WATER AND SANITATION FOR ALL

Methodological guide

n°6

Financing Sanitation in Sub-Saharan Africa

pS-Eau

contents

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Methodological guides n° 6

Financing Sanitation

in Sub-Saharan Africa

Programme Solidarité Eau (pS-Eau)

Authors

Denis Désille, programme Solidarité Eau

Christophe Le Jallé, programme Solidarité Eau

Jérémie Toubkiss, Hydroconseil

Bruno Valfrey-Visser, Hydroconseil

Reviewer

Jean-Marie Ily, programme Solidarité Eau

Publication prepared with financing from the French Ministry of Foreign and European Affairs

Graphic designer: Cédric Estienne, Hydroconseil,

Page layout: Solange Münzer

Printing: Panoply, May 2011

Translation: Nicola Brodrick

Contents

In this guide

LIST OF TABLES

LIST OF FIGURES

LIST OF BOXES

FOREWORD

Costs are provided for illustrative purposes only

This publication is a guide on financing sanitation. Therefore, to ensure this guide is as practical as possible, the authors have provided a range of costs for the different categories of expenditure and for the different segments of the sanitation chain.

The costs provided in this publication are for illustrative purposes only. These costs cannot and do not claim to reflect the wide variety of situations and practices encountered in the different countries in sub-Saharan Africa.

The readers are, therefore, requested to exercise extreme caution and to compare the costs contained in this guide with the actual situation in their country and area of intervention.

This guide is intended as a decision aid, not a catalog

The financing options presented in this guide are no way exhaustive. The financing mechanisms available for sanitation are numerous, as are their possible combinations as part of co-financing. The reader is therefore advised that this guide contains possible options to guide decision-making and does not constitute a comprehensive reference of all available solutions.

Introduction

What type of sanitation is dealt with in this guide?

A guide that focuses on the management of wastewater and excreta

This document deals specifically with the management of wastewater (or 'greywater') and excreta (or 'sewage') produced by households and in public places (schools, healthcare centers, markets, bus stations, etc.). The issue of wastewater produced by commercial and industrial activities will only be covered indirectly. This document does not deal with solid waste, which involves different activities, operators and means of financing.

A guide that deals mainly with on-site sanitation

In sub-Saharan Africa, 100% of access to sanitation in rural areas is currently provided by on-site sanitation facilities and in urban areas, this figure stands at 80%. Although very large cities are gradually starting to develop sewerage systems, the predominance of on-site sanitation looks set to continue over the coming years.

For the public authorities and for local authorities, in particular, on-site sanitation is often the only affordable technology in terms of investment. Sewerage systems are only possible for certain highly urbanized, so densely populated, central areas of the capital city, where there are sufficiently high volumes of wastewater and excreta to be evacuated, as well as the capacity to pay. In addition to the fact that there are currently very few sewerage systems available, households often opt to install latrines and soakaways for other, more practical reasons: on-site sanitation consumes little water, the investment cost is low and there are few maintenance requirements.

For many developing countries, the large-scale development of on-site sanitation has become an inescapable reality, whether this be at household level, in commercial public spaces (markets, bus stations, etc.), in other public places (healthcare centers, hospitals, schools, etc.) or community or religious settings.

This guide, therefore, mainly deals with the financing of on-site sanitation, whilst also touching on that of small-piped sewerage systems. This should in no way prejudice the choice of sanitation system to be implemented, however, on-site or not; this choice needs to take into account the demand from the population, the requirements imposed by the natural environment, the hydrogeological and pedological constraints, as well as the population density, and should be aligned to local practices. Local management capacities – which are possible to reinforce – and financial capacities also need to be considered.

Box 1

Conventional sewerage systems and on-site sanitation

With a **sewerage system**, users are connected to a sewer network through which their liquid waste is evacuated. The sewerage system has three specific features: 1) a network of pipes for collecting wastewater (usually leading to a treatment plant); 2) an operator responsible for infrastructure management and service provision; 3) housing density and water consumption levels that generate sufficiently high volumes of wastewater and excreta for evacuation.

In contrast, **on-site sanitation** is where the sanitation facilities (latrines, flush toilets, etc.) and washbasins are not connected to a sewer network, but to a pit (latrine pits, septic tanks) or soakaway. These are the most common technical solutions found in sub-Saharan Africa, both in rural areas and in large cities.

This guide also includes **small-piped sewerage systems**. Also sometimes known as simplified sewerage systems, these are installed within a neighborhood or for a group of houses and can collect greywater and sewage, or sewage only.

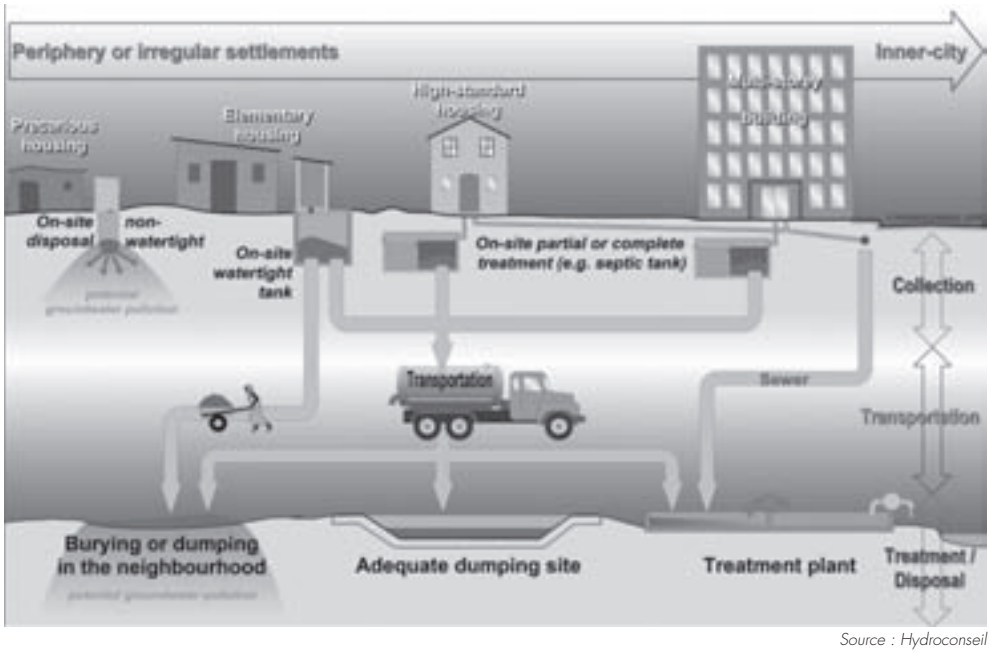
A guide that considers sanitation to be a chain

The entire sanitation service is a chain made up of 3 main segments. Far from being merely theoretical, this division of the sanitation chain into three segments is the result of observations made in a number of African towns. As each segment has its own particular characteristics and requires different actors, skills and trades, each segment also needs specific means of financing and funding flows. It is for this reason that a segment-by-segment financing approach is used in this guide.

- **Segment 1: access to sanitation**

This segment includes all issues related to the collection of liquid waste produced by a town's inhabitants and their domestic or economic activities. This liquid waste includes domestic sewage and wastewater, as well as wastewater from administrative, business, commercial and industrial activities.
The objectives of this segment are health-related (isolate and manage the risk of contamination – particularly as regards feces-related diseases), urban (as in urbanity, which means learning to live together, notably with regard to visual and symbolic cleanliness) and environmental (isolate and control the risk of pollution on-site).
The equipment within this segment consists of sanitation facilities that can be either on-site or connected to a sewer system, individual or shared. In addition to having sanitation facilities at home, households also need to adopt appropriate hygiene behaviors (handwashing, hygienic storage of drinking water, etc.) in order to ensure proper health and hygiene (notably a reduction in diarrhea morbidity).

FIGURE 1. The three segments of the sanitation chain



Source : Hydroconseil

• Segment 2: evacuation from the neighborhood

The second segment of the sanitation chain involves evacuating the residual waste collected and not treated on-site: wastewater or sludge (from latrine pits or flush toilets). The aim here is to remove the wastewater or sludge from the user's vicinity. The scale of reference for this segment is, therefore, the neighborhood.

The objectives of this segment are both health-related (taking pollutants away from the user and their place of residence) and environmental (transporting pollutants to a suitable storage site, one which reduces or negates the pollution load and its impact on water resources).

Evacuation can be carried out by a conventional sewerage system, a small-piped sewerage system, a fleet of motorized vehicles (the 'vacuum trucks' present in all African capitals), or manually (by the family or micro-operators).

• Segment 3: disposal and treatment (+ possible utilization)

Lastly, the third segment deals with the disposal and treatment of the products of sanitation (wastewater and sludge), with or without reutilization. This is a particularly sensitive issue as most towns lack the type of equipment required for effective disposal and treatment (and where it does exist, this equipment is very often not in working order). This can have potentially disastrous consequences and notably leads to illegal dumping on the outskirts of towns and cities. Local authorities should, therefore, focus most of their attention and energy on this disposal and treatment segment.

Why is it important to invest in sanitation?

To meet the needs of towns undergoing rapid expansion

Due to the rapid urban and population growth being experienced in developing countries, the management of domestic wastewater and excreta has become increasingly important. The amount of effluent to be collected and treated not only depends on the size of the urban population, but also steadily increases as more and more urban users gain access to water supply services.

To improve the health of the population

Lack of access to sanitation is the main cause of diarrhea-related diseases, which each year kill 2 million people worldwide, 90% of whom are children under 5 years old. Proper management of wastewater and excreta can significantly improve the population's health, particularly that of the most fragile groups.

To protect the environment

In 2010, more than 50% of the world's population lived in urban areas, with a majority of these being on the coast, and the trend for urban living looks set to continue. This rapid urbanization is putting untold pressure on the aquatic and coastal environments that receive the wastewater discharge. This is particularly the case in Africa, which has, and will long continue to have, the highest urban growth rate in the world. Proper management of wastewater and excreta provides inhabitants with a better quality environment and reduces the threat posed by the indiscriminate dumping of effluent into water resources and the environment.

To increase productivity

Lack of sanitation has a direct impact on the population's capacity to work and on the strength of the economy. In Madagascar, it is estimated that lack of sanitation causes the loss of 5 million productive work days per year, which equates to 80 million euros, or 2% of GDP. Overall, it is estimated that sub-Saharan Africa loses around 5% of its GDP each year due to lack of sanitation; this is equal to US$28.4 billion each year[1], a figure which exceeds total aid flow and debt relief to the region.
As a result, sanitation is a real investment: according to the human development report (UNDP, 2006), one dollar invested in sanitation creates another eight dollars on average in health expenditure saved and productivity gained. Financing sanitation can help prevent several thousand working days being lost each year and improve people's capacity to work.

To improve access to education

Furthermore, due to lack of access to water and sanitation, 443 million school days are lost in developing countries each year from water-related illness. Financing sanitation can help significantly improve the school attendance rate, particularly that of girls who are most affected by lack of toilets.

To create employment

Constructing facilities and providing services within the sanitation chain require a large number of actors and a wide range of skills, with competencies being required for tasks including latrine and sewer construction, sludge evacuation or sludge and wastewater treatment. In general, households are prepared to pay for these types of service. Financing sanitation in an intelligent manner, namely 'in the right place', can help

1 Source: WHO 2006 and the 3rd United Nations World Water Development Report: Water in a Changing World.

Box 2

Wastewater in Dakar

The volumes of wastewater discharge in a large African city can be considerable, even where water consumption is not particularly high.

For example, in Dakar, 20,000 m³/day is discharged into Hann Bay alone – most of this being of industrial origin. The volume of domestic wastewater discharge for the whole of the capital stands at 40,000 m³/day. Part of this is collected by the public sanitation company (ONAS) or is infiltrated into the soil; it is estimated that vacuum trucks in Dakar make over 200 trips per day, which equates to between 1,000 and 1,500 m³ of sludge collected daily. This sludge has a higher concentration of suspended matter than wastewater.

boost economic activity and thus create jobs.

To enhance the image of the local authority

The unpleasant side-effects of lack of sanitation, such as visual or odor pollution are sources of considerable dissatisfaction for the inhabitants of African towns. It is also a sign that the local authority is struggling to provide fully adequate public services, particularly for sanitation. From a political perspective, financing sanitation can help enhance public perception of the way in which the local authority manages basic public services.

What are the objectives of this guide and how is it organized?

The objectives of this guide are to:

- provide those actors who are not (sanitation or finance) specialists with a better understanding of means of financing the sanitation chain;
- facilitate planning and aid decision-making by taking account of the specific context of each town;
- detail the advantages, disadvantages and implementing conditions of each tool presented in the guide.

The guide is organized into five chapters:

- The chapter '*Categories of sanitation costs and expenditure*' provides a detailed list of the different components that need to be financed for each segment of the sanitation chain. Indicative cost estimates are also given here;
- The chapter '*Financing transversal activities*' presents the various possible means of financing the activities and tools necessary for managing and supervising the entire sanitation sector (notably the intervention strategy and the monitoring and evaluation mechanism);
- The chapter '*Financing access to sanitation*' details the different strategies available for financing the access segment of the sanitation chain;
- The chapter '*Financing the evacuation of wastewater and excreta*' presents the various means of financing the second segment in the chain, drawing a distinction between on-site sanitation and small-piped sewerage systems;
- The chapter '*Financing the disposal and/or treatment of wastewater, excreta and sludge products*' details the strategies available for financing the disposal and treatment segment of the sanitation chain.

Lastly, the '*Financing Sanitation Overview*' contains a summarized and simplified version of all of the financing mechanisms presented in the guide.

CHAPTER 1

Categories of sanitation costs and expenditure

What are the main categories of sanitation costs?

Regardless of the segment of the sanitation chain under consideration, there are four main areas of expenditure that need to be taken into account when developing sanitation services.

Studies and services (STU)

This includes all non-physical (and therefore not directly visible) costs, but those which are vital to development of the sector.
These costs pertain to activities undertaken in preparation for projects (demand analysis studies, facility design studies, financial and technical feasibility studies, management method and cost recovery studies, etc.), during projects (project coordination, awareness-raising campaigns, capacity-building and any other accompanying measures, etc.) or upon completion of projects (final evaluation, monitoring of the quality of the sanitation service, etc.).

➔ For example, the cost of a study to design a sludge disposal site, or the budget required for activities undertaken by the NGO in charge of implementing a promotion campaign.

Investment (INV)

Investment costs are those required for constructing facilities (latrines, sewer systems, wastewater treatment plants) and purchasing equipment (vacuum trucks, for instance). The amounts required can vary considerably, depending on the technical complexity of the facilities or equipment involved. This investment can be made by households themselves (latrines, etc.), by local operators (pit emptying equipment, for example) or by the public authority (treatment plants, supporting household investment, for instance).

➔ For example, the cost of constructing a disposal site for pit sludge.

Operations (OPEX)

Operating costs are those expenses related to the technical and financial operation of the sanitation service. These operating costs notably include staff salaries and the purchase of consumable items, both necessary for providing a quality service. The on-site sanitation chain typically has very high operating costs and the ability to meet recurring costs is equally as important as being able to afford the initial investment.

➔ For example, staff or maintenance costs for operating a sludge disposal site.

Renewal (REN)

Renewal costs (or amortization) make it possible to anticipate the replacement of facilities and equipment, which all have a limited lifespan. Renewal costs are specific to the facility or equipment being considered and need to be recovered at regular intervals so as to be able to replace those facilities that have reached the end of their lifespan. Recovering renewal costs ensures services remain sustainable.

➔ For example, the cost of rebuilding a settling basin that has reached the end of its lifespan, or the cost of replacing a lift pump on a sewerage system.

Estimates of the different costs

How much do the studies and services cost that pertain to the entire chain?

There are a large number of actors and skills required to ensure that domestic wastewater management services operate correctly. The local authority has a key role to play in overseeing the work of the different stakeholders within the chain. In order to facilitate its work as contracting authority for the sanitation service, this local authority requires both tools and support. The four most important aspects are presented below.

The local sanitation sector assessment[2]

The local sanitation sector assessment consists of:

– a 'technical' assessment (existing infrastructure, level of service quality);
– a 'stakeholder' diagnostic, involving both those actors requesting the services (demand stakeholders, including users) and those providing the services (supply stakeholders).

This local assessment is supported by a **demand analysis**[3] which enables household expectations to be identified and, thus, strategies to be developed that promote equity between users by defining the most suitable types of sanitation and focusing on the most appropriate financial support mechanisms.

The associated costs relate to:
– consultant's fees;
– field studies;
– consultation meetings.

➔ An assessment costs between 10,000 and 30,000 euros, depending on the scope of the assessment and the level of detail required.

The local sanitation strategy[4]

In order to define and implement actions at local level and to be able to enter into discussions with development partners, it is important for each local authority to establish a local sanitation strategy. This strategy needs to be developed in consultation with all stakeholders and aim to satisfy the demand and requirements of the population. Such a strategy is essential for ensuring that the local authority takes full ownership of its role as contracting authority; a role which, above all, involves planning and coordination.

Based on the aforementioned local sanitation sector assessment, the local sanitation strategy establishes targets for improving the sanitation sector and sets out the means of achieving these targets (notably, the division of roles and responsibilities between stakeholders, intervention methodologies, facilities' management methods, finance strategies). A consultant is often used to assist with the development of the local strategy. The costs associated with this strategy pertain to:

– time spent working on this within the local

2 See CMS guide n°1: How to develop a concerted municipal strategy for water and sanitation in large towns in Africa.

3 See CMS guide n°3: How to analyze the demand of current and future users for water and sanitation services in towns and cities in Africa.

4 See CMS guide n°1.

authority (technical staff);
– information and consultation meetings;
– time spent by the consultant facilitating discussions and drawing up a strategy document detailing the different stakeholders' expectations.

➔ It costs between 10,000 and 30,000 euros to develop a local sanitation strategy, depending on the size of the town and the number of stakeholders to be consulted.

The monitoring and evaluation of sector development and the sanitation service

The will to improve the sanitation chain needs to be supported by regular reviews of any progress made so as to ensure the priorities for intervention can be periodically updated. Through monitoring and evaluation (M&E), which involves regularly collecting information on the level and quality of service along the whole sanitation chain, it is possible to track progress made towards achieving the targets set out in the strategy. M&E is, therefore, a fundamental tool for facilitating stakeholder coordination. When taken seriously, monitoring and evaluation has an associated cost that needs to be included in the financial requirements. A monitoring and evaluation system that is followed for only a few months (or a few years) due to lack of financing is of little benefit to the sector. The costs related to this relate to:

• The implementation of the monitoring and evaluation system, which includes:
– the development of tools to monitor sector progress;
– the training of stakeholders in the use of these tools;

• The regular and continuous operation of the monitoring and evaluation system, including:
– regular and coordination meetings;
– regular field studies to assess the service quality and collect the necessary data;
– time spent by local authority staff (with consultant support, if required) processing the data collected and producing regular reports.

➔ A consultant is required to implement a monitoring and evaluation system, therefore between 10 and 30 days of consultant's fees need to be included in the cost.

➔ The cost of operating a monitoring and evaluation system is between 1 and 3% of the sanitation chain's total turnover.

Capacity-building for the stakeholders in charge of supervising the sector

As they are responsible for developing sanitation services, the local authorities' technical departments and elected representatives require both training and tools to assist them with decision-making and planning. Capacity-building ensures sound management and sustainable services. The costs associated with local authority capacity-building include:
– trainers' and consultants' work;
– field visits to neighboring towns and countries, if required.

The cost of capacity-building for those stakeholders responsible for supervising the sector is directly related to their training needs and expectations. It is, therefore, difficult to provide an accurate upfront estimate of the cost.

➔ The cost of a trainer is between 100 and 500 euros per day.

How much does access to sanitation cost?

What are the levels of service for access to sanitation[5] ?

The term 'access to sanitation' can describe very different situations. One approach (that of the UNICEF/WHO Joint Monitoring Programme) presents four possible categories of sanitation coverage, as shown in the table on the following page.
In rural areas, where the access rate is very low (for instance, fewer than 20% of families have a latrine, even one that is traditional and technically very 'basic'), the aim is to enable the town's inhabitants to progress quickly from level 1 to level 2, regardless of how sophisticated the latrine that corresponds to level 2.
In urban areas, there are either on-site sanitation facilities that equate to level 2 or 3, and where the aim is then to progress to level 4, or there are already level 4 improved facilities in place. It is possible to define a further sanitation ladder based on the technology used, the level of comfort (and hygiene) and the cost. This is dedicated solely to on-site sanitation and consists of 6 main sub-categories, only the first of which is considered 'unimproved'.

How much do studies and services cost for the access segment?

Where there is a potentially non-expressed (latent) demand for improved sanitation services, it is possible to **stimulate demand** using the lessons learned from the demand analysis. Stimulating demand notably involves presenting the different types of sanitation facility to the users and highlighting the advantages and disadvantages of each in terms of both investment and operation.

The aim of a **hygiene education and sanitation promotion campaign** is to encourage users to employ hygienic practices and utilize the sanitation facilities correctly. The cost of such a campaign depends on its length, its intensity and how it is implemented – the task of running the campaign could be outsourced to specialist NGOs or assigned to those staff already working on these issues within the local authority or community health centers.

➔ The cost of a good awareness-raising/promotion campaign will equate to a few % of the cost of the sanitation facilities, i.e. between 1 and 3 euros per user involved, regardless of the duration.

Capacity-building within the access segment of the chain is mainly required for the masons constructing the facilities. Ensuring masons adhere to the required standards when building sanitation facilities is a major challenge; therefore, capacity-building may be required for:

– constructing the different types of facility (slabs for single pit latrines, septic tanks, etc.);
– ensuring regulations for design the facilities (pits) and mixing the concrete are respected;
– the financial management of the activity and cost effectiveness;
– promoting the latrines to users and marketing.

➔ The cost of trainers for mason capacity-building is between 200 and 300 euros per day.

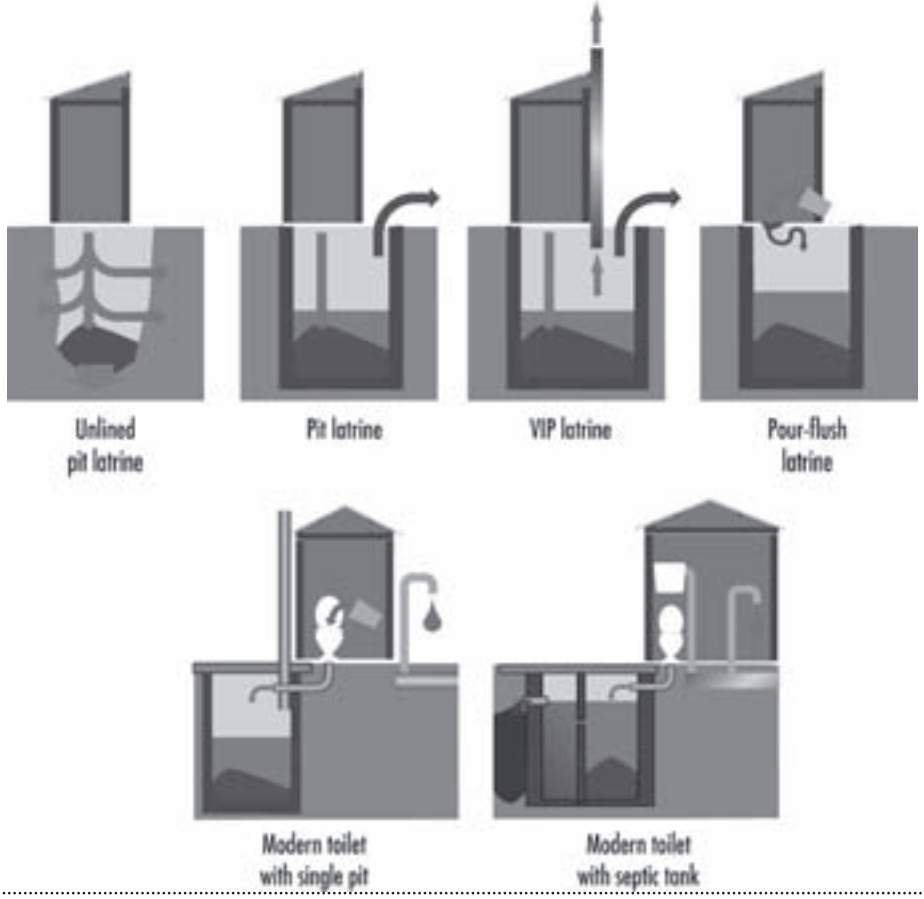
5 For more detailed information on the different technical sanitation solutions available, please consult CMS n°4: How to select appropriate technical solutions for sanitation.

TABLE 1. The different levels of service within the access segment

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Open defecation	**Unimproved facilities**	**Shared facilities**	**'Improved' facilities**
Total lack of sanitation facilities	Traditional facilities (e.g. slab made from non-durable materials)	Facilities used by several families[6]	Modern facilities that are considered to be hygienic

6 Even if the facilities are considered 'improved', they will only be included in level 4 if they are used by only one family, rather than shared between several families.

FIGURE 2. The different levels of service with regard to sanitation coverage



What are the investment costs?

The cost of a latrine can vary widely, from a few dozen to a few hundred euros depending on the technology used, the number of pits, whether the pit is lined, the design and comfort level of the superstructure, the proportion of imported materials used, etc. To give an indication of the possible price ranges, Table 2 provides a few examples of costs recently observed in West Africa (the table shows the investment cost, excluding land and including equipment, materials and labor).

➔ The investment costs for the access segment vary widely with a price range of between 50 and 800 euros, depending on the technical solution selected.

What are the operating costs?

It is difficult to obtain precise data for all the operating costs associated with on-site sanitation facilities. Nevertheless, the cost of operating a latrine is fairly low.

For an on-site sanitation chain, operating costs for the access segment are generally restricted to the purchase of products for latrine maintenance and cleaning and soap, etc.

➔ The operating costs for the access segment of on-site sanitation facilities are generally no higher than a few euros per month.

A small-piped sewerage system sanitation chain has the same operating costs as on-site sanitation, plus the additional cost of cleaning screens and grease traps.

➔ The operating costs for the access segment for small-piped sewerage system are generally no higher than a few euros per month. The cost of cleaning screens and grease traps is rarely calculated as these tasks are usually carried out by the users and no purchase is required.

TABLE 2. Investment costs for the access segment

Technology	Commonly observed price range
Single or 1 pit SanPlat latrines	40 to 100
Single pit pour-flush toilet	100 to 250
Double pit pour-flush toilet	150 to 350
Single pit VIP latrine	100 to 300
Double pit VIP latrine	250 to 400
Integral septic tank	300 to 800
EcoSan latrine	350 to 60
Laundry tub + soakaway	50 to 150
Shower + soakaway	50 to 300

Source: pS-Eau and Hydroconseil. All amounts are in euros.

What are the renewal costs?

Sanitation facilities, when properly constructed, are designed to last for many years (between 30 and 50 years). Observations in the field show that households, rather than renewing their existing facilities, prefer to invest in improving these facilities in order to:

- improve the level of comfort (build a superstructure, add a flushing mechanism to reduce smells, etc.);
- improve the level of service (connection to a small-piped sewer).

➔ As these are not strictly necessary, there are considered to be no renewal costs required for the access segment. Any expenditure is made with a view to improving rather than renewing facilities.

How much does it cost to evacuate wastewater and excreta?

What are the levels of service for evacuation[7]?

In addition to the conventional sewerage system, there are 4 main ways of evacuating wastewater and excreta; each depends on the type of sanitation facilities used, the area and type of housing.

Manual pit emptying, which here means transferring the pit sludge to a location only a short distance from where it was extracted, is most common in **small towns and areas of low population density**. In some areas where the population density is particularly low or where people have very large plots of land, inhabitants sometimes simply prefer to dig a new pit. Manual pit emptying practices need to respect basic hygiene regulations and be properly supervised.

In **small to medium-sized towns** (between around 20,000 to 100,000 inhabitants), there is both manual pit emptying and mechanical pit emptying. The latter is carried out either by the town's technical departments or by private operators from the capital or nearest large city (the market generated by these smaller towns is not usually large enough to support a full-time private operator). Some of these towns also have small-piped sewerage systems in place.

In the **cities and their urban suburbs**, as in the secondary towns (over around 100,000 inhabitants), all three methods of evacuation can be found (manual pit emptying, mechanical pit emptying and small-piped sewerage system), in addition to the conventional sewerage system found in certain neighborhoods. The most common evacuation method is mechanical pit emptying, which is mostly carried out by private operators, but occasionally also by the city's technical departments.

[7] See CMS guide n°4.

TABLE 3. The different levels of service within the evacuation segment

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Manual pit emptying	**Mechanical pit emptying**	**Evacuation through a small-piped sewerage system**	**Evacuation through a conventional sewerage system***
Used for on-site sanitation facilities. Emptying is carried out manually with buckets and shovels. The sludge is transported away from the residential area on a cart.	Used for on-site sanitation facilities. Mechanical pit emptying is carried out using a vacuum truck equipped with a suction pump that removes the sludge from the pit.	Evacuation through a small-piped sewerage system is used on a small-scale, such as a neighborhood. The sanitation facilities of each dwelling are connected to a network of	Evacuation through a conventional sewerage system is used on town-scale. The sanitation facilities of each dwelling are connected to a network of gravity sewers.

*** Financing of this option is not dealt with in this publication.**

Box 3

Manual or mechanical pit emptying?

In large African cities, mechanical pit emptying is thriving due to increasing demand. Many households are still having their latrine pits emptied manually, however. In addition to financial considerations, manual pit emptying is sometimes the only available option:

- The streets in some neighborhoods (such as Ngor in Dakar) are too narrow for vacuum trucks. As a result, there is no choice but to empty the soakaways and pits manually.
- For those households with double pit latrines (where each pit is used alternately), manual pit emptying is also the only option: the second pit is brought into use when the first pit is full. The contents of this full pit take around 3 years to mineralize, by which time it is only possible to remove the dried, solidified sludge manually.

How much do studies and services cost for the evacuation segment?

It is not always necessary to conduct a **study of the pit emptying market**. Nevertheless, such a study can provide the local authority with information on both the number and names of the (manual and mechanical) pit emptiers operating in the area; information that is useful for facilitating negotiations and processes, such as when planning the construction and location of a disposal site, for example. From the study, it is also possible to determine the exact tariffs being charged by the pit emptiers. Lastly, and as preparatory work for the construction of disposal sites and treatment plants (final segment), a study of the pit emptying market will provide the data required to develop precise estimates of the volume of sludge evacuated per day.

➔ The cost of a study of the pit emptying market depends on the size of the town. A detailed study of the existing offer and tariffs charged will require a budget of between 5,000 and 20,000 euros.

Due to a lack of suitable disposal sites, most pit emptiers dump the raw sludge they have collected on the outskirts of the town. The African continent as a whole suffers from a chronic shortage of disposal sites. **Location and environmental impact assessments and design studies for disposal plants** are essential:

- for determining the optimum location (far enough away from housing to ensure there is no risk of odor or noise pollution, yet near enough to the town to keep transport costs and distances down, as these have a direct impact on the tariffs charged);
- for ensuring there is sufficient sludge storage and/or treatment capacity, as well as handling facilities and turning areas for vacuum trucks.

➔ A location and environmental impact assessment will require between 10 and 30 days' consultancy.

➔ A design study for a disposal plant will require between 10 and 20 days' consultancy.

For a small-piped sewerage system sanitation chain, it is essential that a **location assessment** and **design study** are conducted for the small-piped sewer. The location assessment is used to establish the route of the future sewer network and identify any natural slopes. The design study is used to determine the diameter of the network, as well as any reverse slopes to be created when the pipes are being laid.

➔ A location assessment for a neighborhood small-piped sewerage system will require 1 to 3 days of topographic work.

➔ A design study for a neighborhood small-piped sewerage system will require between 1 and 2 days consultancy by a technical engineer.

Regardless of the sanitation chain being used, it may be necessary to provide **capacity-building** for those stakeholders working within the evacuation segment, particularly for:

- manual pit emptiers, who, due to the risks associated with coming into direct contact with fecal matter, will mainly require training on respecting hygiene regulations;
- mechanical pit emptiers, whose training needs mainly revolve around cost effectiveness, customer relations and sanitation and environmental issues;
- the manager of the small-piped sewerage system (whether this be community-based management or management through a public or private operator) to improve the effectiveness of the day-to-day management of the network.

➔ Capacity-building for stakeholders within the evacuation segment costs between 100 and 300 euros per day's training.

What are the investment costs?

The **manual pit emptiers'** equipment is often very basic: shovel, bucket, cart (this is either drawn by a donkey or a pushcart) and pit emptying is usually just one of their many activities. As such, any investment made in manual pit emptying equipment also benefits some of these other activities.

➔ The investment cost for manual pit emptying varies from 100 to 200 euros.

For **mechanical pit emptiers**, the main investment is the purchase of a vacuum truck equipped with suction pump. These are often bought second-hand and the cost can vary considerably from one country to the next. However, as there are often very few vacuum trucks available for sale in African countries, the price can be quite high.

➔ The investment cost for a vacuum truck is between 5,000 and 10,000 euros.

For **small-piped sewerage systems**, investment costs include the digging of trenches and the acquisition and laying of pipes, as well as the construction of the settling and pre-treatment facility further down the network.

➔ The investment cost for a small-piped sewerage system is around 200 to 400 euros per household.

What are the operating costs?

The operating cost for **pit emptying, whether manual or mechanical**, is borne by the user. This cost covers both the emptier's salary and the amortization of his equipment. The actual cost can vary as there are a number of different elements that need to be considered. For mechanical pit emptying, for example, these elements include:

– the distance from the dwelling to the vacuum truck parking area and to the disposal site;
– the volume of the pit to be emptied;
– the capacity of the vacuum truck (between 4 and 13m^3) and the volume of the pit to be emptied (which determines the number of trips required);
– when the pit is emptied (the service will cost more at the end of the month; if a household can afford to have their pit emptied at the end of the month, it means they are well-off);
– ease of accessing the neighborhood;
– the head of the household's negotiating skills .

Nonetheless, the tariffs charged within a given town are fairly consistent with regard to competition not only between providers, but also between the large capital cities. For instance, the prices in Dakar were seen to vary from 15,000 to 30,000 CFA Francs, and are most often between 20 and 25,000 CFA Francs. In Ouagadougou, prices fluctuate between 10,000 and 15,000 CFA Francs and in Bamako, pit emptying most often costs between 15,000 and 17,500 CFA Francs.

➔ In general, mechanical pit emptying costs between 15 and 45 euros. Given that a household latrine pit is emptied once every three years on average, the annual cost is between 5 and 45 euros per household.

The operating costs for the evacuation segment of **small-piped sewers** include the maintenance costs and the cost of emptying the settling tank. The actual operating costs vary according to the set-up; they depend on the volumes of wastewater produced by the households connected to the network, the volume of the settling tank and the age and condition of the sewers.

➔ The annual operating cost of a small-piped sewerage system is between 2 and 6 euros per household.

What are the renewal costs?

The renewal costs for mechanical pit emptying pertain to the amortization of the vacuum truck, whereas renewal costs for manual pit emptying relate to the amortization of the emptying equipment and cart. For small-piped sewers, renewal costs pertain to the amortization of infrastructure and, potentially, pipes. Regardless of the evacuation method under consideration, however, one part of the renewal costs is linked to the cost of the initial investment and the other part depends on market trends, which differ for each country. For pit emptying, managing renewal costs is an integral part of the operator's overall financial management of his activity, as he will ultimately pass these costs on to the user.

➔ Renewal costs for pit emptying can fluctuate widely and are not directly managed by either the user or the local authority (except where pit emptying is carried out by its own staff). It is only possible to determine very local estimates, by taking account of the cost of the initial investment and market trends.

How much does it cost to treat effluent?

What are the levels of service for treatment[8]?

The different levels of service within the treatment segment are displayed in Table 4 on the following page.

How much do studies and services cost for the treatment segment?

The **location assessment** makes it possible to check that the future treatment site is near enough to residential areas and the town to enable the easy transfer of sludge, yet at the same time is far enough away to prevent pollution, particularly from smells. It also includes soil surveys to assess the soil's bearing capacity and permeability. The 'environmental impact' component of the location assessment also helps determine whether the impact on the receiving environment after treatment will be acceptable.

➔ A location assessment for a treatment plant requires between 10 and 20 days' consultancy.

The **technical and financial feasibility study** is crucial. Not only is it used to determine the operating costs of the treatment plant for the technical option selected and ensure that these costs are aligned to local cost recovery capacities, but it also helps identify the most appropriate means of managing the facilities. The cost of this type of study can vary considerably and is highly dependent upon the complexity of the treatment plant.

➔ A technical and financial feasibility study for a treatment plan requires between 20 and 40 days' consultancy.

From the **design study**, it is possible both to establish the required volume of the settling and treatment tanks and to determine the size of related structures, such as civil engineering works and electro-mechanical equipment.

➔ A design study for a treatment plant requires between 10 and 30 days' consultancy by an engineer.

It is often necessary to provide **assistance to the contracting authority**: assisting the local authority with monitoring all the aforementioned studies; developing call for tender documents (if an international call for tenders is to be issued, there could be significant additional costs involved); monitoring the works and coordination between the different enterprises involved (civil engineering, electro-mechanical equipment, etc.).

➔ The cost of contracting authority assistance is between 5 and 10% of the overall investment cost.

In the majority of cases, **capacity-building** will be essential, particularly for the operator who is going to be responsible for running the treatment plant. Different types of training can be provided: initial training and/or technical assistance for the first few months of operation.

➔ The cost of capacity-building for stakeholders in the treatment segment is between 300 and 600 euros per day's training.

What are the investment costs?

The investment costs for a **disposal site** and/or a **treatment plant** are not easy to identify out of context. They depend both on the proposed technical solution and on the volumes of effluent to be treated. If it is necessary to purchase land, this can increase the cost significantly. As extensive treatment using a waste stabilization pond appears suitable for a large number of towns, the investment cost range estimate provided relates solely to this option.

➔ The investment cost of a waste stabilization pond type treatment plant is around 15 to 100 euros per household. The overall cost is several tens of thousands of euros.

8 See CMS guide n°4.

TABLE 4. The different levels of service within the treatment segment

INTENSIVE TREATMENT	EXTENSIVE TREATMENT	UTILIZATION (OPTIONAL)
Compact treatment units that have a small footprint and use a physico-chemical treatment method	Rural treatment facilities that have a large footprint and use natural processes: photosynthesis to develop aquatic vegetation; organic matter is degraded by micro-organisms	As a follow-up to intensive or extensive treatment, it is possible to utilize the treated solids and slurry, most often for agricultural purposes

What are the operating costs?

The operating costs of the disposal and treatment segment are not easy to define. They are notably dependent on the level of sophistication of the technology and on the level of treatment provided.

➔ The operating costs of a treatment plant can vary from a few euros per household per year to several tens of euros per household per year, depending on the level of sophistication of the technology used.

What are the renewal costs?

The renewal costs of a treatment plant depend both on the cost of the initial investment and on the lifespan of the facilities. These two parameters vary in accordance with the technical solutions used and their size.

➔ The lifespan of a treatment plant is generally between 25 and 50 years.

Financing is necessary, but needs to be properly planned

Financing the sector is essential. However, in order to ensure this finance remains sustainable, there are certain key points, listed below, that are important to always bear in mind when selecting the methods of financing to employ.

Take both the investment costs and operating costs into account

When selecting a technology it is necessary to consider not only the investment costs, in terms of the local authority or households' investment capacities, but also the operating costs. It could be possible, for example, to choose a technology that has a very low investment cost, yet later discover it has a very high operating cost.

➔ Key point N°1: ensure both investment costs and operating costs are taken into consideration so that the facilities selected remain sustainable.

Stimulate private investment, in addition to and not in place of public funds

Users and private operators currently finance a large part of the sanitation chain, mainly the sanitation facilities and the pit emptying service (which is not subsidized and, therefore, not easily accessible to the poorest inhabitants).

➔ Key point N°2: utilize public funds to stimulate additional, not replacement, financing in the form of private investment; this requires an intelligent and pro-poor subsidy scheme.

Direct public financing towards those elements of the chain not covered by the private sector and households

Certain parts of the sanitation chain can only be financed using public funds (and often through external partners). This is particularly true of the evacuation and treatment segments of the conventio-

nal sewerage system sanitation chain, and of the treatment segment in all chains, as well as of equitable access in general.

➔ Key point N°3: direct public financing towards those aspects of the chain that cannot be financed by the private sector or households.

Develop sustainable partnerships

Many of the financial tools presented in this guide involve several different stakeholders of various types (local authority, private actors, households, etc.). In most cases, it will be necessary to set up a partnership to manage the financial tool selected and ensure it benefits those for whom it is intended.

➔ Key point N°4: identify synergies between stakeholders able to financially support the sanitation chain and encourage their involvement as part of long-term partnerships.

Be attentive to household demand

Within the sanitation sector, particularly, there are several different aspects to user demand: economic, environmental, cultural, etc. Rather than being fixed, this demand evolves over time. It is vital that a sanitation demand assessment be conducted in order to ensure that the sanitation service offer proposed to users is aligned to their expectations.

➔ Key point N°5: regularly analyze household demand to accurately gauge evolving expectations[9].

Select the most appropriate technical solutions

The choice of technical solution for on-site sanitation depends on a large number of factors related to the type of land, the type and density of the housing, the users' habits (notably in terms of water consumption), the level of technological sophistication in which the households are willing to invest. The solutions chosen vary not only from one country to another, but also sometimes between two areas of the same town. It is important that decision-makers are aware of the determining factors behind this choice of technical solutions, as this will then enable them to hold informed and constructive discussions with the entity providing technical expertise.

➔ Key point N°6: select technical solutions that are adapted to the local physical, urban and socio-economic context[10].

9 See CMS guide n°3.

10 See CMS guide n°4.

CHAPTER 2

Financing transversal activities

What needs to be financed and what are the principal issues?

TABLE 5. The different categories of expenditure for transversal activities

CATEGORY OF EXPENDITURE	TYPE	PRINCIPAL ISSUES
Local assessment Demand analysis	STU	These four activities are often cursory or are overlooked in favor of facilities' construction. They are, however, fundamental to ensuring the suitability of investment decisions and for providing an overview of the sector to ensure its harmonious development.
Local sanitation strategy	STU	
Sector monitoring and evaluation	STU	
Capacity-building for local stakeholders in charge of managing the sector	STU	

How to finance the transversal activities

From the local authority budget

As far as possible, the cost of the transversal aspects of the sanitation chain should be met out of the local authority budget, at least in part. This is particularly important for capacity-building and monitoring and evaluation, two activities which are designed for the medium to long-term. Costs that should be financed from the local authority budget are:

• the salaries of those local authority employees involved in the implementation of transversal activities, particularly new activities (setting up a monitoring and evaluation system, for example) for which additional staff will need to be recruited with specific skills not previously required;

• the operating costs of the local authority department in charge of sanitation, notably vehicle-related costs and office overheads; these costs should be written into the local authority budget to ensure the smooth running of the department concerned;

• the expenses incurred for recurrent, but low-cost activities, such as public meetings and consultations with users and local sanitation stakeholders; minor expenses which, given their size, are difficult to recover from external partners.

From state subsidies

Regular financial transfers from central to local level can be set up by passing on tax revenue, for instance. In addition, sector or unassigned budget support from financial partners is sometimes granted to the state on the condition that a proportion of this funding be handed down to local authorities.

The state may also have included financing for transversal sanitation chain activities in its budget as part of national policy or strategy implementation. However, this is usually one-off financing for which a formal request must be submitted by the local authority.

Given that this type of financing is both rare and relatively difficult to obtain, the local authority should reserve this funding for large expenditure items – financing the local strategy development process[11], or implementation of a full training program, for example.

From subsidies from external partners

External partners (donors, NGOs, decentralized cooperation[12]) are sometimes interested in, and so prepared to allocate specific funding to, transversal sanitation activities. This funding is rarely permanent, however. The best strategy for the local authority consists, therefore, of finding external partners to finance coherent activity 'packages' which are presented as a project. Submitting multiple requests for support or low-level financing requires a lot of work on the part of the local authority, without necessarily increasing its chances of success.

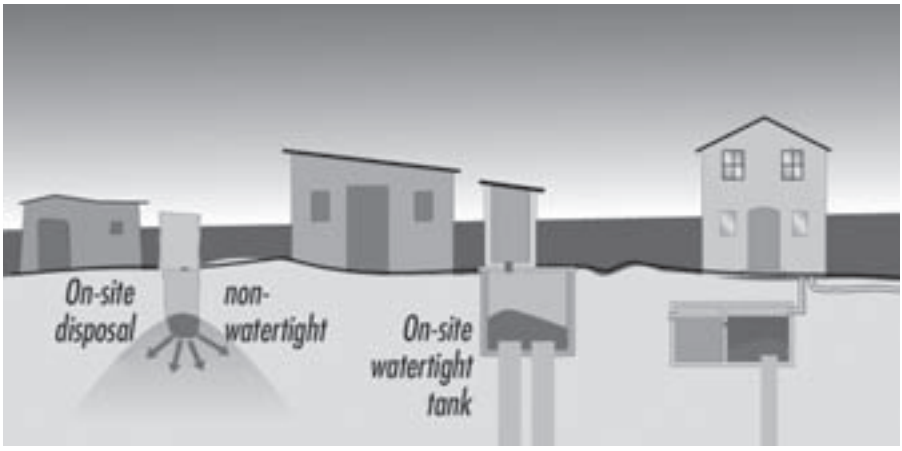
It is worth noting that transversal activities also lend themselves to knowledge and skills transfers, without there necessarily being an associated cost. A European local authority could, for example, provide regular back-up support over the course of several years by making experts available from its own technical departments.

11 See CMS guide n°1.

12 Decentralized cooperation is a relatively common phenomenon in Francophone West African countries and relates to the exchange of technical and financial support between local authorities of the North and South.

CHAPTER 3

Financing access to sanitation



What needs to be financed and what are the principal issues?

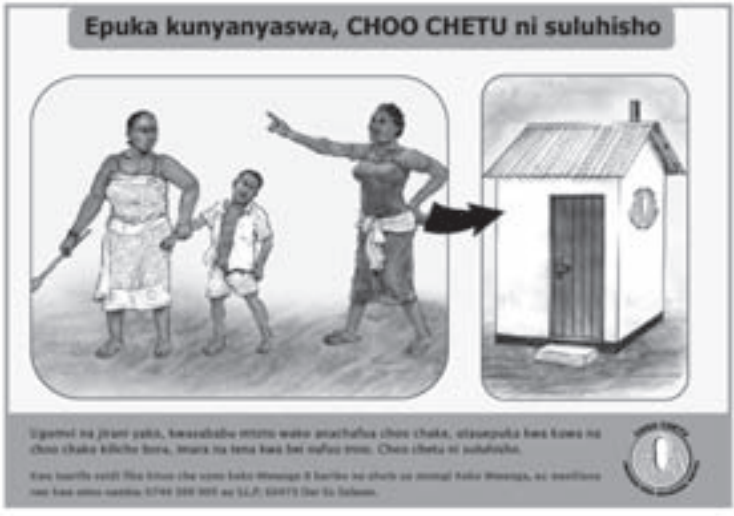
TABLE 6. The different categories of expenditure for the access segment

CATEGORY OF EXPENDITURE	TYPE	PRINCIPAL ISSUES
(Supplementary) demand assessment	STU	Often under-estimated and rarely considered as a separate investment, these studies and services are nevertheless fundamental to the access segment
Hygiene education and sanitation promotion campaigns	STU	
Capacity-building for masons	STU	Training is often only provided for one type of technical solution, rather than focusing on all the options which would increase the range of products offered to users
Construction of domestic sanitation facilities (latrines, showers and soakaways)	INV	The current paucity of facilities is mainly due to the lack of public financing for stimulating and facilitating investment
Care and maintenance of facilities	OPEX	There are usually no issues meeting this item of expenditure for domestic facilities: households have the means to cover low-level care and maintenance costs
Renewal of sanitation facilities	REN	Rather than renewing facilities, the trend instead is for households to gradually improve their sanitation facilities in accordance with their means

How to finance the 'soft' components

It is generally accepted that it is easier to obtain financing for infrastructure than it is for the accompanying activities or 'soft' components, such as demand analyses, hygiene awareness-raising and sanitation promotion campaigns or capacity-building. This is mainly due to the fact that, whereas infrastructure is a tangible investment for financial partners, studies are a lot less visible.

FIGURE 3. Visual aid for a sanitation awareness-raising campaign in Tanzania



It is, therefore, highly recommended that infrastructure construction and accompanying activities are combined to form packages of activities that span the access segment of the sanitation chain; these can then be developed into an overall, coherent project and presented to potential financial partners.

The package of accompanying measures that includes the demand analysis, hygiene awareness-raising and sanitation promotion campaigns and capacity-building is to be implemented by the local authority. The local authority needs to finance all or part of these activities from its own budget. In particular, staff salaries should, as far as possible, be covered by the local authority or at national level, as is the case where staff already work for the local authority or ministry of health. Direct costs (design, training, tools, logistics and a proportion of the monitoring costs) should ideally be met by the local authority, which can either call on its own financial partners or benefit from national campaigns organized by the financial partners of the ministries of health, hygiene, water and sanitation. Should additional funding be required, the local authority can seek:

- national financing. This involves obtaining funds from the national budget; it is important here to identify those subsidies whose selection criteria accept demand assessments;

- external financing. This involves seeking funding from bi- or multilateral development agencies willing to support these types of study as part of their official development assistance activities.

Should a national operator wish to enter the local market, then they are most likely to finance the demand analysis themselves: the operator decides to invest in such a study with a view to developing their client base in the short to medium term. It is also possible for a sanitation service operator to obtain finance from development agencies and institutions with whom he has worked in the past. The operator could successfully request financial support from external partners for those neighborhoods with few facilities and targeted by official development assistance, for instance.

Box 4

Hygiene awareness-raising and promotion of sanitation: what exactly needs to be financed?

Design. To guarantee their success, these campaigns need to be designed by public health and communication experts. These can be communication agencies or individuals that specialize in these areas.

Tools. The messages need to be transmitted using tools that are adapted both to the local context and to the most commonly used media. It will, therefore, be necessary to print posters or brochures, broadcast radio or television messages, etc.

Training. Regardless of the approach used, the employees who are going to be working in the field will require training. The cost of this training is an integral part of the approach, whether this training is delivered at national or local level.

Staff. Awareness-raising and promotion campaigns take up a lot of time; door-to-door campaigns have proved particularly effective, notably in urban areas where community meetings are difficult to organize.

Logistics. This component covers everything the field staff require to work effectively: vehicle and fuel, questionnaires, GPS and traveling expenses (where campaigns are organized in rural or remote areas).

Monitoring. The local authority (whether on behalf of national level or not) needs to monitor and, where possible, measure the impacts of the campaigns. The associated costs include: household surveys, database management, reporting.

How to finance investment for access to sanitation

Direct investment by households

In sub-Saharan Africa, households provide the main source of financing access to sanitation services. The majority of families pay for their own latrines. Many families are unable to commit to this type of expenditure, however, which partly explains the low sanitation coverage rates observed across Africa. Nevertheless, experience shows that mechanisms that enable households to spread the investment cost out over time (payment facilities), or those that encourage them to invest (subsidy contributions, promotion activities) can significantly increase the access rate to sanitation facilities (see below).

Support household investment through loans and payment facilities

Households are often able to pay the entire investment cost of sanitation facilities, provided that there are local mechanisms put in place to facilitate this investment. There are two distinct categories of mechanisms available:

• **loans** enable a household to spread the cost of investment over time. The household negotiates with a lending institution to obtain the amount required to cover the total investment cost. This loan is paid back in regular installments over a defined period. Ultimately, the total repaid by the household corresponds to the amount of the original loan, plus an additional sum (the interest rate) that constitutes the lending institution's remuneration. For access to sanitation, the amounts borrowed are relatively low. As such, loans are issued through **microcredit** (rather than through the traditional banking institutions). It is also possible for loans to be granted as part of a **revolving fund**[13] system.

• **payment facilities** also enable a household to spread the cost of investment over time. The main difference between this and a loan is that with payment facilities there is no interest rate to be paid on top of the investment cost. Payment facilities can be:

– put in place by the local authority or the operator of the public sanitation service, where this exists,

– based on a **tontine**[14] system (a commonly used traditional practice).

The common feature of these mechanisms is that they do not replace financing by the user, as it is always the user himself who ultimately pays the total cost of the sanitation facilities. As a result of such an approach, the user feels a greater sense of ownership of the facilities.

13 A **revolving fund** is one through which money is loaned to clients, repaid and loaned out once more. As loan repayments are paid back into the fund, the pot is kept 'topped up', thus ensuring that the fund can continue to support clients over time.

14 Known as **tontines** in Francophone West African countries, the umbrella term for these types of scheme, which can be found all over the world, is Rotating Savings and Credit Association (ROSCA).

Microcredit

• What is it?

Microcredit is pre-financing lent by a financial body (commonly known as a Micro-Finance Institution – MFI) to an individual to cover part or all of the investment cost. The borrower must repay the capital with interest (the rate can vary from 1.5 to 4% per month). Repayments are usually staggered over a set period of time (ranging from a few weeks to a few years, depending on the size of the loan). With microcredit, the cost of the sanitation facility ultimately amounts to 110-120% of the investment cost (capital + interest).

• What are the conditions of access?

In order to obtain microcredit, the applicant needs to satisfy certain conditions. These conditions can vary depending on the MFI, but it will often be necessary to: possess an identity card or an urban residence permit (or any other form of physical record), be able to provide upfront savings (between 10 and 30% of the loan – this is not always required), have good credit history, provide a mutual guarantee.

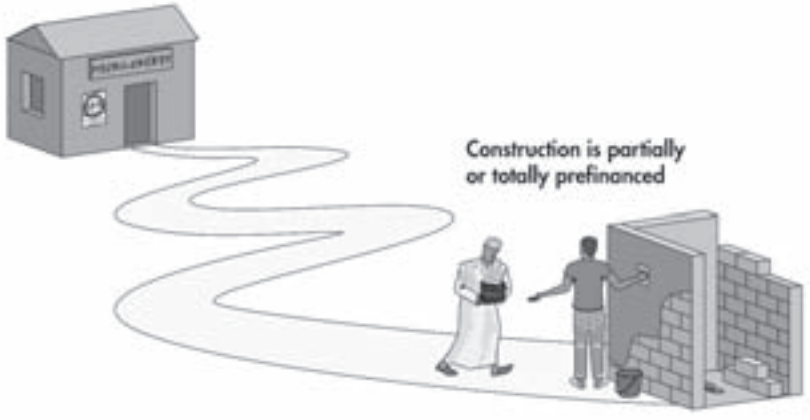
• How is it managed?

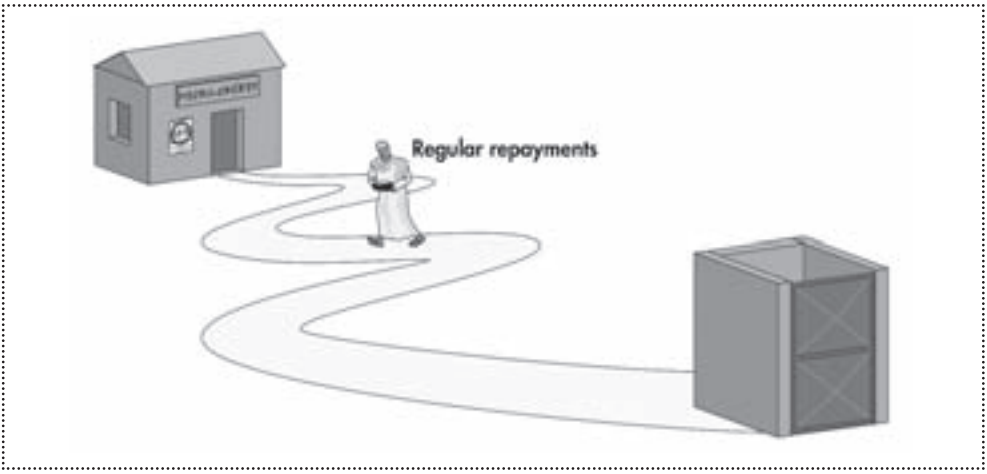
In most cases, the microcredit scheme is managed by a microfinance institution (MFI). Certain banks may also offer other microfinance type services. However, as this type of lending does not form part of their traditional activities, banks often impose strict conditions, notably requiring funds as collateral to cover the risk of non-payment. In this situation, a subsidy will be required, which can also cover the cost of social intermediation to promote microcredit services as a means of supporting sanitation.

• What are the advantages?

If it is based on the MFI's network of regular clients, microcredit can potentially be accessed by a large number of new households. There could, therefore, be a considerable number of beneficiaries.

FIGURE 4. Microcredit, a lending tool adapted to medium-sized investment requirements





Furthermore, a MFI has a good understanding of the profile of those households within its areas of intervention. As a result, it is in an ideal position to help identify areas of intervention for a project.

Microcredit to support household investment in sanitation can also be linked to other micro-credit offered by the MFI. In this case, preferential interest rates could be given to households who are already MFI clients.

In addition, it is possible to reuse the interest revenue or even the capital (once this has been repaid and if it was supported by a subsidy) to finance the extension of the project or other sanitation activities.

• What are the disadvantages?

Rather than making them more affordable for households, the high interest rates charged actually increase the final cost of the sanitation facilities. Moreover, these are facilities that do not generate any direct revenue. Certain households may be reluctant to opt for microcredit for this reason. A subsidy to offset some of the interest rate would render this mechanism more accessible. In addition, the poorest households are precluded from obtaining by the often restrictive conditions of eligibility (provision of upfront savings or guarantees, etc.).

The income of some households – the poorest – is not regular (seasonal activities) or high enough to enable them to make the necessary micro-loan repayments. These households will, therefore, either be ineligible for microcredit or be at risk of defaulting on the loan and finding themselves in excessive debt.

Tontine

• What is it?

A tontine is a form of local savings club where a group of people, united by family, friendship, professional, clan or regional ties, meet at more or less regular intervals to place their savings into a common kitty with a view to providing a solution to individual or group funding requirements. At each meeting, the participants pay the same

amount into the kitty, which is lent out in turn to each of the members, chosen using a lottery system. Once each member has been lent the fund, the cycle is repeated. It is worth noting that the first person to gain access to the kitty benefits from an interest-free loan, whereas the last person pays money in without being remunerated (or even at a negative interest rate, if inflation is high) and ultimately receives the same amount he would have accumulated had he saved on his own. The other members of the group are either debtors or creditors, depending on the order in which they are lent the funds: their participation nevertheless means they are able to benefit from the total sum sooner than if they had each been saving individually.[15]

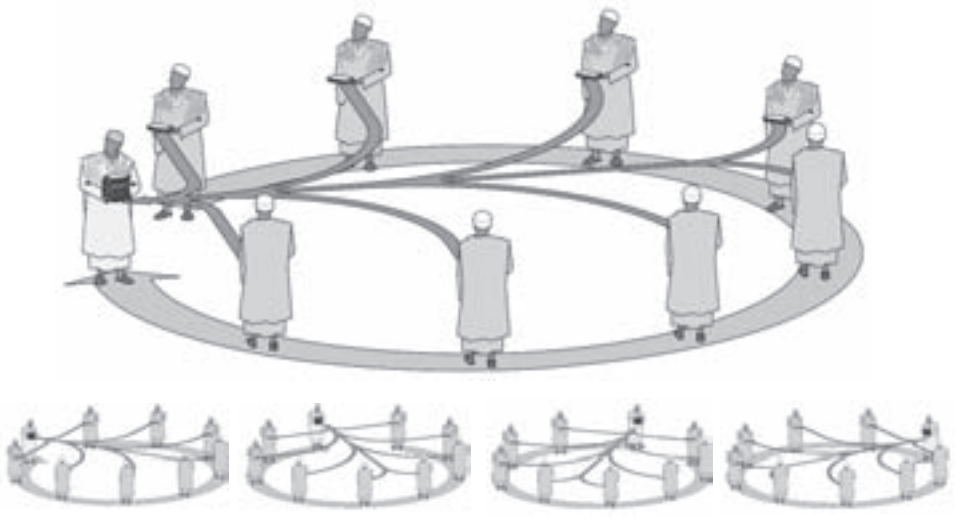
• What are the conditions of access?

Any woman, man or household member of the tontine can use this finance instrument. It is based on the principle that no household is able to leave the tontine until a full cycle has elapsed.

• How is it managed?

A tontine is generally composed of people who know each other and so management of the scheme is usually semi-formal and collegial. As a result, it is not necessary to have an official management structure (with a president, treasurer, etc.). However, where the tontine has a high number of contributing members and manages relatively large sums, it is possible for a management framework to be put in place.

FIGURE 5. The tontine, a tool that facilitates household investment



15 Excerpt from GASSE-HELLIO Matthieu, 'Les tontines dans les pays en développement'.

•What are the advantages?

The tontine is a traditional financial tool that most people understand and are able to use. Tontines help strengthen and improve the existing social and solidarity structures upon which they are based.
Experience from several countries has shown that, in general, this mechanism is highly suitable for financing sanitation facilities.

•What are the disadvantages?

In many cases, the number of tontine members is relatively low (and is often limited to neighborhood-level social networks). Only a fairly small proportion of the population will, therefore, be able to benefit from a tontine scheme.
In addition to this, their limited size also means that the sums generated by tontines remain relatively small, sufficient only for financing low-cost and fairly simple facilities. It would be difficult to finance costly and sophisticated facilities (such as a septic tank, for example) through a tontine system.

Supporting household investment through cash subsidies

Cash subsidies can be used to partially or wholly assist households to purchase sanitation facilities. A subsidy fund needs to be created in order to do this.

How to set up this type of fund

There are several sources of finance that can be used to set up a cash subsidy fund. Regardless of the option chosen, it is worth bearing in mind that, in practice, a co-financing strategy can often be highly successful.

The **local authority budget** is the first source of financing that can be used to supplement the cash subsidy fund. Whether directly debited from the local authority budget, or obtained via a local levy imposed directly on existing services or on local tax, utilizing financing from this budget ensures the local authority assumes its role as contracting authority for the sector within its area.
The advantage of this type of financing is that, if there is no time limit applied to the budget contribution or local tax (or they are renewed each year), it becomes a continuous source of funding; one that is able to support household investment in a sustainable manner and is thus more easily accessible to the poorest families.

The **national budget** is further possible source of finance. Funding from the national budget can be obtained either by debiting the public purse or by introducing a national tax.
The major advantages of this source of financing are that it enables large amounts of finance to be mobilized rapidly and makes it possible to raise additional funds, notably from development partners.

The public or private **national operator responsible** for managing a public service at national level can effectively contribute to a cash subsidy fund via a sanitation surcharge. It is not necessary for this operator to work in the sanitation sector. The aim is to draw on a high-performing public service (water supply, energy, communications, etc.) to further the development of the sanitation sector.
The main advantage of this type of financing is its potential for sustainability: if there is no time limit for inclusion of the sanitation surcharge in the operator's budget, this contribution can be used as a basis for long-term planning.

The Cooperative fund

• *What is it?* A cooperative fund consists of income received from revenue-generating activities. These activities (truck gardening, building) are carried out by the members of a community or neighborhood, often as part of an association.

• *What are the conditions of access?* Profits from these activities are shared out among the association members to help fund their sanitation facilities. The association may also decide to support those households not directly involved in the revenue-generating activity concerned. In this case, the cooperative fund provides sponsorship for the community as a whole.

• *How is it managed?* The fund is managed by the revenue-generating activity association. The

Box 5

The sanitation surcharge[16]

Several countries in Africa have set up a sanitation surcharge through which a certain percentage is added to the consumer's water bill (regardless of whether they have a sanitation facility or not – or whether this sanitation facility is connected to a sewerage system or not). This surcharge is reinvested into the sanitation chain in a number of ways, depending on the country: it can be placed into a fund for sewerage system infrastructure investment; it can also be used to subsidize access to sanitation (on-site sanitation facilities or connection to a sewerage system); or it can be passed on to the sanitation service operator to cover his operating costs. The advantage is that this surcharge is sustainable, endogenous, continuous, reliable and increases year on year (as it rises in line with increases in water consumption). All this from local financing, with (virtually) no aid from or dependence on international donors.

In Burkina Faso, this surcharge was implemented with the specific aim of promoting on-site sanitation. At the end of the 1990s, solving on-site sanitation problems in the city of Ouagadougou led the government of Burkina Faso to implement a 'Sanitation Strategic Plan' (Plan Stratégique d'Assainissement, the PSAO for Ouagadougou). The PSAO is conducted by the national (public) utility in charge of water supply and sanitation (Office National d'Eau et d'Assainissement - ONEA) and has been using a sanitation marketing approach (enhancing the services offered to the households by the small-scale providers and stimulating the household demand for improved sanitation facilities). 700 people on the ground (masons and social workers) have been trained since the beginning of the program in 1992. ONEA offers the households part of the material for free. This offer is equivalent to a small subsidy of around 30%, the rest being financed by the households. The 30% subsidy is financed by ONEA through a small 'sanitation' surcharge on the water bill. This example shows very clearly that on-site sanitation corresponds to strong demand from urban dwellers (ONEA has subsidized more than 75,000 on-site sanitation equipment pieces so far – latrines and greywater systems). It also demonstrates the importance of having a continuous and locally bound financing mechanism (donors have contributed to the mechanism but in a modest way – most of the funds come from the surcharge on the water bill).

16 The information contained in the second part of this box has been adapted from that written by Arba Jules Ouédraogo (the then Head of the Sanitation Department, ONEA) for the joint 2008 report published by the African Minister's Council on Water (AMCOW): Can Africa Afford to Miss the Sanitation MDG Target? A Review of the Sanitation and Hygiene Status in 32 Countries.

association's board, through its president and treasurer, is responsible for ensuring the fund is managed transparently and that financing is granted to those individuals and households who are eligible.

• *What are the advantages?* Depending on the activity conducted, the cooperative fund can potentially generate financing all year round. The cooperative fund is a local source of financing that does not rely on outside aid.

• *What are the disadvantages?* In order to ensure the activities conducted produce the necessary revenue, a highly skilled management structure needs to be put in place to both organize activities and manage the cooperative fund. Seasonal activities (truck gardening, for example) do not generate revenue all year round. It may also be difficult for certain other activities to generate sufficient profit to make a cooperative fund worthwhile.

Voluntary contributions

• *What is it?* A voluntary contribution is a financial payment made by certain (particularly the more notable) members of a community wishing to contribute to access to sanitation for all. Each contributes according to his means and desired level of involvement. The amount collected is then used to finance (as a donation) or pre-finance (as a loan) a pro-poor sanitation project within the community. Appeals for financial contributions can be made at public meetings, fairs, lotteries or festivals.

• *What are the conditions of access?* Voluntary contribution mechanisms prioritize the poorest households.

• *How is it managed?* The contributions collected can be placed into a bank account managed by the local authority. A more collegial type of management by an existing or specially created association is also possible.

• *What are the advantages?* Voluntary contributions reflect the community's capacity to support solidarity actions. It is an effective means of raising finance to supplement other sources of funding. It is a pro-poor source of financing.

• *What are the disadvantages?* Financing through voluntary contributions is mostly ad hoc. Furthermore, identifying the poorest members of the community, the potential beneficiaries of this mechanism, is not always straightforward.

External financing is often sought to supplement cash subsidy funds. These sources of financing notably include bilateral official assistance, multilateral official assistance, decentralized cooperation, foundations, NGOs, etc. For each of these sources of funding, the type of contribution made to the cash subsidy fund varies according to the development partner. This contribution could take the form of a loan (often a soft loan) or a donation. However, there are two major drawbacks associated with these contributions: they are only ever ad hoc and they often have conditions attached that can prove restrictive for the government (whether local or national).

Lastly, national **banking institutions** may be willing to grant funding to the sector. The disadvantage of this source of financing is that it is rarely free: it is usually necessary to repay the capital and pay interest on any finance granted by the banks.

How to manage a cash subsidy fund

Placed into a bank account, there are several ways in which a cash subsidy fund can be managed. It can be:

– directly managed by the local authority, contracting authority for the sanitation service within its area. This is the ideal and most legitimate method. With a local authority department managing

the fund, any fund management costs will be met directly by that local authority;

– managed by an association or NGO. Here, consideration needs to be given to remunerating the association or manager in charge of mobilizing the staff to manage the fund. The main issue with this option is that the association or NGO appointed needs to maintain a long-term presence in the area to ensure they are able to run the subsidy mechanism on a sustainable basis;

– managed by a financial intermediary. Management of a cash subsidy fund could be entrusted to microfinance institutions with proven financial management skills, as well as good knowledge of the social structure, which would enable them to identify and reach the poorest households. This option would also require remuneration to be paid to the microfinance institution.

Regardless of the management method selected, it is advisable to involve the beneficiary households through:

– regular presentations during public meetings on developments and progress made to support households' access to sanitation through the cash subsidy fund (where the fund is managed by a local authority, NGO or microfinance institution);

– encouraging users (more specifically, representatives of the different user groups) to become members of the association responsible for managing the cash subsidy fund. The association's board has an obligation to regularly update all its members on the results achieved.

User involvement makes it possible to both better respond to beneficiaries' expectations and improve transparency in the management of the cash subsidy fund.

What means of accessing the cash subsidy fund should be offered to users?

• Define the cash subsidy level: total or partial?

The level of the subsidy to be made available to households to help them invest in sanitation facilities is the subject of much debate. It is important to bear in mind, however, that the aim of a subsidy strategy is to reach the right people, namely those with the lowest investment capacity.

In practice, there are three possible scenarios as regards subsidy levels:

1. Subsidy rate of a few %. This type of support could be described as a universal subsidy in that it is open to all and there are no selection criteria. However, there is a risk that the subsidy may not be high enough to trigger investment by the poorest households.

2. Subsidy rate of a few dozen % with a maximum threshold of 50%. This type of subsidy is open to all households meeting a set of minimum criteria, most often socio-economic (level of income or area of residence, for example). This subsidy is often suitable for a facilities' installation program at local authority level and has been proven to stimulate personal investment. The main risks associated with the relatively sizeable amounts allocated from each 'drawing right' are that i) the beneficiaries are not necessarily those in greatest need, ii) it is possible to use the funds for purposes other than the construction of latrines.

3. Subsidy rate of 100%. Such a subsidy needs to be limited to a highly specific population group due to the limited amount of total finance available. This subsidy type is not recommended, however, because: i) it restricts the number of beneficia-

ries, ii) it does not encourage either self-building or personal investment, iii) as they were not necessarily chosen by the user, there is a risk the facilities will not be used.

• Who can benefit from cash subsidies?

Defining the eligibility criteria for access to cash subsidies is something of a challenge: which criteria should be used to define poverty? In practice, and to facilitate the management procedures which can otherwise become extremely complex, priority is given to:

– in the major towns and cities: specific neighborhoods identified as being particularly deprived;
– in rural areas: all inhabitants.

In order to ensure the subsidy is accessible to the poorest members of the population, it is important that the mechanism is implemented for the long-term. The poor are rarely the best informed and so are neither best placed nor best able to take immediate advantage of new financing opportunities.

Supporting household investment with subsidies in kind

• Subsidy in kind fund

Implementing a subsidy in kind fund consists of providing users with some of the sanitation facility components free-of-charge. These are often the most expensive parts or those that particularly affect the viability and quality of the facilities: for instance, the concrete slab that covers the pit is commonly provided as a subsidy in kind. It is also possible to provide elements such as construction materials (cement, reinforcing rods, etc.) directly to the users, who then bear the cost of hiring a local mason to carry out the work.

• How to set up this type of fund

The sources of financing that can be used to set up a subsidy in kind fund are similar to those available for creating a cash subsidy fund, as described in the previous section above: the local authority budget, the national budget, contribution from another public service, external finance (loan and donation), national banking institutions.

TABLE 7. Advantages and disadvantages of a cash subsidy fund

ADVANTAGES	RISKS AND DISADVANTAGES
- Simple to implement; - Substantially reduces the investment cost.	- Difficult to target the poorest households; - Beneficiaries' sense of ownership of the facilities often insufficient; - Subsidy may be utilized for purposes other than sanitation (control required but cumbersome); - Demand may be distorted if the subsidy favors one type of technology over another; - Difficult to vary the amount of the subsidy awarded in line with the level of household income (the amount of the subsidy offered is the same for all).

• How to manage a subsidy in kind fund

Again, a subsidy in kind fund is managed in very much the same way as a cash subsidy fund, the only difference being that the grant is no longer in cash but in equipment.
As such, regardless of the management method used (local authority, association, NGO or microfinance institution – the latter is still relevant given its strong social presence in the neighborhoods targeted by the fund), the following competencies will be required:
– financial: to successfully disburse finance from the fund to place orders for the construction of sanitation equipment (usually slabs);
– technical: to carry out timely quality controls of the facilities built by the masons;
– logistical and organizational: to efficiently deal with and prioritize users' demands and ensure the equipment (e.g. slabs) is delivered to beneficiary households.

What means of accessing the subsidy in kind fund should be offered to users?

In order to be granted a subsidy, the beneficiary must sometimes satisfy certain eligibility criteria set out by the project initiator or donor. For example: a maximum level of income, an upfront financial contribution or participation in the works.

How to ensure these mechanisms provide continuous support

In all towns and cities, the population grows as do their sanitation needs. Investment in sanitation facilities is therefore a long-term, on-going requirement. As such, the impact of ad hoc initiatives to support household investment is clearly limited: they are often unable to meet all current needs and are systematically unable to anticipate future requirements.

Why is a permanent support mechanism required?

Regardless of the mechanism used to support and encourage household investment, it is therefore important that this is not ad hoc, but rather continuous and designed for the long-term. There is a

TABLE 8. Advantages and disadvantages of a subsidy in kind fund

ADVANTAGES	RISKS AND DISADVANTAGES
- Makes it possible to substantially reduce the investment cost; - None of the risks associated with cash transfers.	- May distort demand; - Difficult to vary the amount of the subsidy awarded in line with the level of household income and difficult to target the poorest households; - Beneficiaries' sense of ownership of the facilities often insufficient; - Equipment and parts may be utilized for purposes other than sanitation; - The public body responsible for the subsidy may be held accountable for any poor quality materials or construction; - The subsidy's 'disbursement' procedure is complex and there may be issues obtaining materials.

further fundamental argument to support the use of continuous support mechanisms: ad hoc schemes usually tend to benefit those better-off households without facilities and even, sometimes, those who already have satisfactory sanitation equipment. The poorest households are generally less aware of existing assistance mechanisms and less able to meet the eligibility criteria to benefit from this support. In contrast, a long-term, continuous mechanism provides them with an opportunity to gain access to financing more easily.

How to set up this support mechanism

In order to be continuous, a support mechanism must be self-sufficient and not rely on external

TABLE 9. Review of favorable and unfavorable contexts for the different means of financing access to sanitation

	FAVORABLE CONTEXT	UNFAVORABLE CONTEXT
MICROCREDIT	Target population does not belong to the poorest layer of the population and is characterized by a strong willingness to pay, provided that repayment is possible in installments. Target population is geographically stable. There is one or more well placed and easily accessible MFI (in urban areas or small towns).	Disadvantaged population with a very low capacity to pay. Rural areas virtually inaccessible to MFI (except for group microfinancing where an agent collects repayments from even the most remote villages).
TONTINE	Village in rural areas. In urban and peri-urban areas: good social cohesion or links between migrants from the same village.	Community in which there is a lack of trust and solidarity between members. Situations where more costly sanitation technologies are being promoted (VIP latrines, pour flush or EcoSan toilets, septic tanks).
CASH SUBSIDY	Rural, peri-urban or urban areas. Population with similar levels of income and without the means necessary (willingness and capacity) to pay the total investment cost.	The amount and window of availability of the funds used to finance the subsidy are too limited. Population with the same willingness and capacity to pay, where the subsidy is likely to benefit those who are most well-off. Indeed, they are often the first to hear about the subsidy and so best-placed to take advantage of the fund.
SUBSIDY IN KIND	Population with similar levels of income and without the means necessary to pay the total investment cost. Urban and peri-urban areas where construction materials are readily available.	Rural areas where construction materials are not easily available. The amount and window of availability of the funds used to finance the subsidy are too limited. Population with the same willingness and capacity to pay.

sources of financing (such as official development assistance) which are, by definition, ad hoc and cannot be relied upon over the medium to long term.

It is, therefore, important to utilize local and endogenous sources of financing. The following sustainable sources of financing are highly recommended:

– the sanitation surcharge (levied on the water supply service or any other public service that generates revenue);

– the local authority budget (on condition that the sanitation budget be approved and systematically funded each year);

– an allocation from the national budget (on condition that this is systematically re-awarded each year);

It is important to note that the benefits of a local and sustainable support mechanism are twofold:

– as mentioned above, the long-term nature of the mechanism ensures it is accessible to the poorest households;

– experience shows that external partners will view this sustainability, a sign that there is the political will to overcome the challenge of access to sanitation, as a step towards proper sanitation service governance. These partners will thus be far more inclined to provide official development assistance to support this type of approach.

Operating and renewal costs for the 'access' segment

Regardless of whether they have on-site sanitation or small-piped sewerage facilities, the households, as users of these facilities, usually pay the operating costs out of their own funds.
This self-financing is essentially made possible by the fact that these costs are relatively low (see chapter 2, How to finance the transversal activities for more detail).

In addition, it would appear that households, rather than undertaking any actual renewal, tend to prefer to make progressive improvements to their sanitation facilities. As a result, renewal costs are not considered as being applicable to this type of facility (see chapter 2, How to finance the transversal activities for more detail).

CHAPTER 4

Financing the evacuation of wastewater and excreta

What needs to be financed and what are the principal issues?

TABLE 10. The different categories of expenditure for the evacuation segment

CATEGORY OF EXPENDITURE	TYPE	PRINCIPAL ISSUES
On-site sanitation: study of the pit emptying market	STU	The pit emptying market is often a poorly analyzed sector
Small-piped sewerage system: location assessment and design study	STU	Small-piped systems are relatively simple structures, but specific skills are required for the preparatory technical studies
On-site sanitation/small-piped sewerage system: capacity-building	STU	There is often a limited and not always adequate training offer available to those working in the wastewater evacuation sector
On-site sanitation: shovel, bucket, cart OR vacuum truck	INV	It is often difficult for private operators and the local authority to access loans to purchase a vacuum truck
Small-piped sewerage system: simplified network	INV	The cost of constructing a small-piped sewerage system is often too high to be met by users of the system, even collectively
On-site sanitation: pit-emptier's remuneration + transport costs	OPEX	Cost recovery can prove difficult in secondary towns and areas of low urbanization where there is low demand
Small-piped sewerage system: care and maintenance costs	OPEX	Anticipated operating costs are often inaccurate
On-site sanitation/small-piped sewerage system: amortization of equipment	REN	**On-site sanitation.** Pit emptiers frequently fail to take account of amortization costs **Small-piped sewerage system.** Large sums are required

How to finance the studies

Within the on-site sanitation chain, the cost of the relevant preparatory studies is met by the public stakeholders.

A study of the pit emptying market is not always necessary; however it is highly recommended, both to determine the exact tariffs charged and to identify those areas not covered by the pit emptiers (often due to problems of access, particularly for vacuum trucks). It makes sense that this type of study is financed by the local authority, who can seek external funding either through the state or official development assistance.

The situation is significantly different for the small-piped sewerage system sanitation chain, however. The preparatory studies that need to be carried out (location assessment and design study) are much more limited in scope than those required for on-site sanitation and are often restricted to neighborhood level: in most cases, a small-piped system will serve a few dozen households at most. In theory, therefore, it is possible to request a contribution from users, although this may be difficult to obtain in practice: it is easier to request a financial contribution from users for the more visible and concrete components (investment) than for those elements that have no immediately visible results (preparatory studies). Ultimately, experience has shown that external financing (official development assistance) is increasingly used for these studies, often as part of projects, with a contribution made by the local authority or from national funding where possible. This same funding is also used to finance capacity-building activities, particularly those aimed at informing and training users on using and managing the small-piped sewerage system.

Regardless of whether an on-site sanitation or small-piped system is being used, it will often be necessary to provide capacity-building to pit-emptiers, particularly as regards the health risks associated with their activity. As for the access segment, financing these capacity-building activities will often be easier if they are grouped, together with the investment requirements, in an overarching package. The local authority will then be able to mobilize its own financing by combining this with state and external funding.

How to finance investment for the evacuation segment

Manual pit emptying

Investment for manual pit emptying corresponds to the cost to the pit emptier of purchasing the tools of his trade. The means of financing this type of investment is closely linked to the pit emptier's operating status:

- If it is a **local private operator** (the most common scenario), there are two possible options:

– the pit emptying operator purchases the necessary equipment himself (bucket, shovel, gloves, cart – push cart or donkey-drawn cart). This is the most common situation and one whereby the operator mostly uses his own funds, with additional support from family and friends, if required.

– the local authority identifies manual pit emptying as a strategic sector that it wishes to support and so introduces 'leasing' contracts to provide one or several operators with the equipment required. These operators have to repay the cost of the equipment in installments over a defined period of time (one year, occasionally longer). Although this arrangement is rare, it is to be recommended. It has the advantage not only of enabling the local authority to demonstrate its support for the often informal manual pit emptying sector, but also helps identify those urban areas in which manual pit emptiers operate (information which is often lacking). The main source of financing for this option is the local authority budget, with support from the state, international funding or the national sanitation operator, if required.

- If it is an **operator working for the local authority** (occasional scenario), the source of financing will be the local authority budget (which includes state, international and/or national operator funding).

- If it is an **operator working for the national sanitation operator** (whose role mainly centers on operating the conventional sewerage systems, promoting on-site sanitation and managing treatment plants), then the national operator will cover all the emptier's investment costs, either from operating revenue or from subsidies obtained from the state or external partners.

Mechanical pit emptying

The investment requirements for mechanical pit emptying (vacuum truck with pumping system, protective clothing for staff, etc.) are much higher than those for manual pit emptying. As for manual pit emptying, however, the means of financing this investment are closely linked to the pit emptier's status, which could be:

- **a private operator** (most common scenario);
- **the local authority** (less common scenario);
- **a public operator** or private delegated operator of the public sanitation service (rare).

There are three potential sources of finance, depending on the emptier's status: loans (from banks or donors), subsidies or own funds. The table below lists the pros and cons of these funding sources for each of the mechanical pit emptier status types.

TABLE 11. How to finance mechanical pit emptying investment

LOANS (from banks or donors)	**For a local private operator.** Often hard to obtain as the local private operator has difficulties proving he is able to repay the loan. **For a local authority.** Its ability to obtain a loan will directly depend on the local authority's financial negotiation skills and its creditworthiness. This type of financing, therefore, tends to be better suited to larger local authorities. **Public operator (or private delegated public service operator).** Most of these operators already have a credit history, obtained through loans taken out with either national banks or international donors. This type of financing is, therefore, ideally suited to this type of operator.
SUBSIDIES	**For a local private operator.** Given the fact that they are often informal and have limited experience of negotiating with institutional stakeholders, private operators are rarely eligible for subsidies, whether national or international. This issue could, however, be overcome were several operators within a capital city or country to join forces and form an association, for example. **For a local authority or public operator (or private delegated public service operator).** As a public body (or organization contracted by a public body, in the case of a private delegated operator), these stakeholders are in an ideal position to benefit from state or international subsidies.
OWN FUNDS	**For a local private operator.** He mainly uses his own funds to cover the investment cost of a vacuum truck. The majority of private operators use their personal savings, with additional support provided by family or friends, if required. **For a local authority or public operator (or private delegated public service operator).** Budget permitting, financing investment through its own funds is to be encouraged, provided that the strategy for using the vacuum truck has been clearly defined. Investment cannot be optimized effectively if a vacuum truck remains idle or is used with no financial contribution from users.

Small-piped sewerage systems

The specific feature of the evacuation segment of the small-piped sewerage system sanitation chain is that the infrastructure is shared (it is used by several households), yet on a deliberately reduced scale (that of a neighborhood). Investment for this type of shared but private system can be financed by combining two sources of funding:

– **public funding** most often provided as a subsidy. This subsidy can come from the local authority budget, state finance or official development assistance;

– **private funding** from the beneficiaries of the small-piped sewerage system. The beneficiaries' can either make a financial contribution or contribute in kind (assist with the earthworks, for example). Depending on the intervention strategy and level of financing available, it may be possible to offer support to households through mechanisms similar to those used to finance investment for access to on-site sanitation. However, experience has shown (see the Box 6) that care needs to be taken when selecting which financial support mechanisms to implement. It would appear, for instance, that it can sometimes be difficult to secure loan repayments from users.

Box 6

Examples of strategies used to finance the evacuation segment of small-piped sewerage systems

In Senegal, as part of PAQPUD (Sanitation Program for Peri-Urban Areas of Dakar), for a connection to the small-piped system, users were asked to contribute 22,000 CFA Francs + the cement required for the connection. However, it was established that the level of this household contribution (financial or in kind) was too high for certain households and difficult to collect upfront, before work on the system had started. Furthermore, if contributions had to be received from all those households to be connected prior to starting the work, then this work was likely to be delayed. A financial contribution in installments was therefore proposed. Starting the initial work before all the financing is received has been found to encourage further contributions.

In **Mali**, in the Hippodrome neighborhood of Bamako, a donor paid 100% of the investment cost, but the connected households were required to pay the equivalent of 60% of the investment cost in installments into a microfinance institution account (2,000 CFA Francs per month for 6 years, or 144,000 CFA Francs), so as to create a revolving fund for future sanitation projects within the neighborhood (extension of the system, for example). However, at the end of the scheme, the amount paid in by households was found to be disappointing (40% six years after the start of the project).

Still in **Mali**, in the Banconi neighborhood of Bamako, funding was obtained through a loan granted by a donor (Office de l'habitat du Mali), which was to be repaid (interest-free) by the connected households in monthly installments of 3,000 CFA Francs over 36 months (a total of 108,000 CFA Francs). However, at the end of this initiative, the amount actually repaid by the households was found to be virtually zero.

How to finance operating costs for the evacuation segment

Manual pit emptying, mechanical pit emptying

The operating costs for manual and mechanical pit emptying, excluding amortization or renewal costs, cover the operator's remuneration (salary) and transport costs (fuel for mechanical pit emptying, feed for the animal drawing the cart for manual pit emptying). On average, a pit will need emptying once every one to three years, but this can vary depending on the size of the household or volume of the pit, etc. Operating costs for the evacuation of wastewater for on-site sanitation are, therefore, ad hoc.

In most towns and cities in Africa, these operating costs are paid by the users themselves out of their own funds. The user usually negotiates the tariff directly with the pit emptier (particularly when the pit emptier is a private operator, which is most commonly the case).

It would be possible to introduce a subsidy mechanism, but for very specific situations: when the local authority has a vacuum truck, pit emptying could be free-of-charge, for instance. However, not only does such an option need to be underpinned by a clearly stated political will, but also the means of financing the vacuum truck operator's operating costs need to be defined and implemented in a sound and sustainable manner.

Small-piped sewerage systems

For small-piped systems, operating costs are for maintenance and minor repairs to pipe-work and any pre-treatment facilities. Although there is relatively little best practice available on the means of financing these costs, it has nevertheless been possible to identify six main sources of funding:

- The **monthly charge** paid by connected households would appear to be a suitable option, yet it has its limitations. In Bamako (Hippodrome and Banconi neighborhoods) this charge was set at 500 CFA Francs per month per household; however, collecting this proved difficult because:

– the households' earn irregular income and have priorities (accommodation, food, etc.) more pressing than sanitation;

– the monthly charge is used to create a type of savings system in which funding is set aside for future repairs. This approach is diametrically opposed to the financial strategies of the majority of users, who manage their money on a day-to-day basis and are willing to pay only for urgent, visible and immediate repairs, not to correct faults that do not yet exist;

– a number of users felt that the infrastructure, located at some distance from their compound, had very little to do with them; thus they were not inclined to contribute to the cost of something that, in their view, did not directly concern them;

– the users often mentioned the fact that construction of the small-piped sewerage system had been initiated by the public authorities or an

NGO. As such, they believed it only logical that the care and maintenance costs be met by the project initiators themselves, in the same way as road, bridge, etc. maintenance is financed by the state or local authority.

- The **case-by-case contribution** is another, perhaps more realistic, strategy. Here, households pay the maintenance costs for the infrastructure that directly affects them (the pipes in front of their dwelling) on an ad hoc basis – only when the need arises. This system is the one that has been gradually introduced to cover the maintenance costs of the two small-piped systems in Banconi and Hippodrome in Bamako.
- The **local authority** can also finance the operating costs from its own budget.
- The **sanitation surcharge** levied on the water bill or that of any other effective public service (energy, communications, etc.) can be used to cover the operating costs of a small-piped system, as is often the case for conventional sewerage systems.
- A **revenue-generating activity**, such as a cooperative fund, for example, could be created to ensure sustainable cost recovery.
- A **combination of these mechanisms**, for instance, case-by-case contribution + regular local authority contribution + revenue-generating activity, is also possible.

How to finance the renewal of the evacuation segment equipment

Manual and mechanical pit emptying

The majority of manual and mechanical pit emptiers use a low-cost financial approach. As such, very few, if any, include equipment renewal costs in their tariff. Furthermore, these operators seldom keep proper financial records of their activity or have a good understanding of book-keeping. Amortization principles are, therefore, rarely a consideration.

Rather than encouraging pit emptiers to adopt amortization principles (which would considerably increase the tariffs charged and therefore be met with resistance from operators), other avenues can be explored, based on manual and mechanical pit emptiers grouping together into some form of trade body:

– **negotiated loans** from banking institutions offering interest-free or soft loans to replace heavy equipment. This option is particularly aimed at mechanical pit emptiers and would require some form of support (a financial guarantee, for example) to be provided by the local authority;
– a pit emptiers' **mutual fund**. This fund, into which the pit emptiers invest with local authority support, can be utilized to assist a pit emptier cover the cost of renewing his equipment.

These two options are somewhat ambitious, however, and require not only clear and sound organization of the pit emptying profession, but also strict rules governing the use of a negotiated loan or the right to draw from a mutual fund.

Small-piped sewerage systems

Experience has shown that it is difficult to obtain payment (through charges) from users for use of a small-piped system. As such, it would appear to make little sense to require users to cover renewal costs through regular installments into a renewal fund. Instead, it is preferable to obtain financing for small-piped system renewal from the local authority budget, topped up by national or international external funding if required.

CHAPTER 5

Financing the disposal and/or treatment of wastewater, excreta and sludge products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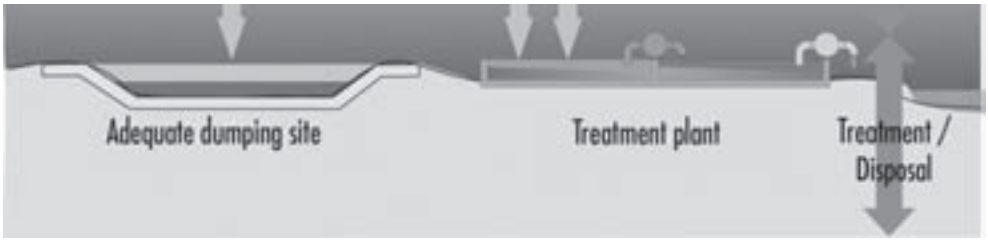
P 563-25-71



What needs to be financed and what are the principal issues?

TABLE 12. The different categories of expenditure for the disposal/treatment segment

CATEGORY OF EXPENDITURE	TYPE	PRINCIPAL ISSUES
Preparatory studies and assessments (location, technical and financial feasibility, design, environmental impact)	STU	It is sometimes difficult to obtain finance for the preparatory studies as certain partners prefer to focus on funding infrastructure
Contracting authority assistance	STU	These two, fundamental, aspects are often overlooked or not afforded sufficient importance
Capacity-building	STU	
Acquisition of land and construction of the disposal or treatment site	INV	The financial requirements are considerable and the local authority is rarely able to finance this investment alone
Operating the disposal or treatment site	OPEX	It is difficult to recover operating and renewal costs from revenue from charges only (paid by either the users or pit emptiers)
Renewing the disposal or treatment site facilities	REN	

How to finance the studies

The **various preparatory studies** (geo-physical studies, environmental and social impact assessments, technical and financial feasibility studies, location assessments, etc.) are vital and need to be undertaken by qualified experts. Regardless of whether the contracting authority is the local authority or a (public or private) operator, there are 3 distinct approaches possible for financing these studies and which can be used in combination:

– financing from the contracting authority's own budget;

– funding from public subsidies (from the state or through official development assistance or decentralized cooperation);

– loan from a national or international banking institution or development bank.

Given the issues associated with the disposal and treatment segment and the complexity of the studies that need to be undertaken, it is often necessary and highly recommended that **contracting authority assistance** is provided. As this component is directly linked to infrastructure construction, it is often more logical and straightforward to include this in an overall 'investment + contracting authority assistance' budget. The different possible means of financing the assistance provided to the contracting authority will, therefore, be dealt with in the following section (financing investment).

Capacity-building is essential for ensuring the facilities are operated correctly, particularly when the operator or local authority does not already have the necessary skills in place. Capacity-building will primarily be provided to the operator's staff and the local authority's technical departments responsible for monitoring and controlling the management of the future wastewater treatment plant. The two funding options for capacity-building most likely to lead to effective and sufficient financing are:

– finance from the local authority's or national operator's own budget;

– funding from public subsidies (from the state or through official development assistance or decentralized cooperation).

How to finance investment for the disposal and treatment segment

Investment costs for the final segment of the sanitation chain pertain to the acquisition of the site (land) and its subsequent development (real estate: facilities and equipment). The infrastructure usually belongs to the local authority or sanitation service operator. In some very rare cases, the local private operator is the investor, manager and owner of the infrastructure. Regardless of the institutional set-up, however, there are 5 main possible means of financing investment in the treatment segment.

- The first option to explore is that of financing investment from the local authority's/operator's **own budget**.

– Whatever the situation, all or part of the investment cost should always come out of the budget of the local authority, who will be the asset owner. However, due to the usually high costs involved, it is rare to find a local authority able to finance the total cost of investment alone.

– If there is a (public or private) sanitation operator active in the local authority area then, depending on his self-financing capacity, he may be able to cover part or all of the investment within a concession-type contract framework (investment in exchange for the exclusive right to operate the facilities over a period of time proportional to the amount invested).

Box 7

Using a local tax to finance sanitation

Whether to supplement funding from its own budget or from a bank loan, it is possible for the local authority to finance all or part of the investment costs by adding a sanitation tax onto the water bill.

- A second option would be to take out a **loan from financial institutions** (national or international) to top-up the local authority's or sanitation service operator's own funds.

- In certain countries there are **national public subsidies** available specifically for sanitation. Regardless of the tools used to provide access to these subsidies (permanent funds, conditional transfers, etc.), the local authority or operator is strongly advised to seek out these financing opportunities. As a general rule, the local authority needs to contribute a portion of its own funds to benefit from these subsidies and needs to demonstrate that the project is financially viable.

- Another common option used to top-up insufficient local financing is through **external public subsidies from bilateral or multilateral cooperation**. This financing can take the form of either a donation or a relatively low-interest loan, depending on the size of both the local authority and the investment.

- Finally, through **decentralized cooperation**, local authorities in Northern countries are also able to provide subsidies directly to their Southern counterparts. In some cases, the local authority from the North can also provide technical expertise, either through its own staff or by bringing in independent experts.

Ultimately, it is rare that only one single finance mechanism is used. The most practical funding method is through co-financing, where national or external financing is associated with local funding.

The table below lists the pros and cons associated with each of these financing options for investment made by the local authority or (public or private) sanitation service operator.

Box 8

Decentralized cooperation supporting the construction of a treatment plant in Senegal

Lorient (France) has been twinned with Cayar (Senegal), a town of nearly 20,000 inhabitants, since 1998. Following a study phase, the two local authorities defined development of a treatment plant. The Yéri Seck project was created to construct a wastewater treatment unit of 6,000 population equivalents. The station consists of a pumping station (with an energy dissipater, grit settlement tank, sump pumping station) and a treatment plant (with clarifier, pond and infiltration basin upstream). To undertake this project, the local authority of Cayar received support from the town of Lorient, the Regional Council of Brittany, the French Ministry of Foreign and European Affairs and the Loire-Brittany Water Agency.

TABLE 13. Pros and cons of the five options for financing investment in the disposal and treatment segment

OWN BUDGET	**For a local authority.** Funding from the local authority budget, even if only a relatively low contribution, is highly recommended: it demonstrates strong political will on the part of the local authority to tackle wastewater treatment issues and enables additional financing to be raised more quickly and easily. **For a sanitation operator.** Financing from the (public or private) operator's own budget can be stimulated, or hampered, by the specifications setting out the type and scope of its activity. Nevertheless, a financial contribution from the operator, even if only a partial or small amount, will be seen as a sign of intent and serve to encourage additional funding.
LOAN	**For a local authority.** The borrowing capacity of a local authority is directly linked to its capacity to repay the loan. Those best placed to negotiate a loan from an international financial institution or bank will, therefore, be the large-size local authorities in good fiscal health. **For a sanitation operator.** A national-scale sanitation service operator, whether public or private, will usually be well-versed in negotiating bank loans. This experience should, therefore, make it easier to access loans from banking institutions.

NATIONAL PUBLIC SUBSIDIES	**For a local authority.** If there is national funding available to local authorities for sanitation then it is of course worth the local authority applying for these subsidies, provided it fulfils all the conditions. **For a sanitation operator.** Public national operators are often eligible for national subsidies. This funding option is one that should, therefore, be fully explored. In contrast, private national operators will find it harder to access this type of facility. However, given they serve the general public interest, it is always possible for these private operators to explore the national subsidy option where there is a specific contractual arrangement (the state and/or local authority remains the owner of the subsidized equipment and the private operator manages this equipment under concession).
BI- AND MULTILATERAL SUBSIDIES	**For a local authority.** In practice, local authorities have limited access to international subsidies due to a lack of suitable funding mechanisms. However, some opportunities do exist and these types of subsidy are currently on the increase, notably as part of international calls for tenders. **For a sanitation operator.** National, public sanitation operators are often regular users of public subsidies and more and more bi- and multilateral partners are becoming willing to invest in the treatment segment of the sanitation chain. Although accessing these international subsidies may prove more difficult for private operators, this option is still worth investigating.
DECENTRALIZED COOPERATION SUBSIDIES	**For a local authority.** Local authorities are, by definition, the main partners in decentralized cooperation. As such, it would be perfectly reasonable for a local authority in Africa to ask its Northern country counterpart for financial support to fund investment in the treatment segment of its sanitation chain. **For a sanitation operator.** Although there have so far been relatively few examples of this, decentralized cooperation can also support sanitation operators' investment: directly, in the case of a public operator, by contributing to a fund set up by the public operator specifically for financing investment in the treatment segment; indirectly, where there is a private operator, by contributing to a public fund set up in the local authority's name (as the private operator is the manager of the facilities, not the owner).

How to finance operating costs for the treatment segment

Depending on the level of development of the sanitation chains within a given area, effluent can reach the treatment plant in one of three main ways:

– through small-piped sewerage systems and large diameter sewers (also called conventional sewerage systems);

– the pit sludge from on-site sanitation is brought to the treatment plant in vacuum trucks or discharged into the sewerage system at designated entry points.

For the reasons stated at the beginning of this guide, this publication does not deal with either conventional sewerage systems or industrial and commercial wastewater. However, the treatment plant is the final destination of effluent regardless of the chain considered (from on-site sanitation through to conventional sewers). As such, it is recommended that the treatment plant's operating costs be covered by all the different users, regardless of the sanitation chain used.

Operating costs vary in accordance with the technical solution chosen for the equipment and infrastructure used within this final segment. However, operating costs will always be incurred and it is of fundamental importance that these be recovered locally.

Therefore, it is also necessary to forecast operating costs for a disposal site that receives sludge delivered by vacuum truck from on-site sanitation only, even though these costs may be very low.

Require payment from users connected to the conventional sewerage system

Whilst this option is suitable for a treatment plant, it is less so for a simple sludge disposal site. As water supply consumers connected to the conventional sewerage system are the major producers of wastewater, it seems only fair that they should pay for wastewater treatment (and, by extension, the treatment plant's operating costs). As such, the 'polluter pays' principle is applied.

A sanitation surcharge needs to be included in the legal texts currently in force. Although rarely popular among users and consumers as it increases the water bill (and sometimes has to be paid by users connected to the water supply network, but not the sewer system, which is perceived as unfair), this surcharge is nevertheless highly useful as it provides a sustainable source of finance, particularly where the same operator or local authority is in charge of both the water supply and sanitation services. This should, therefore, be the first option explored.

It is not only domestic users who are connected to the conventional sewerage system. It is also used by commercial activities (particularly hotels), industries[17] and 'institutional' users (healthcare centers, hospitals, schools, public buildings, training centers, etc.). At least the first two of these user groups have a certain capacity to pay. It is, therefore, very important that all types of user contribute to the operating costs through a pricing system that is adapted to their individual attributes.

Charge for sludge disposal

Based on the fact that economic activity within the sanitation chain mainly centers on the access segment (on-site sanitation facilities construction market) and evacuation segment (mechanical pit emptying market), it would seem only sensible to use some of the available funds from these two segments for the disposal and treatment segment. In those towns that predominantly use on-site sanitation, for example, cash flow is particularly active within the evacuation segment as a household requires the services of a vacuum truck operator every 2 to 3 years. Therefore, one possible option would be to introduce a surcharge on sludge disposal at the treatment plant. There is a risk associated with this, however, as vacuum truck operators unhappy at seeing their costs increase may be inclined to dispose of the sludge illegally. To mitigate this risk, the option of charging for sludge disposal, if implemented, needs to be accompanied by activities to inform and communicate with the vacuum truck operators.

Tax credit. All commercial activities have to pay local or national tax and the pit emptying sector is no exception. As a result, the local authority may decide to encourage vacuum truck operators to dispose of their sludge at the treatment plant by offering them tax credit. For example, for each visit to the treatment plant, the vacuum truck operator has to pay 10,000 CFA Francs, 5,000 CFA Francs of which he will be able to claim back in surcharge credit. This type of approach can act as a highly effective incentive. It does, however, mean that it will be necessary to amend the tax rules, which may not always be straightforward. In addition, there also needs to be a relatively effective tax collection system in place.

Box 9

Charging to use the disposal site

Certain towns have introduced a charge to use the disposal site as a means of recovering operating costs (e.g. Dakar and Dar es-Salaam). The sum the vacuum truck operator has to pay depends on the contents or quantity of the sludge being transported. To ensure the vacuum trucks actually use the disposal site and not turn to illegal dumping, there are a number of criteria that need to be met: the plant must be nearer and more accessible than the usual dumping site (so they save fuel) and illegal dumping must be strictly forbidden and punishable by a heavy fine (this is on the assumption that the plants have been correctly sized and so are able to accept sludge from the whole town). An initial or partial exemption could also be considered as a means of attracting vacuum truck operators.

Sell licenses to mechanical pit emptying operators

Although it can be very competitive in large cities, the mechanical pit emptying market is a highly dynamic and relatively lucrative sector.

17 There are specific issues associated with the treatment of wastewater from industrial activities as the contents of this wastewater (chemical pollutants and heavy metals) may mean it cannot be treated with domestic wastewater (which has a mainly organic load). It is often necessary to require industries to finance a facility to pre-treat the wastewater prior to it being discharged into the conventional sewerage system.

There are a number of public service commercial activities that operate under a license. Through this system, a sum is paid (to the local authority or the state) for the right to conduct an activity that, although in the public interest, nonetheless generates revenue. The advantages of introducing a (monthly or annual) license for mechanical pit emptiers are twofold: it provides a regularly updated overview of the mechanical pit emptying sector; it provides regular income that can be used to cover all or part of the treatment plant's operating costs. In order to implement this type of financing mechanism, a prior economic assessment needs to be conducted, in particular to ensure the license fee is set at an acceptable level. If the license is too expensive, it becomes prohibitive and liable to encourage fraudulent practices within a segment vital to the whole chain; indeed, the cost of the license is then passed onto the final users through the pit emptying tariff.

Use the local authority budget

The local authority may decide to cover the operating costs of the treatment plant out of its own budget. This has to be long-term commitment: the budget item for financing the treatment plant's operating costs must be systematically renewed each year when the budget is approved. An accurate upfront estimate of the operating costs is also required for this option to be successful.

How to finance the renewal costs of the treatment segment

The investment costs of treatment facilities and equipment are often high. As a result, their renewal costs are also high. Financial rules are likely to have been set out in legislation (local and national strategies) to ensure treatment infrastructure renewal needs are met. If this is not the case, it is important to bear in mind that the levels of financing required to replace all or part of those facilities that have reached obsolescence can be sizeable. There are two possible approaches to meeting this funding challenge:

– **anticipate future renewal costs**. This involves making regular deposits into a bank account to be used when required. In this instance, potential sources of finance are mainly the sanitation surcharge on the water bill, the local authority budget or money deducted from the sanitation operator's profits;

– **consider renewal as an investment**. In this approach, no regular savings deposits are made and so finance needs to be raised in the same way as that for investment (see above).

Utilizing the by-products, or the 4th segment in the chain

Informal practices that utilize wastewater or sludge are widely developed among the urban population in Africa. However, these practices can pose a serious health risk if not properly supervised.

Whilst utilizing the by-products of wastewater and sludge treatment is an option not to be overlooked, it should not necessarily be considered a means of cost recovery for the sanitation chain.

Indeed, great care needs to be taken prior to embarking on this approach. Financially viable examples of utilizing these by-products are few and far between, not only because composting or biogas involves additional investment and operating costs, but also because economic opportunities are not always easy to find (in urban areas, for example, there is often low demand among truck gardeners for fertilizer that is not free-of-charge). Adopting a wastewater utilization strategy means developing a financial chain alongside and separate to the sanitation chain, focusing particularly on the economic opportunities and viabilities of this chain. Furthermore, development of this utilization aspect should not take focus away from the main aim, which is the effective and sustainable treatment of liquid waste.

Box 10

Utilizing wastewater, example of Pedra Badejo, in Cape Verde

Pedra Badejo, near Santa Cruz in Cape Verde, is a coastal town of 13,500 inhabitants. In 2009, a wastewater treatment plant was built downstream from the town's sewerage system with funding from the Arab Bank for Economic Development in Africa. The technical option chosen was that of a drying bed with a treatment capacity of 1,500m^3/day.

The challenge facing the local authority was twofold:

- firstly, to encourage users to connect to the sewerage system using subsidies of up to 380 euros per household;
- secondly, to finance the subsidies granted to households, plus the treatment plant's operating costs (these being relatively low due to the technical solution used) through the resale of treatment by-products.

The planned wastewater utilization strategy included both reselling the treated water to nearby farmers for irrigation, and directly irrigating a banana and sugar cane plantation (the latter crop to be used to make rum) downstream from the treatment plant.

The results of this utilization strategy and, in particular, its financial viability are far from satisfactory, however:

- only 40% of households are connected to the sewerage system and produce less than 300m^3 of effluent per day, or 20% of the plant's treatment capacity;
- income generated from the resale of treated water leaving the treatment plant is too low to cover the various costs.

The economic model of the wastewater utilization strategy for Pedra Badejo was based on the following assumption: the volume of effluent will produce sufficient quantities of treated water to support a whole industrial-truck gardening chain: from irrigating the sugar cane to manufacturing the rum. In fact, the volumes treated are significantly below expectations and the original economic model has turned out to be unprofitable.

This example shows that, whilst wastewater utilization is usually technically and environmentally viable, financial viability can be harder to achieve. Wastewater utilization must be thought of as a new chain, one that is both completely different to that of sanitation and highly commercial: what economic opportunities exist for the by-products? What level of income is it reasonable to expect? How much of this income needs to be reinvested into the sanitation chain to finance some of its costs and support its development?

Filter and drying beds

Banana plantation, irrigated with treated water

Source: Marco Forster (Ecopsis). Mini-case study undertaken in 2011 for Lux-Development as part of development work for project CVE078, financed by the Cape Verde / Grand-Duché du Luxembourg cooperation.

Financing sanitation overview

TABLE 14. Overview of the financing options available for the three segments of the sanitation chain

	TRANSVERSAL ACTIVITIES		
	What needs to be financed		
STUDIES	Local assessment Demand analysis Local strategy Sector monitoring & evaluation Capacity-building for local stakeholders responsible for managing the sector		
	ACCESS SEGMENT		**EVACUATION SEGMENT**
	What needs to be financed	How is it to be financed	What needs to be financed
STUDIES	demand analysis	local authority budget (+ state and external partner subsidies)	On-site sanitation: study of the pit emptying market + disposal plant assessments (location, design, environmental impact, etc.)
	user awareness-raising		Small-piped sewerage system: location assessment and design study
	capacity-building		On-site sanitation / small-piped sewerage system: capacity-building
INVESTMENT	latrines, showers and soakaways in households + any domestic pre-treatment equipment	households + loans, payment facilities or local savings club OR households + cash subsidy OR households + subsidy in kind	On-site sanitation: shovel, bucket, cart
			On-site sanitation: vacuum truck
			On-site sanitation: disposal sites
			Small-piped sewerage system: simplified network
OPERATION	maintenance products + cleaning products + soap	households	On-site sanitation: pit emptiers remuneration + transport costs
			On-site sanitation: disposal sites
			Small-piped sewerage system: care & maintenance costs
RENEWAL	no renewal costs for the access segment (but rather progressive improvements)		On-site sanitation: manual and mechanical pit emptying
			On-site sanitation: renewal of disposal sites
			On-site sanitation / small-piped sewerage system: renewal of equipment

TABLE 14.

TRANSVERSAL ACTIVITIES			
How is it to be financed			
Local authority budget + state budget + external aid, if available			STUDIES
EVACUATION SEGMENT	**TREATMENT SEGMENT**		
How is it to be financed	What needs to be financed	How is it to be financed	
local authority budget (+ state and external partner subsidies)	preparatory studies (location + technical & financial feasibility + design)	own budget (local authority or operator), public subsidies (state, ODA, decentralized cooperation) or financial loan	STUDIES
local authority budget + external subsidies + households (optional)	contracting authority assistance	See the INV component of the treatment segment	
local authority budget + external subsidies	capacity-building	own budget (local authority or operator) or public subsidies (state, ODA, decentralized cooperation)	
own or local authority or national operator funds	treatment plant	own budget bank loan national public subsidies bi- and multilateral subsidies decentralized cooperation subsidies	INVESTMENT
bank loans, subsidies or own funds			
local authority budget (+ state and external partner subsidies) OR private investment			
households (with loans, payment facilities or local savings club) + subsidy (local authority + state + ODA)			
users, sometimes the local authority	operator's remuneration + care & maintenance costs	surcharge on the water bill local authority budget utilization of wastewater treatment products	OPERATION
sanitation surcharge + local authority subsidies			
users (monthly charge, breakdown insurance) and / or local authority			
mutual funds or negotiated loans	renewal of treatment equipment	surcharge on the water bill local authority budget amount deducted from profits (operator)	RENEWAL
local authority budget + external financing			
local authority budget + external financing			

Further information

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- *Réutilisation des eaux usées traitées : perspectives opérationnelles et recommandations pour l'action*, AFD, 2011
- *WASH-Cost*, www.washcost.info

Case studies

The recent field data and information contained within the case studies listed below was used to inform this current publication. It is possible to consult these case studies on: **ww.pseau.org/finasst**

- *L'assainissement autonome de Filingué*, Niger
- *L'assainissement autonome de Dogondoutchi*, Niger
- *Le Plan Stratégique d'Assainissement de Bobo-Dioulasso*, Burkina Faso
- *L'accès à l'assainissement en milieu rural*, Vietnam
- *Vidange des latrines et fosses septiques*, GIE Diabeso Saniya à Bamako, Mali
- *L'égout à faible diamètre de Banconi-Flabougou*, Bamako, Mali
- *Station de traitement de boues de vidange de Samanko II, commune IV de Bamako*, Mali
- *Station de traitement des déchets liquides de la zone industrielle du bord du fleuve, Commune II*, Bamako, Mali
- *Le PADE - Processus d'Amélioration Durable de l'Environnement dans les quartiers péri urbains pauvres, Rufisque*, Senegal
- *Programme d'Amélioration de l'Assainissement des Quartiers Périurbains de Dakar* - PAQPUD, Senegal
- *Egout à faible diamètre et latrines VIP d'Hippodrome-Extension*, Bamako, Mali

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Financing sanitation in Sub-Saharan Africa

Methodological guide n°6

This guide provides highly practical decision-making tools for identifying the type of financing mechanisms to be implemented for on-site sanitation and small-piped sewerage systems.

Initially within this publication is a detailed list of all costs to be recovered: investment, operation, maintenance, studies and accompanying measures, for each segment of the sanitation chain.

Then, for each segment and in accordance with the type of facility and expenditure required, the potential sources of finance are examined and compared, as are the relevant means of mobilizing and allocating finance for the benefit of users.

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Publication prepared with financing from the French Ministry of Foreign and European Affairs

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