

# Sanitary systems in Ouagadougou, Burkina Faso: Current practices and future potential

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## Abstract

This paper aims to establish the current sanitary situation within the formally settled quarters of Ouagadougou. The current sanitary trends will be presented and analysed and a very brief overview of some of the measures considered necessary for the introduction of a closed-loop oriented system of domestic wastewater management in this context will be given.

## Introduction

Ouagadougou is the capital of the land-locked West African Sahel nation of Burkina Faso. The city currently has a population of 1.2 million, with an estimated growth rate of 9.8%. Average temperatures are around 30°C (max. 40° from May – June, min. 19°C from December – January). The city's water supply is reliant on surface water resources, with the major source being the reservoir at Loumbila (30km west of the city), supplemented by three drinking water reservoirs within the city limits. In recent years the national water supplier ONEA (l'Office National de l'Eau et de l'Assainissement) has been unable to ensure a continuous water supply in the dry months of May, June and July, and there is an urgent need for the new drinking water reservoir at Ziga (50km west of the city) to come into service (planned for 2007). Groundwater resources represent a relatively small percentage of the public water supply (10%), due to the hydrogeology of the region. This small percentage is however not unimportant as it represents a relatively reliable fresh water reserve in dry seasons.

At the start of the 1990's a quarter of all illnesses in Ouagadougou were attributable to poor sanitation. The poor sanitary situation was aggravated by the wide range of institutions implicated in the provision of sanitary services and their lack of coordination. Since 1992 a concerted effort has been made by ONEA to improve the city's sanitary situation with the development and implementation of a strategic plan for the "classical" sanitary disposal of wastewater (a central wastewater treatment lagoon for industrial and medical wastewater; VIP latrines and closed greywater soakaway pits for decentralised domestic sanitation; latrine blocks in schools). The original strategic plan for decentralised domestic sanitation was tested during a 3 year pilot phase in two sectors of Ouagadougou, eventually being expanded to the entire population living within the officially recognised city limits (i.e. the sanitation needs of informal

settlements are not considered within the plan). Today there remains a huge demand on behalf of the population that sanitary facilities be improved.

During a three-month period, from August to November 2002, the sanitary installations in Ouagadougou were visited with sanitary extension agents of ONEA. These included new or rehabilitated domestic installations as well as older, more traditional means of sanitation. The latest reports on the sanitary situation were collected and analysed and compared to the findings of the field visits. In addition to establishing the local sanitary situation, the legislative, social and agricultural conditions were examined in order to assess the ease with which ecosan systems would fit into the local context.

Additionally, a very successful ecosan advocacy workshop was organised with decision makers from governmental and non-governmental agencies, and from the fields of sanitation, agriculture, education, research, population participation, women's groups etc. being invited. The aim of the workshop was both to provide information on the possibilities to implement ecological sanitation and to establish the level of interest and opinion of the participants.

## Results

### 1. The domestic sanitary situation

In Ouagadougou, decentralised domestic sanitary installations dominate. The present construction of a sewage network and centralised wastewater treatment lagoon is planned only to serve the city centre, the hospital, the main hotels, and the industrial park. Each individual household is responsible for its own "waste"water management, which is chosen according to the household needs and financial means.

Greywater from domestic use is for the most part disposed of either by allowing it to flow freely across the ground surface, or channelled toward an open soakaway pit. These also serve as depositories for domestic waste and as breeding grounds for disease.

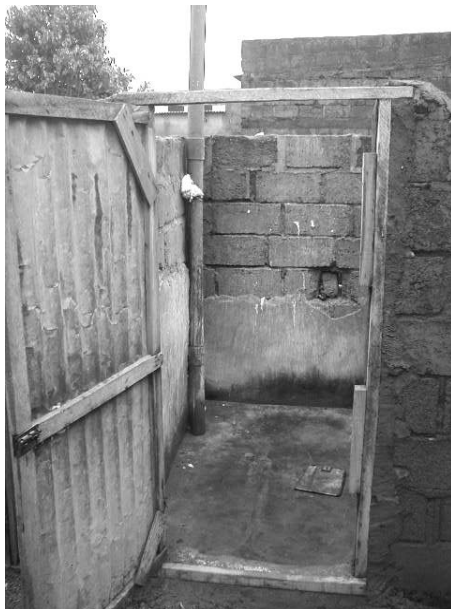


Fig 1: A "traditional" pit latrine

Traditional pit latrines (often doubling as showers) represent around 80% of all toilet facilities, compared to an estimated 70% in 1991 before the strategic plan was introduced. Improved Ventilated Pits, which have been extensively promoted over the last 10 years only represent around 5%. This is due in part to the high construction costs for such a latrine as prescribed by ONEA (approx. 450 Euro, excluding a subvention for the floor slabs, aeration pipe and doors). An estimated 7% of the urban population remain without access to any form of sanitary installation in their courtyards – unchanged from 1991, before the strategic sanitation plan was introduced – and defecate simply in the surrounding environment.

Most homes (around 75%), if choosing to construct a new sanitary installation, will simply engage a local mason who will charge much less than those trained by ONEA to dig an unlined single pit and build the superstructure. These installations, while all being similar, are not constructed according to a particular plan. Pits normally average 4m depth, with exceptions in the area of the drinking water reservoirs, where the high groundwater level has limited this depth to around 2m. Fig. 1 shows a well maintained latrine in a courtyard with 7 apartments. In this case the single pit also serves to collect shower water, and pit ventilation is provided by means of a PVC pipe.

The emptying of latrine pits is most often performed by hand when the pit is almost full, although several firms do also offer a vacuum service (cost around 22 Euros). The contents are either left in a public place to dry completely, after which they are used for gardening/agricultural purposes, or they are taken by the vacuum tankers to the outskirts of town where they are freely dumped or sold to farmers.

No particular anal cleansing method was found to be particularly dominant. Users were equally likely to use water as they were to use paper, pieces of wood, or other material. Along with receiving the blackwater, the pits are also used to dispose of greywater (from showering), and domestic solid waste, such as plastic bags, broken bottles, used batteries etc. This leads to a rapid filling of the pits with various materials and a highly heterogeneous content.

## *2. Organisational responsibility and legislation*

Today, as in 1990, a wide range of both national and communal bodies have a responsibility for sanitation provision, however only ONEA, who charge around 1.5 Euro cent per m<sup>3</sup> of drinking water sold for the collection and treatment of wastewater, appear to have any funds to intervene in the sector. However, while other organisations may not dispose of sufficient funds to finance sanitary measures, they do have responsibilities in this regard. The government ministries involved in sanitation include the Ministries of Water; Health and Social Action; the Environment and Tourism; Basic Education; Secondary and Superior Education and Scientific Research; etc. Added to this are communal authorities that are gaining increased responsibility due to the decentralisation process currently underway, as well as private enterprise and NGOs. No effective coordination between these actors is currently apparent.

This multitude of actors and responsible authorities has contributed to a high degree of uncertainty and intransparency in the provision of sanitation. Often the actors even within government bodies are not aware of the activities / responsibilities of other government bodies.

On a legislative level it is stated that for an individual to obtain a construction permit in Ouagadougou, evidence must be provided that a form of sanitation will be constructed. The type of installation must not be stated, nor are there any formal instructions laid down by the authorities, which could regulate the performance of the sanitary facilities.

## *3. Urban agriculture*

Agricultural activity is widespread among the population of Ouagadougou, and can broadly be divided into four different forms:

- a) Officially sanctioned urban agriculture – this is practised for the most part on the land surrounding the drinking water reservoirs within the city limits. 2 main types of cultivation are pursued: Individual gardeners, for the most part women, cultivate vegetables for sale and consumption within the city, while another mainly male group tend tree and ornamental plant nurseries. These groups currently use industrial and medical wastewater collected from the open storm sewers, to irrigate and fertilise their plants.
- b) Inter-domiciliary agriculture – this is practised within neighbourhoods where empty plots of land, sometimes of only a few square metres are planted with a wide range of crops (maize, millet, gumbo, ground-nut etc.) by local people in order to supplement their income/diet. The town council formally forbids the practise.
- c) Agriculture within the confines of a family compound – most families will plant a range of food-crops in their yard to supplement their diet. Crops include maize, possibly millet, peppers etc.
- d) Agriculture on the outskirts of the city – here, agriculture is practiced on a large scale with much of the population having plots where they continue to cultivate, even if they are employed in other sectors.

Due to the scarcity of water resources in and around Ouagadougou, and the expense of mineral fertilisers, many cultivators, in particular those engaged in agriculture as their main source of income, currently use wastewater or the sludge from emptying pit latrines to fertilise their crops.

### **Possibilities to introduce closed-loop sanitation systems in the Ouagadougou context**

The introduction of ecosan principles to the wastewater management in Ouagadougou could play an important role in helping the city's increasing population face the triple threat of poor sanitation, decreasing water quality, and an increasing demand for food. However there are also several factors that could prevent a successful implementation of the approach. Any intervention should start on a pilot level, identifying potential users who are in need of sanitary facilities and will be able to use the products of an ecosan system (either for their own activities or by identifying a potential market for them). Such groups have already been encountered who have expressed a great deal of interest in closed-loop systems. One proposed model to assist implementation would require action on both a legislative and executive level. Some of the proposed measures are:

#### **Legislative level:**

- Clearly establish one responsible body that is in a position to oversee sanitary measures and with the political responsibility to carry out its mandate. While not only relevant for the implementation of ecosan systems, this measure is of great importance in order to ensure efficiency of operations.
- Clarify legislation to obtain a construction permit. In order to better control the effects of sanitation on public health, the environment etc. basic guidelines should be given providing the framework of how sanitary systems should perform. Such a framework is envisaged to both regulate the impact of the sanitary system and provide an impetus to private enterprise (who currently provide the majority of installations).

#### **Executive level:**

- Identify the most suitable sanitary system to serve the needs of the users
- Awareness raising activities to propagate the full range of benefits of a closed-loop system
- Identify markets for the recyclates (whether it is the user or if it could be sold on)
- Investigate the logistical possibilities for transport / distribution of recyclates

Social acceptance for the agricultural use of the recyclates would appear not to pose too great a problem at present, and is in fact preferred by many to the current methods of crop fertilisation. While the environmental benefits of closed-loop systems were welcomed it was the income generating possibilities associated with ecosan systems that provoked a great deal of interest among those questioned (particularly women's groups), and should be considered as a strong motivating factor for participants.

### **Conclusion**

Due to an expressed need for improved sanitary facilities, an active agricultural sector requiring low-cost fertiliser, the need to protect surface water resources and the possibility of the creation of income generating activities, a great deal of interest exists in Ouagadougou regarding the implementation of closed-loop sanitation systems.

This interest however faces several problems, such as the costs of introducing new sanitation concepts and systems, unclear institutional responsibility, social practices of using toilets as receptacles for all kinds of waste and a certain resistance to new ideas among those currently promoting other forms of sanitation. A successfully implemented pilot project will help serve to overcome these difficulties.