areas with low densities and large plots	50-100	commissioned sanitation workers	every 1-2 years	15-20
Lined latrine with platform	households in urban areas with small plots	150-300	emptying by sludge trucks; disposal of solid residuals by sanitation workers	sludge pumping truck 1-2 times per year; solid residuals every 2 years	30-50
Lined pit linked to a soak-pit	urban households, public facilities	300-800	emptying by sludge trucks, disposal of solid residuals by sanitation workers	sludge pumping truck once per year; solid residuals every 2 years	
Septic tank with grease trap, soak-pit and/or filtering trench	households in large urban areas with high residential densities	800-3.000	manual cleaning of grease trap and filtering trench, emptying of septic tanks by sludge pumping trucks	regular maintenance of grease trap; emptying of septic tanks every 3-5 years	15-25

SMALL-SCALE PRIVATE SERVICE PROVIDERS

Nairobi/ Kenya	Bamako/ Mali	Nouakchott/ Mauretania	Dakar/ Senegal	Dar es Salaam/ Tansania	Kampala/ Uganda
... but a distinction between individual or mutual self-help and service against payment is sometimes difficult.					
some NGO pilot projects	experimentation with "micro-trucks"				simple manual pumps / carts
well-organised market, 80% private	well-organised market, 80% private	well-organised market, 100% private	well-organised market, 90% private	well-organised market, pre- dominantly private	well-organised market, pre- dominantly private
sludge treatment in a lagoon					
frequent	close to railway stations or public markets			not documented	frequent
predominantly built by untrained brick layers in the context of house construction					
... where subcontracts are given out, a potential market for private service providers arises.					

Financial results from private operators of sludge pumping trucks for the emptying of latrines and septic tanks in different African Cities in USD

Item	Bamako	Ouaga- dogou I	Ouaga- dogou II	Dakar	Nairobi	Kampala	Conakry
Investment Costs	60.000	25.000	8.333	16.667	20.900	32.750	94.167
Customers per Year	2.667	3.494	832	2.000	1.200	576	n.a.
Fee per Service	25	25	25	30	60	60	n.a.
Yearly Revenue	66.667	87.360	20.800	60.000	72.000	34.560	73.170
Yearly Expenses	25.383	31.529	10.617	24.333	22.156	26.351	68.763
Fees and Insurance	3.050	1.512	250	2.167	996	6.300	9.888
Salaries and Wages	4.833	4.017	1.200	6333	3.000	4.200	15.446
Maintenance and Fuel	7.500	21.000	7.500	12.500	13.980	12.576	10.757
Depreciation and Interest	10.000	5.000	1.667	3.333	4.180	3.275	32.672
Yearly Profit	41.284	55.831	10.183	35.667	49.844	8.209	4.407

All tables according to:

Collignon, B., Vezina, M. (2000): *Independent Water and Sanitation Providers in African Cities*, The World Bank, Washington.

LITERATURE AND WEBSITES

Literature on Case Studies

Mumbai - India (41)

Nitti, R.; Sarkar, S. (2003): Reaching the Poor through Sustainable Partnerships - The Slum Sanitation Program in Mumbai, India. Urban Notes, No. 7, Washington.

Colombo - Sri Lanka (42)

WSP (Ed.) (1998): Structured Learning in Practice - Lessons from Sri Lanka on Community Water Supply and Sanitation. Washington.

Khulna- Bangladesh (43)

WSP (Ed.) (2000): Community Based Pilot Project on Solid Waste Management in Khulna City - General Project Description. Field Note.

WSP (Ed.) (2000): Pilot Project on Solid Waste Management in Khulna City - Community Organisation and Management. Field Note.

WSP (Ed.) (2000): Pilot Project on Solid Waste Management in Khulna City - The Role of Participatory Urban Appraisal. Field Note.

Chiclayo - Peru (48)

Hildebrand, C. (2003): Lessons learnt - Erfahrungen aus dem Trinkwasser- und Sanitärprogramm GTZ/PROAGUA. Peru, Eschborn.

KfW (2002): Kurzdarstellung Schlussprüfung Abwasserentsorgung der Stadt Chiclayo.

Cotonou - Benin (53)

Brock, B.: Le Centre des Recherches pour le Développement International (Hg): Actual and Potential Contribution of Urban Agriculture to Environmental Sanitation: A Case Study in Cotonou.

WSP (ed.) (2003): Septage Suction Truck: Cotonou - Benin.

Bamako - Mali (54/61)

WSP (ed.) (2003): Public Toilet Managers: Bamako - Mali.

Dakar - Senegal (55)

WSP (ed.): The Pick and Shovel Men or Baye Pelle of Dakar: Dakar - Senegal.

Bangalore - India (59)

UWEP (ed.) (2001): Community Participation in Waste Management - Experiences of a Pilot Project in Bangalore, India. Gouda.

Windhoek - Namibia (60)

Joubert, A.P. (2003): Windhoek's Waste Management Strategy for Informal Settlement Areas, Dar es Salaam

Kampala - Uganda (76)

Collignon, B., Vezina, M. (2000): WSP (ed.): Independant Water and Sanitation Providers in African Cities: Full Report of a Ten-Country Study. Washington.

Queenstown- South Africa (79)

Palmer Development Group (2000): PPP and the Poor in Water and Sanitation - Case Study: Queenstown, South Africa. Loughborough University, Leicestershire.

El Alto - Bolivia (84)

WSP (ed.): El Alto Condominial Pilot Project Impact Assessment - A Summary. Field Note.

Other Literature

Arroyo-Moreno, J.; Rivas-Rios, F., Lardinoio, I. (1999): Solid Waste Management in Latin America: The Role of Micro- and Small Enterprises and Cooperatives. IPES-ACEPESA-WASTE Urban Waste Series, No. 5

Bartone, C.R. (2001): The Role of the Private Sector in Municipal Solid Waste Service Delivery in Developing Countries: Keys to Success. In: The Challenge of Urban Government: Policies and Practices, WBI Development Series, Centre for Urban and Community Studies, University of Toronto, pages 214-223

Bartone, C.; Leite, L.; Triche, T.; Schertenleib, R. (1991): Private Sector Participation in Municipal Solid Waste Service: Experiences in Latin America. In: Waste Management & Research, 9(6), pages 495-509

Brikké, F. et al. (2000): Operation and Maintenance of Rural Water Supply and Sanitation Systems, Series: Resource Training Package for Managers and Planners. WHO, Geneva

Budds, J; McGranahan, G. (2003): Are the Debates on Water Privatization Missing the Point - Experiences from Africa, Asia and Latin America. In: Environment and Urbanization, London, Vol 15, No 2, pages 87-113

Cointreau, S. (1994): Private Sector Participation in Municipal Solid Waste Services in Developing Countries. Urban Management Programme Discussion Paper No. 13. World Bank, Washington

Cointreau, S.; Gopalan, P. and Coad, A. (2000): Private Sector Participation in Municipal Solid Waste Management: Guidance Pack (5 Volumes). St. Gallen.

LITERATURE AND WEBSITES

Websites

Collignon, B. et al. (1999): Water Supply and Sanitation in Peri-Urban Areas and Small Centres. Paris

Collignon, B.; Vezina, M. (2000): Independent Water and Sanitation Providers in African Cities. Washington

Franceys, R. (1997): Private Sector Participation in the Water and Sanitation Sector. DFID - Department for International Development. Occasional Paper No 3. London

Grover, B. et al. (1983): Water and Sanitation Project Preparation. Washington.

Haan, H.C.; Coad, A.; Lardinois, I. (1998): Municipal Solid Waste Management: Involving Micro- and Small Enterprises - Guidelines for Municipal Managers. Co-publication of WASTE, GTZ, SKAT and ILO

Kalbermatten, J. et al. (1980): Appropriate Technology for Water Supply and Sanitation - A Review of Technical and Economic Options. Washington

Parkinson, J. (2003): Drainage and Stormwater Management Strategies for Low-Income Communities. In: Environment and Urbanization, London, Vol 15, No 2, pages 115-126.

Taylor, K.; Parkinson, J.; Colin, J. (2003): Urban Sanitation. A Guide to Strategic Planning. London

The World Bank / UNDP (1983): Water Supply Project Preparation. Washington.

United Nations Human Settlements Programme (2003): Water and Sanitation in the World's Cities -Local Action for Global Goals. London

www.developmentgoals.org
World Bank website on the Millenium Development Goals

www.gret.org/pseau
French website on water and wastewater (*Programme Solidarité Eau* of French Development Cooperation)

www.gtz.de/ecosan
Website of the GTZ sector project "Ecosan - Closing the Loop in Wastewater Management and Sanitation"

www.gtz.de/mba
Website of the GTZ sector project "Promotion of Mechanical-biological Waste Treatment (MBWT)"

www.gtz.de/urbanet
GTZ website on urban development and local governance

www.irc.nl
Website of the "IRC- International Water and Sanitation Centre" with news and information on low-cost water supply and sanitation in developing countries

www.itdgpublishing.org.uk/waterlines.htm
Website of the international technical journal "Waterlines" on appropriate technologies of water supply and wastewater management

wedc.lboro.ac.uk/index.htm
Website of the "Water, Engineering and Development Centre (WEDC)" of Loughborough University, UK

www.skat.ch/watsanweb
Internet portal on water supply and wastewater management

www.skat-foundation.org
Website of the Swiss *Skat-Foundation* with information, literature, etc. on water supply and wastewater management

www.unhabitat.org/programmes/sustainablecities
Website of the UNCHS-Habitat "Sustainable Cities Programme", which comprises a component on "Basic Urban Services" (water supply and wastewater management)

www.worldbank.org/urban
World Bank website on urban development and urban issues

www.wsp.org
Homepage of the "Water and Sanitation Program" (multilateral donor initiative led by the World Bank)

ANNEX

INDEX OF ABBREVIATIONS

CBO	Community Based Organisation
CFAF	<i>Communauté Financière Africaine Franc</i>
DFID	Department for International Development (British Development Cooperation)
DC	Development Cooperation
ECOSAN	Ecological Sanitation
EUR	Euro
FC	Financial Cooperation
GTZ	<i>Deutsche Gesellschaft für Technische Zusammenarbeit</i> (German Technical Cooperation)
KfW	<i>Kreditanstalt für Wiederaufbau</i> / KfW Development Bank (German Financial Cooperation)
NGO	Non-Governmental Cooperation
SME	Small and Medium Sized Enterprises
TC	Technical Cooperation
UNDP	United Nations Development Program
USAID	US Agency for International Development
USD	United States Dollar
UWEP	Urban Waste Expertise Programme
WSP	Water and Sanitation Programme
ZAR	South African Rand

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