

## Fecal sludge management program : Lessons learned

Personal protective equipment



Road safety equipment for trucks



Discharge of non authorized products in FSTPs



Manual emptying activity

Goodbye Aliou Diop



New :  
Innovative  
model of  
toilets  
being tested  
in dakar



## The call center : an innovative tool



On-site sanitation is the most widespread system in Senegal for the management of domestic wastewater. In the Departments of Pikine and Guédiawaye (Region Dakar, Senegal), which have 1,421,060 people (RGPHAE, 2013), almost all people (96%) use this type of sanitation system. This results in a considerable production of fecal sludge (1,130 m<sup>3</sup>/d). **p 4**

## Process for the Certification of Emptying Companies



In the Departments of Pikine and Guédiawaye (Region of Dakar, Senegal), where there are 1,421,060 people (RGPHAE 2013), almost all households (96%) use on-site sanitation facilities for the management of domestic wastewater. This results in a significant production of fecal sludge (1,130 m<sup>3</sup>/day), most of which is collected by trucks. **p 8**

## Payment of domestic septic tank emptying service through mobile money



In the Departments of Pikine and Guédiawaye (Region Dakar, Senegal), which have 1,200,000 people, on-site sanitation is present in almost all households. This results in a considerable production of fecal sludge estimated at 1,028 m<sup>3</sup>/day in 2014.. **p 25**

# Lessons Learned



Dr. Mbaye Mbégué

Less than three years after the start of its implementation, it is not certainly the right time to assess the Program for the Structuring of the Fecal Sludge Market (PSMBV), but a few lessons learned from its innovative approaches and tools can be proudly displayed and shared. Indeed, a long way has been gone through constraints and successes and many activities have been carried out with mixed outcomes to try and improve the living conditions of poor people in the suburban areas of Pikine and Guédiawaye in the management of fecal sludge. This has been also a way to relieve them from a continuing deteriorating environment by developing lifesaving reflexes and reducing the impacts of several endemic diseases related to lack of cleanliness.

In this respect, the PSMBV fits naturally in the context of the Millennium Development Goals that aim, among others, to halve the number of people

without access to adequate sanitation and who have raised this issue before the international scene. Already in 2000, the development aid actors noted with dismay that one third of the global population, or 2.6 billion people, did not access improved sanitation facilities.

According to the WHO/UNICEF Joint Monitoring Program for Water Supply and Sanitation ([www.wssinfo.org](http://www.wssinfo.org)), among the portion currently served in developing countries, there are at least 1.1 billion urban dwellers, who use sanitation facilities through latrines or septic tanks. This makes most cities in these countries "latrine cities."

Sanitation companies in these cities mostly lack human and financial resources to meet the challenges facing their respective countries. Indeed, several studies report that most of the treatment plants built in developing countries are rapidly deteriorating or abandoned. Also, it should be noted that the lack of sanitation facilities and poor management of water and sanitation infrastructure are responsible for the deaths of 1.6 million people per year, 90% of whom are children under five.

Moreover, technological choices and urban sanitation management strategies in developing countries, especially in Africa, suffer from a lack of integrated vision. Indeed, investment in this sector does not sufficiently take account of the imperative need to optimize and reduce energy costs, to enhance treatment by-products or to make sanitation management a full economic activity participating in urban development.

However, sanitation has a real economic impact. It is now proved that every dollar invested in sanitation generates a net profit of 7 dollars.

It is in light of this huge potential, which is little known but should be valued to make the sector profitable and further improve the living environment, that the National Sanitation Office in Senegal (ONAS) is committed, through its fecal sludge program, to structure the on-site sanitation market. Its objective is to make it a profit sector able to meet the users' demand for sanitation services at costs compatible with their resources.

The organization in place is based on various tools, which, individually or jointly, aim to improve the functioning of a segment of the fecal sludge value chain or the whole chain itself.

Therefore a new approach of on-site sanitation has emerged as it considers the sector as a chain, a whole set. In its interventions, the program tries to act locally while thinking globally. Every developed tool not only aims to improve the segment concerned, but also, in conjunction with the others, to optimize the overall performance of on-site sanitation through improved profitability of emptying companies, main industry players, and decreased service cost.

From sludge collection to treatment and recovery through transportation, various tools have been developed and tested since the start of the program less than three years ago.

These tools include the provision of adapted toilets to people living in flood-prone areas, the organization of the demand for emptying services through the call center, certification as business organization tool, the guarantee fund as an instrument for the renewal of emptying trucks, the communications package, and so on. The interesting results so far obtained have motivated midterm sharing of these tools, which will certainly be optimized for the rest of the program, in order to make them the pillars of a sustainable model of fecal sludge management likely to be replicated in developing countries.

We hope you will enjoy reading this newsletter and look forward to providing you with the next issue!

Dr. Mbaye MBEGUERE

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## Program for the Structuring of the Fecal Sludge Market for poor people in Dakar suburban areas (Pikine and Guédiawaye)

### The call center: an innovative tool for the development of the fecal sludge market in Senegal

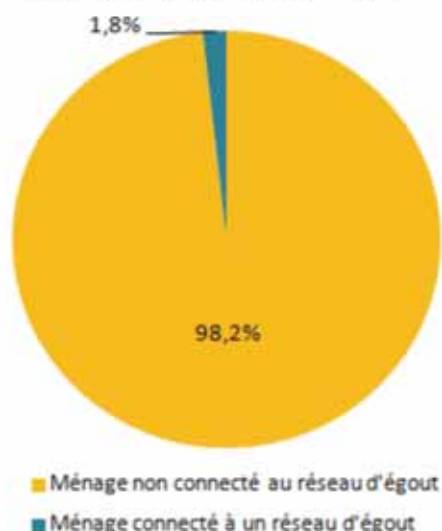
#### Context

On-site sanitation is the most widespread system in Senegal for the management of domestic wastewater. In the Departments of Pikine and Guédiawaye (Region Dakar, Senegal), which have 1,421,060 people (RGPHAE, 2013), almost all people (96%) use this type of sanitation system. This results in a considerable production of fecal sludge (1,130 m<sup>3</sup>/d). In addition, as the groundwater is shallow in many places in both departments, domestic pit emptying is performed at a relatively high frequency, twice a year on average. However, people often have difficulties to access emptying trucks when they need it. Besides, due to weak competition between the emptiers, the cost of mechanical emptying is high for a large segment of the population (the majority lives on less than \$ 2/day).

This is reflected by the widespread practice of manual emptying in Pikine and Guédiawaye. Thus, 43.8% of households have resorted to this practice, which negatively impacts on public health and environment reduces mechanical emptiers' market share on a potential market estimated at USD2.47 million.

In order to address this situation, the National Sanitation Office of Senegal (ONAS) has developed, with the financial support of the Bill & Melinda Gates Foundation, the Program for the Structuring of the Fecal Sludge Market (PSFSM), which is designed to take into account the whole fecal sludge management value chain in the departments of Pikine and Guédiawaye.

Mode d'accès à l'assainissement



The Program for the Structuring of the FSM and FSM value chain



In fact, the PSFSM consists of a set of complementary actions that all contribute to two ambitious objectives, which, apparently, seem incompatible: (i) to provide poor people and Pikine and Guédiawaye with a quality mechanical emptying service at the lowest possible cost and (ii) to help increase mechanical emptiers' incomes.

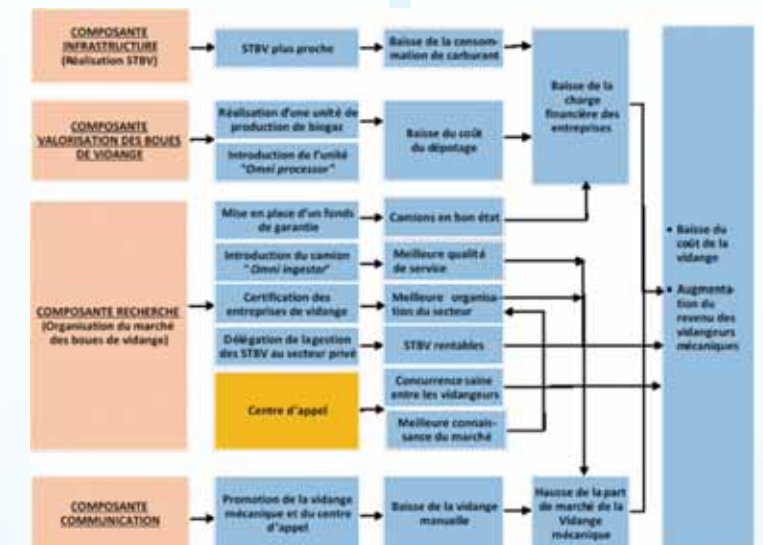
#### The objectives of the emptying call center

The main objectives of the Call Center dedicated to domestic septic tank emptying are:

- To modernize the fecal sludge sector through the use of ICT;
  - To facilitate the relationship between the emptier and the household towards a balance between emptying supply and demand;
  - To establish sound competition between the emptiers to reduce the cost of emptying;
  - To contribute to the decrease in the average emptying cost to curb the practice of manual emptying;
  - To contribute to the increase in the mechanical emptiers' market share in order to increase their incomes;
  - To improve the quality of service delivered by the emptiers;
  - To serve as a research tool to identify the most effective strategies in achieving the above objectives;
- Ultimately, the emptying call center is both an action and research tool, with its twofold purpose to improve the mechanical emptying market in Dakar and to identify the most effective improvement strategies in order to replicate them elsewhere.

#### The methodology for establishing the call center

The establishment of the call center required three types of activities: (i) preparatory activities (ii) activities for the operation of the call center, and (iii) the center's support activities.

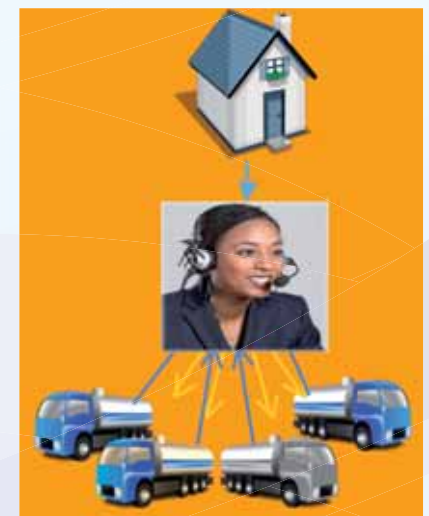


In the fecal sludge market organization system, the emptying call center plays a major part.

#### The preparatory activities for the establishment of the call center

These preparatory activities have been conducted for about twenty months and are successively as follows:

- Conducting studies intended to the following:
  - Identifying emptying companies in the Dakar region, their staffs, and trucks. The emptiers have been fully involved in the process;
  - Geo-referencing 60,000 households in the survey area through the registration of GPS coordinates of the pit;
  - Identifying people involved in pit emptying decision-making in the 60,000 households in the survey area: surname, name, phone number;
  - Geo-referencing enough primary and secondary reference points through their GPS coordinates. These points are used to help the emptier easily locate the household, for lack of a single addressing system known by the emptiers ;
- The design of the call center platform on, inter alia:
  - The definition of the terms of the emptying service contract between the household and the emptier through the call center;
  - The invitation of bidders for emptying applications,
  - The reception of bids,
  - The selection of the successful bidder,
  - Locating the household for the emptier using reference points,
  - Monitoring the quality of service,



#### Centre d'appel des boues de vidange



Un système d'hygiène et d'assainissement adéquat est essentiel pour la dignité, la santé et le bien-être de tous. Toutefois, ceci implique plus qu'un accès à une toilette acceptable et l'élimination sûre des déchets ; il comprend en effet des pratiques qui favorisent une bonne hygiène, un milieu de vie sain, mais aussi un accès facile à un service de qualité.



- The definition and application of penalties against the emptiers not complying with the contract terms,
- Defining the parameters to be exported for the research and monitoring the center's operations,
- Conducting bench tests to check, internally, the operation of the platform;
- Training of emptiers (rolling personal and other contacts participating in bids) for them to participate in bids from the call center;
- The physical establishment of the call center (premises and equipment);
- Recruitment and training of the call center staff (supervisor and operators).

Call Center Operating Activities

The scheme adopted to make the link between the customer (household) and the emptier is, for each emptying application, a bidding system through SMS. The customer, who wishes to empty his septic tank, calls the call center, provides key information on himself and the pit, and confirms the date and time when he wants the tank to be emptied. The call center then invites the emptiers by SMS for them to submit quotations for this service. At the end of the bidding period, it notifies the lowest bidder and the customer to confirm the service. Furthermore, the call center conducts quality monitoring by phone with both the household and the emptier.



This sanitation service bidding through a call center is highly innovative: it is a world first. It introduces a new service, the basic principle of which - ordering a service by phone - is unfamiliar to the majority of the Senegalese. In order to reduce the risk of failure by controlling and correcting it gradually, the call center has been gradually put into operation based on a phasing plan in three successive stages:



- the "Beta" stage » which consists of relatively short (approximately 1 month) in situ technical tests intended to: (i) test the operation of the tools developed through the call center, at a very small scale, and (ii) start the practical training of the call center staff. In order to generate a request to use the new service, the center is actively promoted in 150 households using posters, SMS, and home visits.
- The phase « Pilo » stage is a five-month practical test intended to: (i) test the operation of the tools developed through the call center on a specific and favorable population, at a small-scale (a small-scale area larger than in the beta phase),

une première mondiale  
Système d'appel d'offres pour  
un service d'assainissement  
via un centre d'appel

(ii) complete the practical training of the call (ii) center staff, and (iii) collect information for a good understanding of the call center's impact on emptying prices. Active promotion of the center is conducted with 2 000 targeted households in this area.

- The « Scaling » stage : This twenty-month stage allows the widespread use of the call center's services throughout the program area (Pikine and Guédiawaye), where information and awareness campaigns are conducted for the active promotion of the center and mechanical emptying. Lessons learned in "Beta" and "Pilot" Phases are taken into account to improve the service and prepare large-scale operation (the whole region of Dakar and gradually other regions of Senegal). Daily monitoring of the call center's activities is conducted for the gradual improvement of its platform and procedures. A business model will be developed at the end of this stage to clarify, among others, the aspects related to the management of customers, emptiers, and customer/emptier relation, and the sustainable funding source (s) for the operation of the call center.

The call center's support activities

Several support activities intended to facilitate the success of the call center are carried out at the same time through other components of the PSFSM, including:

- The gradual improvement in the call center platform based on a daily monitoring of its use;
- The implementation of communication campaigns for the promotion of mechanical emptying and the call center;
- The establishment of a guarantee fund to provide equipment to the emptiers;
- Geo-referencing of emptying trucks (installation of beacons);
- Initiation of a certification process for emptying companies.

These support activities are catalysts that greatly contribute to making the emptiers own the PSFSM, in general, and the call center, in particular.

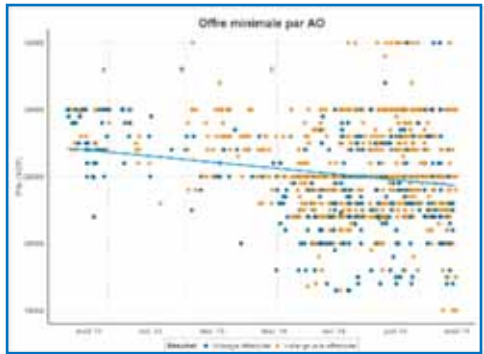
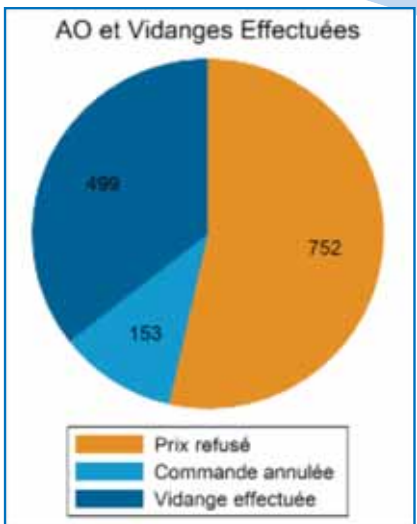
The first results obtained

The call center has given a touch of modernity in the Senegalese fecal sludge sector. It has also enabled many households to access mechanical emptying service and has established sound competition among the emptiers.

In late July 2014 (after one year of operation), the main results obtained through the call center are the following:

- 138 emptying trucks are listed in the call center platform database;
- All emptying trucks have been invited to bid;
- The emptiers have owned the system with a marginal rate of invalid bids (5%);
- 499 septic tanks have been emptied through the call center;
- 4 867 people have been provided at least with one emptying service through the call center ;
- The average price of the emptying service through the call center has declined significantly. For example, in the Commune of Sicap Mbao, the price has declined by 14% between July 2013 and July 2014 (from USD57 to USD49).

With the increase in the participation of emptiers, the competition has increased and resulted in pressure for the reduction of prices.



Therefore the call center has had positive consequences for both customers and emptiers: the former benefit from lower mechanical emptying prices and the latter benefit from higher demand for their services.

- The service provided by the call center is appreciated positively by 99% of the customers. In particular, they appreciate the facility to contact an emptier, compliance with commitments made by the call center and the quality of the delivered service, punctuality of emptiers and quality of their services, and quality calls made by the call center after the emptying operation;



- The vast majority of emptiers (94%) have a positive opinion on the call center. They especially like the facilitation of the contact with the customer and the tool's ease of use (invitation and bidding by SMS).

Lessons learned

The main lessons learned from the first year of operation of the emptying call center reveal that attaining objectives set for this innovative tool requires:

- Organized, formal emptiers, committed to modernization of their sector;
- Involvement of emptiers in the call center establishment process;
- Training and ongoing supervision of mechanical emptiers for appropriate participation in the bidding process;
- The establishment of a support mechanism (such as the guarantee fund) for the emptiers to own the program and, in particular, to meet certification requirements;
- Adequate communication to households and emptiers on the service delivered by the call center and its advantages;
- The provision of a robust technical solution for the call center, in order to process and follow-up calls regardless of their volume;
- Phasing the operation of the call center starting on a small scale basis and gradually extending it to larger areas;
- Regular updating of the emptier database to take into account the constant changes in the industry;
- Gradual building of a database on the characteristics of septic tanks (volume and accessibility);
- Daily monitoring of the call center by an experienced team;
- Designing an appropriate business model for the sustainable financing of the operation of the call center without impacting negatively on the emptying cost.



# Process for the Certification of Emptying Companies



Old truck breaks down before a customer's house



Defective drain valve vanne tinered with an inner tube



Pipes connected with plastic bags and inner tube



Mécanical emptiers without ppe during discharge opération

## Context

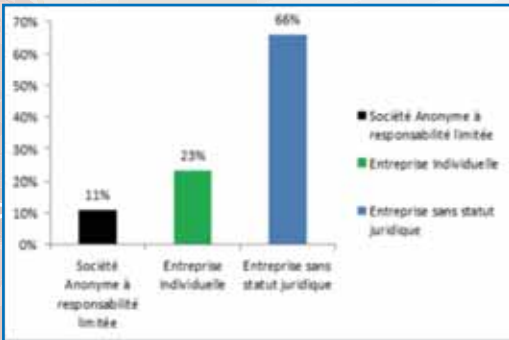
In the Departments of Pikine and Guédiawaye (Region of Dakar, Senegal), where there are 1,421,060 people (RGPHAE 2013), almost all households (96%) use on-site sanitation facilities for the management of domestic wastewater. This results in a significant production of fecal sludge (1,130 m3/day), most of which is collected by trucks. In the Region of Dakar, there are 150 emptying trucks, the vast majority of which are old and unfit for business, with an average age of 25 years. Thus, beyond their operating costs, these old vehicles cause serious problems to the Environment and Public Health.

In fact, this is the link between domestic wastewater treatment facilities and fecal sludge treatment plants (three in the Region of Dakar), which suffer from lack of organization. Indeed, although many Senegalese laws address the fecal sludge issue (see box), it remains that the standardization of emptying trucks is still lacking, which is expressed through:

Many Senegalese legal texts directly or indirectly address the fecal sludge issue, including:

- Sanitation Code
- Hygiene Code (Act No. 83-71 of 5 July 1983) establishing the domestic hygiene rules and public hygiene rules;
- Environmental Code (Act No. 2001-01 of 15/01/2001) and its implementing decree No. 2001-282 of 12 April 2001;
- NS standard 05-61 of July 2001 establishing wastewater discharge standards;
- Town Planning Code (Act No. 2008-43 of 20/08/2008).

- The informal nature of most companies: 66% of them do not have a recognized legal status;
- The lack of specific laws regulating emptying trucks' activities;
- Emptiers' outdated and inadequate working tools (trucks and equipment);



With the financial support of the Bill & Melinda Gates Foundation, the National Sanitation Office of Senegal (ONAS) has developed the Program for the Structuring of the Fecal Sludge Market (PSFSM) intended to modernize the entire fecal sludge management value chain in the departments of Pikine and Guédiawaye, through a system based on several complementary actions. **Certification of emptying companies (emptying license)** is an important component of this system, as it is an essential step in business regulation.

## The objectives of certification of emptying companies

Certification of emptying companies aims to organize mechanical emptying through a strengthened legal system governing the fecal sludge sector in Senegal, by the establishment of:

- Conditions for fecal sludge collection, transportation, unloading, and discharge;
- Certification standards and penalties applicable to infringements;
- Role of each stakeholder.

The certification of emptying companies also aims to make mechanical emptying more professional and attractive.

## Methodology of the process for the certification of emptying companies

The certification process is based on a **participatory and inclusive approach** involving all stakeholders in the sector. It includes the following five main activities:

- Information and exchange with emptying stakeholders,
- Legal inventory of the fecal sludge sector in Senegal,
- Diagnosis of emptying companies,
- Establishment of certification standards and penalties,
- Setting the certification implementation schedule,
- Validation of the process by all stakeholders.

Focus group with private operators



Focus groups with mechanical emptiers

## Information and exchange with emptying stakeholders

The information and exchange campaign includes:

- Interviews with institutional actors (SNH, Police, Mayors' Association, National Assembly, Ministries with responsibility for Health, Environment, Road Transportation and Road Control [Police, Gendarmerie]), and private operators (truck owners);
- Focus groups with private operators and mechanical emptiers (operating staff). These interviews and focus groups were used as platforms for:
- Information of actors on PSFSM and expectations from their involvement,
- Diagnostics of emptying companies (routing emptying trucks has also been conducted to assess the condition of the trucks and emptying operations);
- Establishment of certification standards and penalties.

## Legal inventory of the fecal sludge sector

This activity has reviewed all legal texts dealing directly or indirectly with the fecal sludge issue in Senegal. Ultimately, it emerges that:

- Fecal sludge is transported by trucks certified by the Minister with responsibility for Sanitation or his representatives (Sanitation Code, Article L79);
- The conditions for fecal sludge collection, transportation, unloading, and discharge are set by decree taken at the joint instigation of the Minister with responsibility for Sanitation and Ministers with responsibility for the relevant sectors (Sanitation Code, Article L83).

Certification of emptying companies will thus be the tool for the implementation of this legislation on the organization of fecal sludge collection, transportation, and discharge.



## Diagnosis of emptying companies

This diagnosis revealed that the emptying companies have technical, organizational, and administrative shortcomings.

### Technical shortcomings

The technical problems are related to the dilapidated condition of emptying trucks, the average age of which is around 25 years. These result mainly in the mechanical (frequent engine failures) and hydro-mechanical condition (inadequate pumps, defective hoses, hose nozzles, gaskets, drain valve) of emptying trucks. The consequences are financial (high operating cost of trucks), healthy, and environmental (sludge leaks during pumping or transportation).

### Organizational shortcomings

The lack of organization and regulation in the emptying sector allows practices violating the current rules and regulations on the environment protection, public health, and civil protection. These shortcomings include the following:

- Lack of health and safety protection for mechanical emptiers (gloves, masks, helmets, boots, goggles, fluorescent vests, first aid kit, flashing lights, marking cones), which exposes them to health and safety risks (industrial accidents);
- Anarchic parking of emptying trucks;
- Illegal discharge (in the environment, open pipes, or ONAS sewage system), despite the sanitation code, which, in Article L86, provides for fecal sludge discharge only in FSTPs and officially authorized sites.
- Manual emptying as a supplement to mechanical emptying, which often does not fully remove the fecal sludge (inadequate pump).

### Administrative shortcomings

These are related to the informal nature of the vast majority of emptying companies (66%). This puts them at a disadvantage as only formal businesses, which conform with tax and social security rules, can bid for public contracts, such as pre-rainy season operations, FSTP management, maintenance of treatment plants, and emptying septic tanks in major religious events.

## Establishing certification standards

Interviews and focus groups served as platforms for establishing certification standards and penalties through an inclusive and participatory approach to enable their understanding and acceptance by all stakeholders. Based on the technical problems identified during the interviews and focus groups, three categories of standards are established for the certification of emptying companies: (i) technical standards, (ii) safety and medical prevention standards, and (iii) and administrative standards.

**The technical standards** aim to improve compliance of logistics used by emptying companies with health and environmental protection requirements. Four technical standards have been identified and concern the hydro-mechanical equipment (pumps, pipes, valves, seals, hose nozzles).

**The safety and medical prevention standards** protect the operating staffs in conducting their activities in accordance with the labor law. Four standards have been established in relation to:

- Protection equipment (work clothes, masks, hard hats, nonslip boots, gloves);
- Signaling and road safety equipment (marking cones, warning triangles, fluorescent vests, fire extinguisher, flashing lights);
- Medical protection of staff (first aid kit, certificate of vaccination against some infectious diseases).

**The Administrative standards** are seven in total. These aim to formalize and organize emptying companies. Compliance with all certification standards entitles the truck concerned to a **points-based license valid for one year**. The principle is to provide 10 points to each truck conforming with these standards.

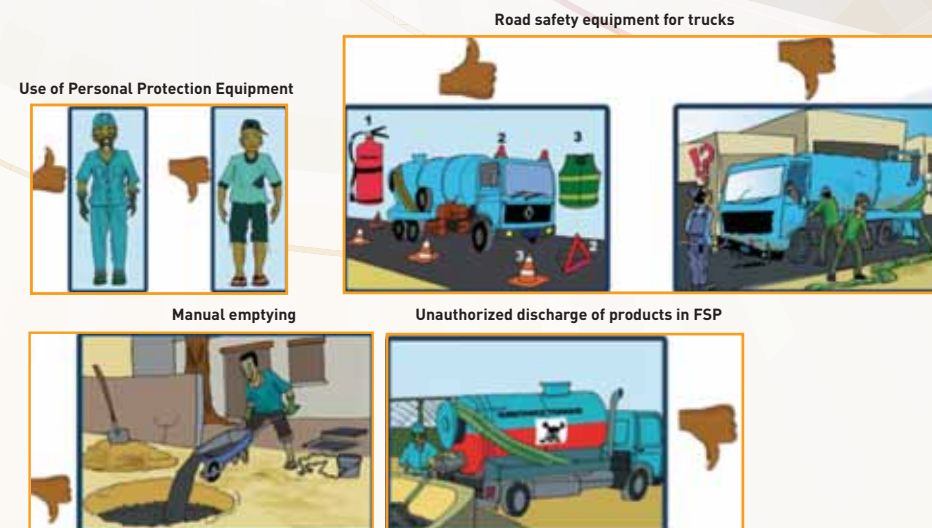
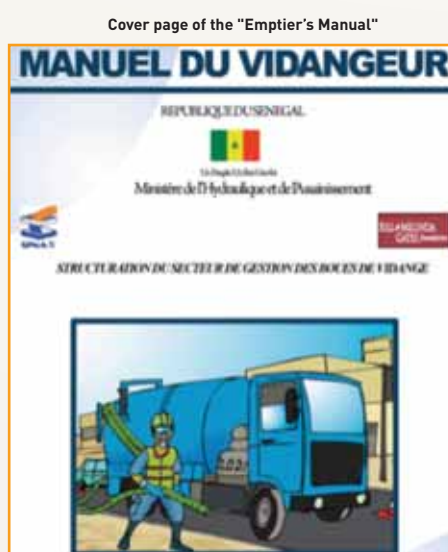
## Establishing certification-related penalties

Consultation with all mechanical emptying stakeholders has led to the establishment of three types of penalties:

- Administrative penalty including mainly warning and reprimand;
- Point-withdrawal penalty. The total loss of the company's assets results in the withdrawal of the license until non-compliance is lifted. Moreover, according to the seriousness of the offense, the administrative authority may order the revocation of the license with immediate effect;
- Financial penalty, including fines ranging from US\$50 to US\$ 1,000.

Integrating certification of mechanical emptying companies into the Senegalese legislative body will be done based on Article L83 of the Sanitation Code, which stipulates that the mechanical emptying business will be organized through a decree taken at the joint instigation of the Minister with responsibility for Sanitation and Ministers with responsibility for the sectors concerned. A draft decree has already been prepared and submitted to the Minister with responsibility for Sanitation.

Considering the fact that most mechanical emptiers are illiterate, an illustrated document titled "Emptier's Manual" has been produced. It is a tool that will be provided to the emptiers for them: (i) to take ownership of certification standards and (ii) to identify prohibited practices.



## Setting the certification implementation schedule

Given the deep changes that the certification will bring within mechanical emptying companies (financial and organizational implications), the standards and penalties will be applied progressively and gradually, under a schedule enabling the greatest number of make the necessary arrangements.

Thus, from the date the decree for the application of Article L83 of the Sanitation Code (which includes certification into the Senegalese legislative body) comes into force, the emptying companies will be given **two years** to comply with the provisions of the decree.

As a measure supporting the efforts required from the emptying companies, the PSFSM has set up a guarantee fund to facilitate their access to bank credit.

## Validation of the process by all stakeholders

The inclusive and participatory approach was adopted by a workshop on the validation of the process for the certification of mechanical emptying companies, which was attended by all stakeholders. The meeting was an opportunity to agree on the final details on certification standards and penalties, as well as the implementation schedule.

## The first lessons learned

The main lessons learned from the process for the certification of mechanical emptying companies show that the success of this process goes through:

- **Good** organization of mechanical emptiers;
- **Inclusive and participatory** approach, particularly the involvement of emptiers and political and administrative authorities from the beginning of the process;
- **Flexibility** in the establishment and application of certification standards and penalties;
- **Support** for the profitability of the mechanical emptying business. The emptier's guarantee fund, the communication campaign to promote mechanical emptying, and the emptying call center are tools put in place by the PSFSM to reduce manual emptying and boost the demand for mechanical emptying;
- **Strong advocacy** with political and administrative authorities.

## The first results achieved

There are five main results achieved so far in the process for the certification of emptying companies:

- **Awareness and successful** involvement of all stakeholders in the fecal sludge issues, which results in their full commitment to the success of the PSFSM;
- **Good knowledge** of the mechanical emptying business through the various meetings, which identified the key issues related to the business;
- **Consensual establishment** and validation of certification standards, penalties, and implementation schedule;
- **Emptying companies** commitment to comply with certification standards within the time limit. They already anticipate truck upgrading through the PSFSM guarantee fund;
- **Initiating the process** for the introduction of certification into the Senegalese legislative body, through the writing of a draft decree and its submission to the Minister with responsibility for Sanitation.

## Prospects

Supporting measures are needed to enable the emptiers to comply with certification standards through:

- Continued facilitation of emptying companies' access to credit through the guarantee fund;
- Continued communication on manual emptying control and promotion of mechanical emptying;
- Continued advocacy with the relevant authorities, providing emptiers with regulated parking areas, and issuing the decree on the certification of emptying companies;
- Organization for the emptiers of training sessions on business creation and management.



# Communication: a key tool for ownership of the program by the stakeholders

## Context

The Program for the Structuring of the Fecal Sludge Market (PSFSM) is implemented in an area populated by economically disadvantaged people, with a rapid population growth, where about 75% of the population has an on-site sanitation system and produces therefore a large amount of fecal sludge. The Government of Senegal has made great efforts in the fecal sludge sector, including the construction of Fecal Sludge Treatment Plants (FSTPs) in Dakar and in the other parts of the country. However, it should be noted that the fecal sludge sector still suffers from many shortcomings in relation to the collection, transportation, discharge, FSTP management, and cost of mechanical emptying (which is high for many households).

This situation negatively and significantly impacts on people's health, hygiene, and environment, due to many factors, including manual emptying by households, illegal discharge by some emptiers, and non-compliance by emptying trucks with technical standards. To bring a solution to the situation of the fecal sludge sector, the National Sanitation Office of Senegal (ONAS) has developed, with the financial support of the Bill & Melinda Gates Foundation, an ambitious program called "Program for the Structuring of the Fecal Sludge Market (PSFSM)," designed to address the entire fecal sludge management value chain in the departments of Pikine and Guédiawaye (Region of Dakar). The program's objectives are as follows:

- To allow the poorest households to access mechanical emptying services at the lowest possible cost through:
  - The renewal of trucks through a guarantee fund,
  - The construction of a FSTP near Pikine and Guédiawaye,
  - The introduction of a waste-to-energy plant (omni-processor);
  - The sound competition of emptiers through an emptying call center;
- To improve households' access to appropriate sanitation facilities;
- To promote good hygiene practices, particularly hand washing with soap and ending manual emptying for mechanical emptying;
- To regulate emptying companies' activities with the implementation of a certification process;
- To improve the management and operation of FSTPs through the delegation of management to the private sector.

To support the implementation of this ambitious program, a comprehensive communication and awareness plan has been developed.

## The objectives of the PSFSM communication plan

The PSFSM communication plan aims to mobilize all stakeholders in the fecal sludge sector for them to own the Program in order to achieve its objectives, including:

- Access to mechanical emptying services for the poorest households at the lowest possible cost through:
  - Households' access to appropriate sanitation facilities;
  - The adoption of good hygiene practices (hand washing with soap and ending manual emptying for mechanical emptying);
  - The establishment and enforcement of regulations ruling emptying companies' businesses (certification);
  - The delegation of FSTP management to the private sector.

## Positioning and Identity Issues

The PSFSM communication plan includes five main issues: information issues, positioning issues mobilization issues, and relation issues.

## Information Issues

Tools for the dissemination of information and the message content should be well designed and adapted to the various targets of the program: implementation partners, households, emptying operators, state actors, local authorities, technical and financial partners, private companies, research and training centers, consumer associations, women empowerment groups, community-based organizations, media, parliamentary institutions, traditional communicators, etc.

## Positioning and Identity Issues

Communication should position the PSFSM as the perfect tool for the development of the fecal sludge sector. It should contribute to the institutional notoriety of the program.

## Mobilization Issues

Communication should mobilize all stakeholders in the fecal sludge sector by leading to the ownership of the program by the actors involved in the process.

## Relation Issues

Communication should contribute to the success of the connection between the household, the mechanical emptier, and the service regulator (ONAS).

## The Methodology of PSFSM Communication Strategy

The communication strategy is structured around two approaches:

- A mass communication approach designed to reach large targets beyond the

boundaries of the program area (Pikine and Guédiawaye);

- A neighboring approach specifically targeting the program area.

The strategy includes a communication campaign aiming to: (i) popularize the issues related to the various links in the fecal sludge management chain, (ii) improve demand for mechanical emptying services, and (iii) promote good hygiene behavior. It is primarily based on information, awareness, and communication actions in line with an inclusive and participatory approach.

## Mass Communication

Nationwide communication activities have been implemented to give notoriety to the program and facilitate its replication in other towns in Senegal. The selection of actions and communication media is based

on the audience of mass communication media, coverage rate, and media penetration.

Mass communication includes two pillars:

- **Institutional communication** designed to highlight the responsibilities of the program, the expected results, and impact on the implementation area;

- **Communication for Behavior Change**, which is based on the dissemination of awareness messages promoting the gradual end of manual emptying for mechanical emptying and hand washing with soap.

The media used to reach large targets at national level (including the project area) are: television, radio, print media, online media, publishing, display, and telephony (see table). Thus, broadcasting contracts have been signed with four television channels and five non-specialized and community radio stations. Over 20 TV broadcasts and 220 radio programs have been provided.

Communication Media	Tools Used
Television	<ul style="list-style-type: none"><li>- Institutional film on the presentation of the PSFSM.</li><li>- Spot encouraging people to end manual emptying;</li><li>- Sketch on the benefits of mechanical emptying and promotion of the call center;</li><li>- Promotional film on the call center and damaging effects of manual emptying.</li></ul>
Radio	<ul style="list-style-type: none"><li>- Sketches and spots on:<ul style="list-style-type: none"><li>• Damaging effects of manual emptying,</li><li>• Organization of the mechanical emptying,</li><li>• Popularization of the emptying call center.</li></ul></li><li>- Live programs as a basis for neighborhood events,</li><li>- Organization of radio contests as part of neighborhood events targeting community-based organizations and local information networks within households.</li></ul>
Print Press	<ul style="list-style-type: none"><li>- Articles on the program's activities.</li><li>- Advertising inserts on the program's specific activities.</li></ul>
WEB	<ul style="list-style-type: none"><li>- Developing an internal sharing website for exchange between the program's partners: <a href="http://msludge.wiki.manobi.com">http://msludge.wiki.manobi.com</a>.</li><li>- Initiation of an English-French website: <a href="http://www.onasbv.sn">www.onasbv.sn</a>, with twitter and facebook links.</li></ul>
Publishing	<ul style="list-style-type: none"><li>- Design of an illustrated institutional brochure on the program, focusing on the tasks and opportunities. It is updated based on the change in the program.</li><li>- Publication of a 36-page quarterly magazine called "Boues mag"</li><li>- Development of an emptier's manual.</li><li>- The use of water bills for the dissemination of information on the emptying call center is under consideration.</li></ul>
Display	<ul style="list-style-type: none"><li>- 6 000 posters promoting mechanical emptying have been designed and posted.</li></ul>
Telephony	<ul style="list-style-type: none"><li>- Cellular phone text messages to provide information about the call center (phone number, working hours, etc.).</li></ul>





### Neighborhood Communication

Neighborhood communication covers the study area (Departments of Pikine and Guédiawaye). Thus, neighborhood communication and awareness actions have been implemented in these two departments. The neighborhood communication strategy is based on four entries: state and local institutions, communities, families, and children's education.

### The entry through state and local institutions

Initially, an information and advocacy campaign is conducted in the PSFSM area, with state representatives and local officials. The objective is to make them appreciate the fecal sludge issues and support the program's initiatives. Thus, the Governor, Prefects, and Municipal Councilors in Pikine and Guédiawaye have been met for information and exchanges on the PSFSM.

### The entry through the family

As the basic social unit, the family has been given priority in changing behaviors through the adoption of positive attitudes on personal hygiene (particularly the promotion of hand washing with soap), mechanical emptying of septic tanks, and innovative toilets suitable for flooded areas. An extensive network of social facilitators has been set up in the program area, including during community meetings, where facilitators are identified based on their social commitment. These facilitators have been used to disseminate good practices and adapted toilets within the families, through door to door. The households using manual emptying and living in flooded areas have been particularly targeted.

### The entry through communities

The community communication and awareness strategy includes several media:

- Information and sharing workshops at district level to reinforce the institutional footing of the program and strengthen the links between the Communes d'Arrondissement (local districts) and ONAS. These workshops bring together households, policy makers, CBOs, etc. They are collaborative and interactive platforms for the exchange of information on all fecal sludge aspects.
- Focus groups with people (bringing together several households)
- Film screening sessions. Door-to-door, focus groups, and film screening sessions are used to promote good behaviors through models (who properly implement awareness messages).

### The entry through the children's education

Through the involvement of non-formal educational establishments to get young children (who are more receptive to hygiene behavioral changes) to contribute to the adoption of good behaviors in their families and social environment.

### The first results achieved

Two studies are planned by the PSFSM (mid-term survey and assessment at the end of the program) to assess the impact of communication on people in Pikine and Guédiawaye. However, a few partial results have already been achieved, including:

- Familiarity of institutional actors, beneficiaries, and emptying operators with the program. For example, they agree to renew their trucks through the guarantee fund established by the program;

- A consensus of all stakeholders for the certification of emptiers through the initiation of an accreditation process;

- Larger use of the call center by both people and emptiers;

- The emptying call center is increasingly used to make emptying requests;

- The number of households that continue to use manual emptying in the program area has decreased from 48% to 34.5%, according to the latest midterm survey;

- Hand washing with soap in critical moments is increasing in the program area.

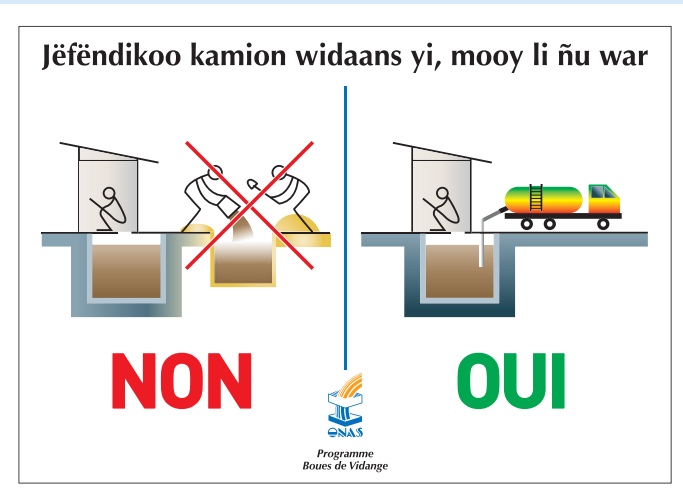
### Constraints in the PSFSM Communication Plan

The program's research component has forced the communication plan to consider the interactions in order to avoid the aspects detrimental to research conducted by the WSA (Water and Sanitation in Africa) in collaboration with IPA, particularly in the establishment of the call center (Beta, Pilot, and Scaling Phases). Indeed, it was essential to consider the combination of research and communication campaign concerns to ensure necessary synergy.

### Prospects

Two main prospects emerge from the implementation of the PSFSM communication strategy in the medium to long term:

- **Develop communication** (advocacy with policy makers and raising people's awareness) nationwide to end manual emptying;
- **Build a partnership** with the schools to implement a curriculum on Sanitation (especially the fecal sludge issue), Hygiene, and Environment.



It should be noted that the PSFSM inception phase has been used as a program communication platform, with the organization of a launching ceremony and much-publicized information workshops.

In addition, the meetings organized periodically by the PSFSM Steering Committee and Technical Committee promote the exchange and direct dialogue between the various partners.





# The delegation of the management of Dakar fecal sludge treatment plants to the private sector: a successful public-private partnership model

Context

With an urbanization rate of 96.4%, the Region of Dakar hosts almost half of the urban population of Senegal (49.6%) or 3,137,196 people. The overwhelming majority of this population (over 75%, source: PDA Dakar) uses on-site sanitation facilities for the management of domestic wastewater. This results in the production of large amounts of sludge estimated at about 1,500 m3/day (source: PDA Dakar), most of which is collected by emptying trucks (one portion is collected through manual emptying).

In order to control illegal discharge from emptiers in the Region of Dakar (in the sewer system, in abandoned land, etc.), the National Sanitation Office of Senegal (ONAS) has built three Fecal Sludge Treatment Plants (FSTP) within Cambérène, Niayes, and Rufisque wastewater treatment plants.

These three FSTPs, which are designed for a total flow of 220 m3/day, are now receiving four times higher this volume. In addition, direct public management provided by ONAS has shown its limitations. So, just like the majority of FSTPs built in developing countries, those in Dakar were, before the delegated management, in a state of advanced deterioration (see table and photos below). This situation shows that sanitation is not only about technology.



Localisation des STBV de la région de Dakar

The financial situation of Dakar FSTPs prior to the delegation of management to the private sector was as follows.

Operation and Maintenance	<ul style="list-style-type: none"><li>No target results.</li><li>No control of truck loads to ensure compliance.</li><li>No control of FSTP operations by ONAS.</li><li>No maintenance program.</li><li>No equipment replacement program.</li><li>Lack of Personal Protective Equipment for the staff (clothes, gloves, helmet, boots, masks).</li><li>Non-compliance with the frequency of cleaning tanks and stripping drying beds.</li><li>Unhealthy discharge yard and sludge storage area.</li></ul>
Equipments	<ul style="list-style-type: none"><li>Obsolescence of equipment (screen, cofferdam valves, trolley, drying beds).</li><li>Failure of equipment (pumps, generators, drying bed valves),</li><li>Inadequate slurry pumps.</li><li>Lack of computer equipment (computer, printer) and office furniture.</li></ul>

Dégrilleur endommagé et rouillé



Lits de séchage délabrés et vannes défectueuses



Bassins non curés laissant pousser des herbes



Grille avaloir de récupération de liquides endommagé



Chariot de transport des déchets en mauvais état



The financial situation of Dakar FSTPs prior to the delegation of management to the private sector was as follows.

Results of Dakar FSTP operation prior to the delegation of management to the private sector

	STBV de Cambérène	STBV des Niayes	STBV de Rufisque	Total
Receipts (\$/year)	60 293	30 328	45 324	135 945
Operating expenses (\$/year)*	46 507	43 008	37 908	127 423
Operating income (\$/year)	13 786	- 12 680	7 416	8 522
Taux de rentabilité (%)	22.9	- 41.8	16.4	-

\* These expenses do not include depreciation of buildings and equipment, and financial expenses.



FSTP's receipts come almost exclusively (more than 99%) from the discharge fee set at USD0.6/m<sup>3</sup> of sludge. There are almost no by-products obtained from sludge treatment: the sale of dried sludge generates annually only USD623 or less than 0.5% of total receipts.

On the whole, it appears that the operation of FSTPs is:

- profitable in Cambérène, with a rate of return higher than 20%,
- profitable in Rufisque, with a positive rate of return lower than 20%,
- showing a huge loss in Niayes, with a negative rate of return.

All these challenges and poor performances have led the National Sanitation Office of Senegal (ONAS) to consider the application for the first time in Africa of the principle of delegating FSTP management to the private sector. Thus, the Program for the Structuring of the Fecal Sludge Market (PSFSM), which has been developed with the financial support of the Bill & Melinda Gates Foundation, has provided an opportunity to fulfill this desire to entrust the FSTPs to the private sector.

#### The objectives of the delegation of FSTPs to the private sector

The overall objective of the delegation of FSTP management is to have a Public-Private Partnership (PPP) model between ONAS and the private sector, in order to increase its involvement in the on-site sanitation subsector.

There are two specific objectives:

- To make the fecal sludge sector profitable through an efficient management of FSTPs. The aim is to get the private sector to develop a management method, which is:

- technically efficient,
- financially viable; the use of by-products from the fecal sludge treatment is an important component in making the FSTPs profitable,
- compliant with environmental legislation.
- To encourage the private sector to invest in the fecal sludge sector.

#### Methodology of FSTP delegation to the private sector

To implement the delegation of FSTP management to the private sector, the methodology involves three steps: (i) study of options for FSTP delegation to the private sector, (ii) defining the rights and obligations of the Licensing Authority and the Concessionaire, and (iii) selection of the private operator with the best bid.

#### Step 1: Study of possible options for FSTP delegation to the private sector

The delegation of public sanitation service is governed in Senegal by various laws, including:

- Act 65-61 of 19/07/1965 establishing the Code of Obligations of the Public Service,
- Act 2006-16 of 30/06/2006 amending Act 65-61 of 19 July 1965 on the Code of Obligations of the Public Service,
- Act 2008-59 of 24 September 2008 on the organization of the public service for drinking water and collective sanitation of domestic wastewater,
- Decree 2011-1048 of 27/07/2011 on the Procurement Code,
- Act No. 2013-10 of 28 December 2013 establishing the General Local Government Code.

The delegation of the public service management is defined by the 2011 Public Procurement Code as "an administrative contract, whereby a public legal person entrusts the management of a public service under its responsibility to a public or private delegatee, whose earnings depend substantially on the results of the management of the service."

The delegation of public service management may cover various types of contracts: concession, leasing or management of public service on a concessionary basis, and any variation or combination of these three types of contracts.

**The lease contract** is a contract whereby the government (the leasing authority) entrusts, for a specified period (usually shorter than that of a concession), a third-party private or public corporation (the leaseholder) with the operation of facilities that it has acquired for the latter to provide the public service, as the

leaseholder makes no investment either initially or for reinforcement and/or extension work." The leaseholder operates and maintains the facility at its own risk. It collects royalties directly from the users, but pays the leasing authority a rent, the amount of which is predetermined in the contract.

**The concession contract** is a contract whereby a public corporation (the licensing authority) gives a third-party private or public entity (the concessionaire) the responsibility of providing all or part of investments in a facility and operating it to provide a public service. Therefore the concessionaire bears not only the routine operating and maintenance costs, but also all or part of the initial investments and/or investments necessary for the improvement of the concessionary public service. The concessionaire then operates the public service on its behalf and at its own risk, under the control of the public authority, by collecting payment from the users of the infrastructure or the beneficiaries of the concessionary service.

**The management of public service** on a concessionary basis is a contract under which a public authority entrusts the management of a public service to a contractual partner, which provides management on behalf of the said public authority and receives from this public authority a payment based on incomes or results of the operation of the service. The analysis of financial, administrative, technical, and environmental data (challenges in FSTP management, dilapidated facilities and equipment, low or no profitability, no sludge recycling) has led to the selection of a seven-year concession contract based on the current conditions of FSTPs. This option seems to be advantageous for both the public authority and the concessionaire. Indeed, the public authority will not bear the investments necessary for the renovation of the FSTPs and the operator will be able to spread the investment costs over a relatively long period: the concession contract will apply for a seven-year period on a single batch consisting of the three FSTPs in the Region of Dakar.

#### Step 2: Defining the rights and obligations of the Licensing Authority and the Concessionaire

The delegation of FSTP management to the private sector is based on the following principles:

The delegation of FSTP management to the private sector is based on the following principles:

- ONAS contracts out to the private operator the public service for the management of Cambérène, Rufisque and Niayes Fecal Sludge Treatment Plants on

the following basis:

- Annual payment by the Concessionaire of a service operating license
- Monthly payment of a fee to the licensing authority. This fee is set in the Contract by mutual agreement between the two parties.

The rights and obligations of each party are summarized in the following table.

	ONAS	PRIVATE OPERATOR
<b>RIGHTS</b>	<ul style="list-style-type: none"> <li>- The right to information provided by the private operator.</li> <li>- The right of control.</li> <li>- The right of monitoring.</li> <li>- The right of unilateral amendment to the contract, penalty, and termination of the contract for reasons of general interest, for misconduct of the Concessionaire, or for the existence of facts.</li> </ul>	<ul style="list-style-type: none"> <li>- The exclusive right to operate the service in the geographical area as provided for by the contract.</li> <li>- The exclusive right to use the public domain in the geographical area as provided for by the contract.</li> <li>- The right of occupancy and use of the public domain in the geographical area as provided for by the contract.</li> <li>- The right to directly collect the service payment from the users of the delegated service;</li> <li>- The right to maintain the financial balance of the contract in the event of new facts.</li> </ul>
<b>OBLIGATIONS</b>	<ul style="list-style-type: none"> <li>- Control, monitoring, and assessment of the Contract.</li> <li>- Defining the Monitoring Committee' organizational method.</li> <li>- Planning and implementation of large investment for the replacement of facilities and equipment.</li> <li>- Taking, with the public, the ultimate responsibility for the management and maintenance and, in general, any activity necessary for the proper operation of FSTPs.</li> </ul>	<p><b>General Obligations</b></p> <ul style="list-style-type: none"> <li>- The obligation to provide a public service for fecal sludge treatment by providing small investments necessary for the operation of the facilities.</li> <li>- The obligation to comply with the principles of continuity and adaptability of the delegated service and equal treatment of users.</li> <li>- The obligation to meet financial obligations made with the Licensing Authority.</li> <li>- The obligation to inform and raise users' awareness of the public service of FSTPs.</li> <li>- The obligation to comply with the changes as stipulated by the public authority in the public interest and to fully comply with the Contract.</li> </ul>
<b>DEVOIRS</b>	<ul style="list-style-type: none"> <li>- Le contrôle, le suivi et l'évaluation du Contrat.</li> <li>- La définition du mode d'organisation du Comité de suivi.</li> <li>- La planification et l'exécution des gros investissements de renouvellement des ouvrages et équipements.</li> <li>- L'assumption, vis-à-vis du public, de la responsabilité ultime de la gestion et de la maintenance ainsi que, de manière générale, de toute activité nécessaire au fonctionnement adéquat des STBV.</li> </ul>	<p><b>Specific Obligations</b></p> <p>The Concessionaire is responsible for the environmental, technical, and social performances of FSTPs, as well as good management/maintenance of the infrastructure. Therefore, it has to comply with monitoring and control indicators, which may be environmental, technical, and social. Thus, it is responsible for the following specific tasks:</p> <ul style="list-style-type: none"> <li>- Developing a plant maintenance program;</li> <li>- Developing an annual inspection program for the whole system;</li> <li>- Cleaning periodically settling basins and drying beds;</li> <li>- Providing staff for the operation of FSTPs, required working and protection equipment;</li> <li>- Controlling and regulating access to the plant;</li> <li>- Setting opening and closing times of the plant;</li> <li>- Developing and updating the FSTP control registry (log book);</li> <li>- Checking approval of trucks when discharging;</li> <li>- Treatment and recovery of sludge from FSTPs for marketing;</li> <li>- Prohibiting discharges into FSTPs of cleaning products not authorized by law, including the Sanitation Code;</li> <li>- Submitting to the Licensing Authority the monthly trading account, mentioning, among other things, the number of trucks and volume of sludge collected on the site on a daily basis, operation costs, net operating income, amount of the fee payable to the Licensing Authority.</li> <li>- Submitting periodic documents to the Licensing Authority to enable the Management Committee to monitor the Concessionaire's activities and check performance indicators, including: monthly activity reports, planning tools for preventive and curative operations, accounting elements, results of physicochemical analyses of fecal sludge effluents.</li> </ul>



- The control, monitoring, and assessment of the proper performance of the contract will be provided by a Management Committee consisting of representatives of ONAS, National Health Service, Sanitation Directorate, Environment Directorate, Emptiers' Association, Consumers' Association, and Ministry of Agriculture. The committee is also responsible for regulating the emptying rates.

### Step 3: Selection of the private operator with the best bid

The process for the selection of the Dakar FSTP Delegatee has followed the various steps as provided for by the Senegalese procurement legislation, including:

- Validation of bidding documents by the Central Public Procurement Directorate,
- Publishing an open bid,
- Validation of the timeliness report,
- Assessment of submitted bids (seven in total)
- Validation of the assessment report,
- Provisional award of the contract,
- Final award of the contract,
- Signing of the contract between ONAS and the successful private operator (DELVIC Sarl) on 1 November 2013.

### The first results achieved

Since the delegation of the FSTP to the private sector, the following results have been achieved:

- Renovation of Niayes and Rufisque facilities by both parties, in accordance with mutual obligations specified in the contract;
- Successful implementation of a mechanism for the improvement of facility and equipment maintenance: the FSTPs have become operational and their environment healthy;
- Improvement of the administrative organization in FSTPs;
- Significant increase of 8.5 hours per week in the operation of FSTPs, in order to better control illegal discharge and provide improved access to emptying for households;
- Beginning of dried sludge marketing;
- Significant increase in financial incomes. For example, after six months of operation by the private operator, if the amount paid by the Concessionaire for the operating license is considered, ONAS had already received the equivalent of 80% of the receipts it used to generate over a year prior to delegated management.



Etat des bassins après curage par l'opérateur privé

### Lessons learned

The early lessons learned from the Delegation of FSTP to the private sector reveal that:

- The private sector has been very skillful and really efficient in managing FSTPs;
- ONAS takes greater advantage from the concession compared to public management (operational FSTPs and increased receipts);
- ONAS is better viewed by private emptying operators, who no longer consider it as an obstacle, but as a partner, which aims to organize the private sector and facilitate its work;
- The technical and financial partners are interested in this first African experience on the delegation of FSTP management to the private sector and may support similar programs in other parts of Senegal or in other developing countries.

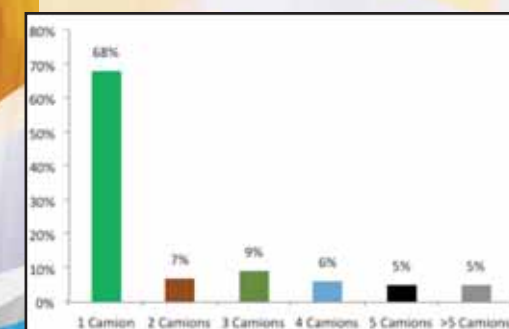
### Prospects

With a view to succeeding this new African experience, ONAS has developed a support and monitoring policy to build on the best practices and replicate them in other urban centers. Thus, the FSTPs will be provided with a base designed to collect any relevant data.

## The emptier guarantee fund: easier access to funding

### Context

With a population of 1,421,060 people (RGPHAE, 2013), whose wastewater is managed in almost all households through on-site sanitation facilities, the Departments of Pikine and Guédiawaye (Region of Dakar, Senegal) produce large amounts of fecal sludge (1,130 m<sup>3</sup>/day). Much of this sludge is collected by emptying trucks (another portion is collected manually). In total, the Region of Dakar has 150 emptying trucks and most companies have a single truck (68%).



Number of trucks per emptying company

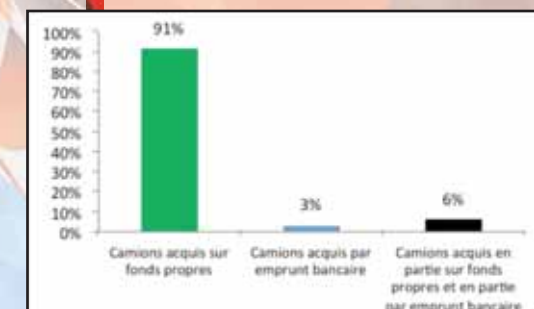
This is due, on the one hand, to the companies' poor resources and, on the second hand, to their difficulties in accessing bank credit. Emptying companies have great difficulties to renew their fleet of trucks, most of which are old and unfit for the business (the average age is 25 years). Thus, beyond health and environmental problems resulting from these trucks, their operating costs are high. Maintenance and fuel consumption account for 7-12% and 34-41%, respectively, of the emptying companies' operating costs.

In addition, the emptying companies have great difficulties in accessing bank credit. Bank loans are subject to incomes adequately covering loan costs or a guarantee equivalent to at least twice the amount of the loan.

Most of the time, these conditions cannot be met by emptying stakeholders, most of whom work in the informal sector.

Therefore the emptiers purchase trucks using their own resources (about 91% of purchases) or through operations combining equity financing and borrowing from a third party (relative, friend, economic operator) based on trust or debt agreements signed by both parties.

As part of its on-site sanitation development and modernization policy, the National Sanitation Office of Senegal (ONAS) has developed, with the financial support of the Bill & Melinda Gates Foundation, the Program for the Structuring of the Fecal Sludge Market (PSMBV). One component of this program includes modernizing fecal sludge collection through support for the renewal and rehabilitation of the fleet of trucks.



Mode of financing the acquisition of trucks



### The objectives of the emptier guarantee fund

The PSMBV's guarantee fund aims to promote the development of emptying companies by facilitating access to credit for the renewal of their emptying trucks and/or acquisition of spare parts in order to enable them to:

- **Meet** future requirements to obtain emptying license, which completes the certification process for emptying companies;
- **Increase** their incomes through lower operating expenses for old trucks.

In other words, the emptier guarantee fund is designed to offset potential losses suffered by the credit institution, in the event that the borrowing emptier fails to repay the loan.

### The key principles of the emptier guarantee fund

The guarantee fund is based on the following three principles:

- Risk sharing between the three parties concerned (guarantee fund, credit institution, beneficiary of the guarantee [emptier]) which results in the fact that:
  - the guarantee provided by the guarantee fund does not replace the usual securities covering the operation (pledge, collaterals and personal securities, transfer of incomes, etc.);
  - securities are provided by common account: securities benefit the credit institution and the guarantee fund in proportion to their respective shares of risk, because they share the final loss associated with a failed operation;

- an average guarantee rate is applied by the guarantee fund for the credit institution. This provision is intended to avoid the credit institution and/or the beneficiary of the guarantee (emptier) being less rigorous in fulfilling their responsibilities, when the guarantee rate is high, as any unpaid debts will be largely recovered from the guarantee fund;

- The guarantee fund is used for compensation only in failed operations after all legal steps have been taken to recover the funds, according to the usual practices of the credit institution;

- The application by the credit institution of an lower than usually applied interest rate, taking into account the reduction of the cost of risk related to the guarantee fund.

### The methodology for the establishment of the emptier guarantee fund

The guarantee fund has been established with the assistance of a Financial Engineer in six steps:

1. Development of specifications setting out the expectations from credit institutions,
2. Competitive bidding of all commercial banks operating in Senegal,
3. Examination of bids received (five in total)
4. Selection of the best proposal,
5. Negotiation and signing of a financing agreement between ONAS and the selected bank,
6. Provision of funds to the selected bank in the form of a paid Term Deposit (DAT).

The negotiations with the selected bank have led to agreement on the following points:

- Guarantee rate equal to 25% of the amount of the credit facility. In other words, the amount provided by the bank (stock available for lending) is four times higher than the guarantee fund
- Annual percentage rate (APR) lower than or equal to 12% and including 1% charges
- Loan limit equal to FCFA20 million for trucks and FCFA5 million for spare parts
- 60-month credit period with a 6-month grace period for trucks
- 24-month credit period and no grace period for spare parts.

### Emptiers' training in access to the guarantee fund

Three training workshops have been organized to improve the emptiers' knowledge of the operation of the fund but also to inform and educate them on their responsibilities for the proper operation of the system. These workshops have been facilitated by a Financial Engineering and Integrated Value Chain Expert, with the participation of the selected bank's representatives, a tax inspector, and all operational partners of the PSMBV. The emptiers' responsibilities highlighted during the workshops are as follows:



Training session on the guarantee fund for emptiers

- a) Financial responsibility, including:
  - The importance of bank commitments;
  - The consequences for the emptier for non-repayment of the loan,
  - The importance of having financial statements, projected balance sheet, and estimated operating account, which implies an internal or external accountant.
- b) Tax liability covering:
  - The importance of tax obligations;
  - The consequences for non-payment of taxes;
  - The importance of the declaration of existence and tax returns;
  - And the need to regularly approach the tax offices to have updated information.
- c) Social responsibility relating to:
  - The importance of the PSMBV project and its social impact;
  - The consequences suffered by the program stakeholders in the event that an emptier fails to repay the loan;
  - The future prospects if emptiers act as "good fathers" vis-à-vis the PSMBV's Guarantee Fund..

### The operation of the emptier guarantee fund

- composed of the following members:
- PSMBV Coordinator,
  - PSMBV Financial Manager,
  - PSMBV Monitoring & Evaluation Expert,
  - Representative of the Senegalese Ministry of Water and Sanitation,
  - Representative of ONAS Administration and Finance Directorate
  - Representative of the Association of Sanitation Actors in Senegal (AAAS)
  - Two representatives of the selected bank.
- The Steering Committee meets at least once per month and, in fulfilling its assignment, may appeal to any relevant person or organization. It is responsible for:

- Assessing the financial and economic viability of the emptiers applying for credit from the selected bank under the financing agreement signed with ONAS,
- Assisting the emptiers (most of them are illiterate) in preparing their application files,
- Assessing and selecting applications to be financed,

- Ensuring compliance with the commitments made by emptiers with the selected bank,
- Reporting to ONAS Director General about the status of the guarantee fund,

The plan adopted by the Steering Committee for the granting of loans to emptiers is as follows:

- Loan applications are officially made by each borrowing emptier,
- The bank puts a lien on the emptying truck,
- Each borrower signs an agreement with the emptiers' association, who reserves the right to recover the truck to entrust its operation to another emptier, in the event of non-payment of three installments to repay the credit.

The borrowing emptier's application should include:

- **For companies (legal entities)**
  - Last three financial statements (balance sheet and income statement) certified, if possible.
  - Projected trading account for the term of the loan.
  - 12-month cash flow plan
  - Financing Plan
  - Status of engagement or non engagement
  - Presentation of the company's business.
  - Opening an account in the selected bank's books and domiciliation of incomes.
- **For individuals (natural persons)**
  - Financial statements of the last three years,
  - Projected trading account over the term of the loan,
  - Status of engagement or non engagement
  - Financing Plan,
  - Opening an account in the selected bank's books and domiciliation of incomes..



### The first results obtained

The guarantee fund Steering Committee received 18 applications from the emptiers in late April 2014. These applications came from 18 companies, including 3 limited liability companies, 1 Economic Interest Group (GIE), and 14 companies owned by a sole proprietor. All these applications concerned the acquisition of an emptying truck.

The analysis of the applications ended with their approval by the Steering Committee and communication to the selected bank in mid-May 2014.

All 18 applications were accepted by the selected bank. This reflects the quality of the applications submitted by the emptiers.

The first 10 trucks have arrived in Senegal from Europe. Therefore the system set up by the bank, the emptiers' association, and the Senegalese supplier worked well.



Award of financing certificate to the President of the emptiers' association

View of the first trucks acquired under the emptier guarantee fund



### The first lessons learned

The process, which led to the establishment of the guarantee fund and the acquisition of the first trucks by the emptiers, helped draw these first lessons:

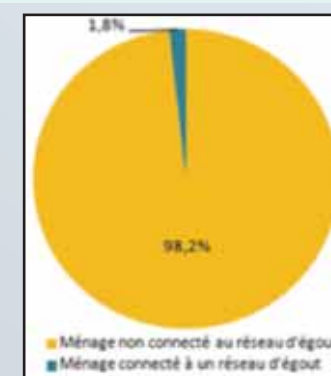
- The emptiers involved in the PSMBV have huge business financing needs, particularly for renewal of their emptying trucks.
- Credit institutions do not trust the emptiers' repayment capacities, which blocks their access to credit.
- The establishment of a guarantee fund reassures credit institutions to engage in financing emptying activities.
- For the guarantee fund to have a chance to be highly successful:

- The credit institution has to understand the spirit of the guarantee fund, which is to support a largely informal sector, which has a significant growth potential. Therefore the credit institution has to: (i) agree to finance the acquisition of second-hand trucks (in good condition), the cost of which is covered by the emptiers' incomes, (ii) take a share of the credit risk (ii) provide an amount (stock available for lending) much higher than the guarantee fund (iii) apply an interest rate and charges lower than those usually applied in order to encourage the emptiers to incur debts.
- The emptiers must be: (i) well informed, trained, and supported in the process of accessing funds and (ii) organized in formal entities (e.g. associations), the roles of which include putting the pressure on their members which are bad debtors.
- les vidangeurs doivent être : (i) bien informés, formés et accompagnés sur le processus d'accès au fonds et (ii) organisés dans des structures formelles (associations par exemple) dont un des rôles sera de faire la police auprès de ses membres mauvais payeurs.

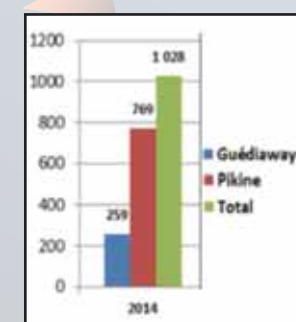
## Payment of domestic septic tank emptying service through mobile money: improving people's financial access to mechanical emptying services

### Context

In the Departments of Pikine and Guédiawaye (Region Dakar, Senegal), which have 1,200,000 people, on-site sanitation is present in almost all households. This results in a considerable production of fecal sludge estimated at 1,028 m<sup>3</sup>/day in 2014.



Mode of access to sanitation



Fecal sludge production (m<sup>3</sup>/day)

As the mechanical emptying cost is high for a large segment of the population, manual emptying (less expensive than mechanical emptying) is widespread in Pikine and Guédiawaye. In 2011, 43.8% of households used this practice, which has a negative impact on Public Health and Environment.

These two departments have a rather high household poverty rate, with 37.9% and 30.1% respectively. In fact, the majority of people live in these areas on less than USD2/day.

In addition, access to credit through financial institutions is limited. In a survey conducted with 4,800 households in Pikine and Guédiawaye between March and May 2014, less than half (45%) said they had an account in a financial institution and 10% of them had saved nothing, 15% had savings lower than or equal to FCFA50 000, and 20% were able to save more than FCFA50 000. However, an informal credit system exists in Pikine and Guédiawaye. Thus, in the twelve months prior to the survey, through this system, 55% of people received loans, 50% lent money, and 30% lent and borrowed money. The average amount of loans is FCFA100 000 and 60 000F for credits. In other words, there exists a savings capacity in both departments, although only 45% of people has savings accounts in financial institutions.

As part of its on-site sanitation development and modernization policy, the National Sanitation Office of Senegal (ONAS) has developed, with the financial support of the Bill & Melinda Gates Foundation, the Program for the Structuring of the Fecal Sludge Market (PSMBV). A component of this program aims to **improve people's access to mechanical emptying services through mobile money payment based on the households' savings.**

### The objectives of the payment of domestic septic tank emptying by mobile money

The objective of paying mechanical emptying by mobile money is twofold:

- To develop household savings for sanitation services, in order to increase the capacity and willingness of households to pay for this isolated service;
- To promote mechanical emptying (and therefore the decline in manual emptying).



## Methodology for the development of emptying payment by mobile money

The methodology consists of two phases:

1. A baseline survey to measure the starting point of participating households and provide a subscription service for emptying service payable by mobile money
2. The introduction of mobile money as a neighborhood savings system for emptying.

The baseline survey

### The baseline survey

It is an extensive survey, including 4,800 households in Pikine and Guediawaye, on the willingness of households to pay for mechanical emptying services. In other words, the aim is to collect the information necessary for a proper assessment of behavioral and social factors determining the adoption of these services by the households, including the socio-economic structure, sanitation and emptying methods used, sanitation practices within the community, etc.

A supervision and close monitoring system has been put in place to ensure quality and reliability of the collected data while ensuring compliance with privacy principles.

### Introduction of mobile money as a neighboring savings system for emptying

This phase aims to develop, test, and implement strategies to make households more willing to pay for mechanical emptying services through a mobile money savings system. It has been conducted through four main activities:



#### Activité 1:

Recruitment, through a call for proposals, of an operator working in the mobile money sector and having (i) a good network of service points in Pikine and Guédiawaye and (ii) a reputation for trustworthiness among people, with lower commission rates

#### Activité 2:

Proposing households, during the baseline survey, to subscribe to a new mechanical emptying service.

#### Activité 3 :

Implementation of a savings account system through the selected operator's network in the experimental phase. Savings accounts have been proposed to households which have decided to subscribe to the emptying service.

#### Activité 4:

Performing mechanical emptying paid through savings accounts and through the call center for emptying.

Mechanical emptying payment through mobile money and through the emptying call center includes the following six steps:

- i. The household opens an account with the selected mobile money operator, with the assistance of an interviewer,
- ii. The household supplies the account at least up to the emptying cost,
- iii. The household contacts the call center by phone for emptying when the septic tank is full,
- iv. The emptying call center puts the emptiers in competition and selects the most competitive bid,
- v. The tank is pumped upon agreement of the household on the price proposed by the call center,
- vi. The emptier is paid by the call center, once the emptying service is confirmed, by direct mobile money transfer from the household's account.

Poster identifying households which have subscribed to mobile money payment



## Monitoring the operation of emptying service payment by mobile money

Such monitoring is done on a daily basis and aims a better understanding of the structure of the "mobile money for emptying" product to develop suitable strategies to better attract customers.

### The first results obtained

In mid-July 2014, 4.5 months after the initiation of the mechanical emptying payment by mobile money, the results are promising::

- 1 496 households have taken out a subscription, which accounts for 40% of households which have been approached to join the system;
- Nearly 15% of subscribers have made at least one deposit for emptying;
- Nearly 10% of subscribers have been provided a first emptying service using mobile money payment.

## The next step

The next step is the continued monitoring of subscribers to mechanical emptying service payment through mobile money. Any useful information for the popularization of this payment system is being collected and analyzed.



Proportion of households which have subscribed to mobile money payment



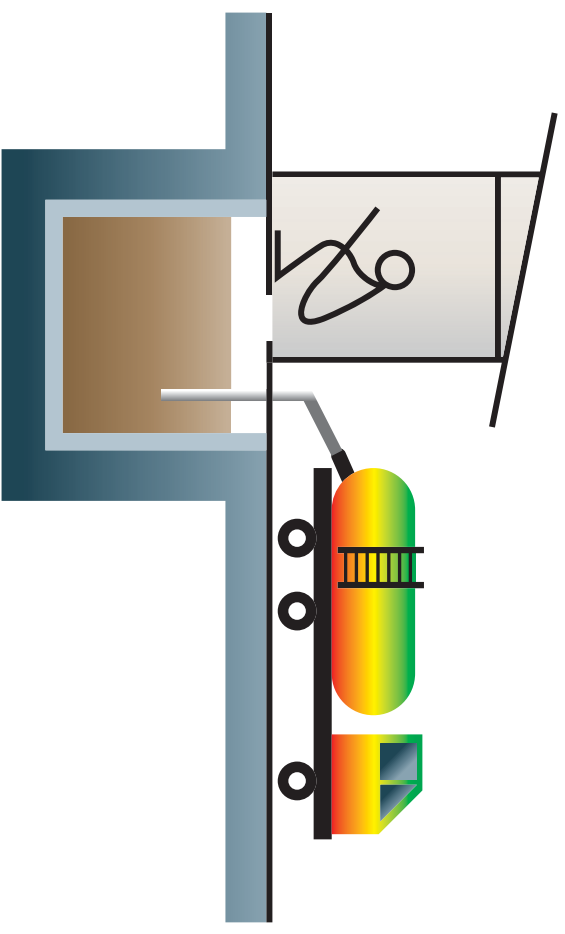
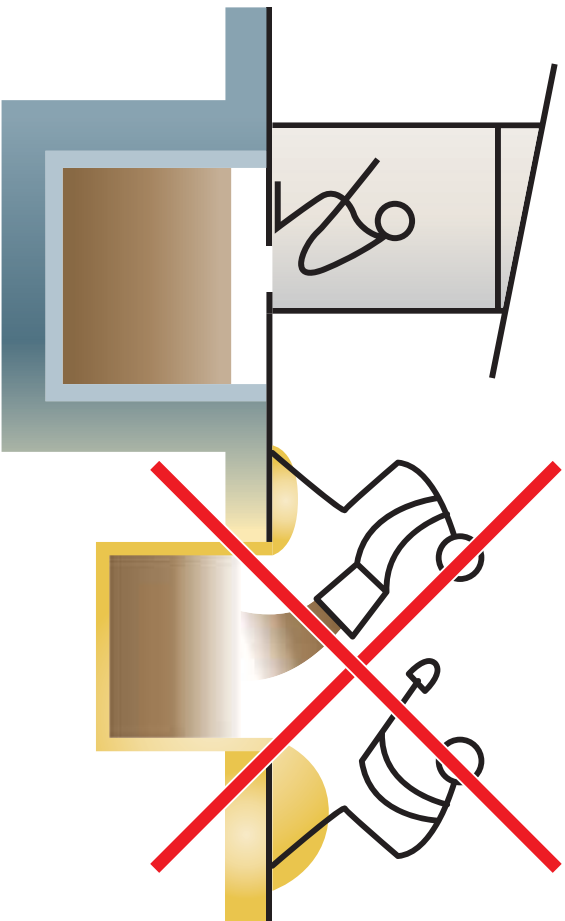
Cumulated number of emptying operations performed by the subscribers to mobile money payment



Séances de formation des enquêteurs



**Jëfëndikoo kamion widaans yi, mooy li ñu war**



**NON**

**OUI**



*Programme  
Boues de Vidange*