



Engaging Sanitation Entrepreneurs

The market for mechanical pit-emptying in Dakar & the realities of engaging entrepreneurs

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(edited by David Schaub-Jones)

Introduction

Recent work suggests that the local private sector is the predominant supplier of basic sanitation in the developing world. In April 2009 BPD convened a multi-disciplinary roundtable to discuss how the private sector provides sanitation and whether their efforts can be better harnessed to serve a development agenda. The focus was very much on what sanitation entrepreneurs are doing in the field and how practically to engage with them. Thirty professionals from differing sectors – from sanitation engineers to health specialists, from Malawian entrepreneurs to financial lenders – debated the role that entrepreneurs currently play, how to support them and what opportunities the sanitation sector may currently be missing.

Dakar provided an interesting opportunity for these discussions to focus on a nascent partnership that exists between a range of entrepreneurs and a government agency. Much of this is based around a proposed licensing system for vacuum trucks – the trucks are currently run by a range of formal and informal small and medium enterprises. These negotiations build on a large donor-supported programme to expand access to sanitation for poorer households in Dakar, the capital of Senegal.

This case study was written based on data collected in December 2008-January 2009 for a MSc thesis in Water Services Management, entitled, “Partnerships between authorities and small scale providers of sanitation ; Case studies in Dakar and Dar es Salaam”, supervised by M. Schwartz and M. Valfrey-Visser and financed by UNESCO-IHE, Hydroconseil and BPD. At the end is a list of those interviewed during the fieldwork – the author would like to thank them for their assistance and goodwill.¹

Background

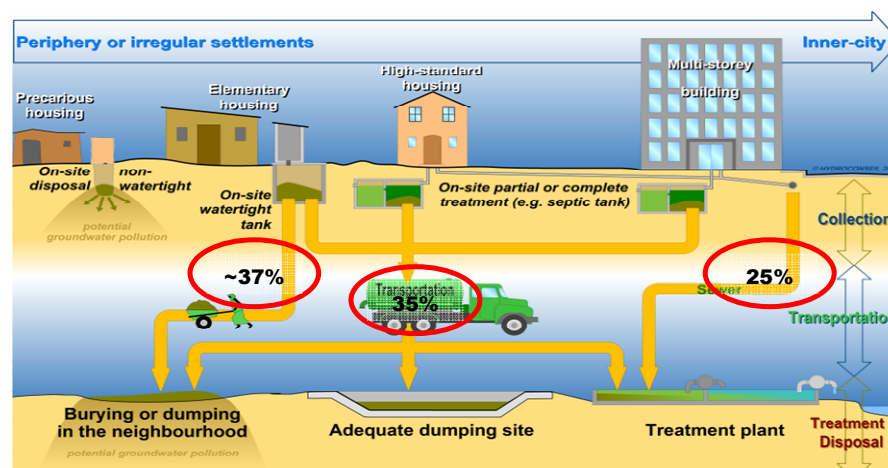


Figure adapted from Hydroconseil

Key point:
It is not necessarily the poorest households being served by trucks – manual emptying remains largely ‘outside the system’

¹ This case study was written in order to prompt reflection and debate during BPD’s Roundtable. The full methodology is detailed in the MSc report and the analysis is of the author alone, based on field interviews – it does not necessary reflect the entirety of current initiatives dealing with small scale sanitation providers in Dakar.

An estimate of the liquid waste flows in the city of Dakar are given above². Roughly 35% of the waste is currently handled by vacuum tankers – a business run by private individuals, contracted directly by households, who then dump the waste in faecal sludge treatment plants (FSTPs) run by an autonomous parastatal, ONAS, (the national sanitation agency).³ These connect directly into wastewater treatment plants, also run by ONAS.

The relationship between these vacuum tanker operators and the authorities is the focus of this case study. The estimated size of this market is around 2.2 million Euros (with an average of 200 emptying trips made daily within Dakar).⁴

Sanitation Coverage in Dakar

The population of Dakar is estimated at 2.5 million inhabitants⁵. According to ONAS and the 2004 census⁶ the coverage percentages in Dakar are as follows:

Sewerage connection	Septic tank	Pit latrines	Others	None
25%	55%	11%	6%	3%

Institutional setup of sanitation

Major sector reforms took place in Senegal in 1995. These included the creation of ONAS (Office National de l'Assainissement du Sénégal – the National Sanitation Office of Senegal) in 1996. ONAS is responsible for implementing national sanitation policies in the country and is in charge of the collection, treatment, waste recovery and evacuation of wastewater in urban and peri-urban areas. ONAS' role was recently redefined through a contract signed with the State in August 2008. In having one agency responsible for such matters, Senegal is atypical.

Sanitation in Dakar has been revamped significantly in recent years thanks to the 2001 Programme Eau à Long Terme (financed by the World Bank) within which a programme called "Sanitation Program for Peri-urban areas of Dakar" (or PAQPUD) has significantly raised coverage. This 30 million Euro programme has, over six years, addressed both sewerage and on-site sanitation. Of its various objectives, the most relevant to this case study the goals to construct 60 000 household facilities (mixing both on-site and condominial approaches) and the construction of 3 faecal sludge treatment plants (FSTP). Both were achieved by 2008.⁷ PAQPUD is to be continued until 2011 through an output-based aid agreement with the Global Partnership for OBA (GPOBA) of the World Bank. This proposes to construct 15,100 new on-site and condominial sewerage connections for 4 million Euros.

Worth noting: PAQPUD explicitly addressed faecal sludge transfer and treatment – an aspect often overlooked in sewerage projects.

² The data in this figure is based on various studies, including CREPA (2002), EDE (2007).

³ Even by implementing successful engagement strategies with the entrepreneurs studied (i.e. the vacuum tank operators), achieving the objectives would still only allow control of 60% of the liquid waste flow in the city (the flow going through the sewer system and the flow going through the vacuum tank operators). The remainder is reflected by the manual pit emptying sector where entrepreneurship is still limited: anecdotal evidence suggests that it is often a member of the family doing the job.

⁴ A demand-based estimate of the full emptying market for vacuum trucks (assuming emptying every 16 months and an average tariff of 40 Euros per trip).

⁵ National Agency for Statistics and Demography (2007), <http://www.ansd.sn/> as reviewed in January 2009

⁶ Direction de la Prévision et de la Statistique (2004), « Rapport de synthèse de la deuxième enquête sénégalaise auprès des ménages (ESAM-II) », Ministère de l'économie et des finances, République du Sénégal

⁷ The construction of household facilities was a success partly due to high demand for on-site facilities and partly as in 2006 the World Bank gave an additional 750 000 Euros to pay for 4 000 additional facilities requested. Despite the extra financing, 60% of the overall demand expressed by householders remained unsatisfied.

Entrepreneur Profiles

Operators of pit-emptying machines work sometimes for formal businesses, although often informally for the direct truck owner. Occasionally individuals purchase a truck and employ their family to operate it. The majority of the trucks working on household sanitation in Dakar are pumping trucks only: they don't remove the compacted sludge from the pit. Some are better equipped – machines with jets have a mechanism to inject water at high pressure – this is used to dilute sludge and then pump it out. These tend to belong to the formal companies. A third approach is to use tanks towed by other vehicles (only one of these was definitely identified, operating around the Camberene FSTP, with a capacity of 6 m³).

In December 2008, 63 different trucks were recorded visiting the Camberene treatment plant - 16 for the Rufisque treatment plant. The trucks are often in poor condition and frequently break down. From the treatment plant records it was estimated that there are around 85 trucks emptying septic tanks and pit latrines in the greater Dakar region (by comparison, 62 trucks were identified in 2000 by a Hydroconseil study¹).

The research identified 8 formal enterprises operating trucks. These own the more advanced 'water-jet' machines and have in total 35 (of which 5 were out of operation in December 2008 due to breakdowns). They control just over 40% of the total trucks.

Only 2 of 8 formal enterprises frequently emptied for households - the remainder preferred formal contracts from ONAS or business customers, citing the difficulty of monitoring employees' activities when they are emptying for households. Indeed, the sole firm (DELTA) currently focussed on household emptying mentioned that they are trying to win more formal contracts. This household emptying is often left to the least formal of the entrepreneurs.

Important trend: The more formal entrepreneurs tend to gravitate to institutional contracts and away from household emptying.

Existing relationship between entrepreneurs and authorities

The current dialogue between ONAS and the entrepreneurs started when the first facility for treating faecal sludge was designed in Dakar within the PAQPUD program. A steering committee, led by ONAS, had representatives of the entrepreneurs' association, as well as the Mayoral Association, National Hygiene Service, Environment and Planning Ministries. It seems that the demand from the entrepreneurs to open this new dumping site was considerable. This FSTP opened in September 2006 – following great demand from the truck operators (when construction was delayed entrepreneurs pressured ONAS by engaging directly with various Ministries).

The opening of the new FSTP in Cambérène has shown that ONAS and the entrepreneurs can work fruitfully together. Prior to this, in the Rufisque area, operators used to dump sludge directly in fields, but increasingly came under criticism from the (growing) population due to the smell. As the neighbourhood grew space for illegal dumping became scarce. As such the opening of the new FSTP was a great improvement from their perspective. Trucks pay a fee for dumping at the FSTP of 200 FCFA/m³ (= 0.3 Euros/m³) – this was set by the original steering committee.

The work upon which this note is based estimated the overall flows (sludge volume and finance) within the system. From this it became apparent that an estimated 35% of the trucks are not respecting the formal rules. Thus sludge not discharged directly at the treatment plant is discharged in directly into sewers (nominally illegal), or perhaps directly into the environment. It is nigh impossible for the initial client (household or business) to know when this is happening. It is also hard for ONAS to police.

Currently the Health Department, via its Environmental Health Officers, is a major player when it comes to regulation. They act as a brake on sludge being dumped directly into the environment, as does the general population (who would report such activities to EHOs). This pushes the operators towards collaboration with ONAS and drives their strongly expressed demand for new treatment plants to be opened (3 of which were included in the PAQPUD project).

One of the main complaints made by entrepreneurs during interviews was the problem of traffic police asking for bribes: they post themselves in strategic locations (near “the

*Key Question:
How important a player are the Health Department.
Do they need to be a formal part of any engagement strategy?*

garage” and near the Bel Air dumping site) and usually ask bribes from any truck passing. This is an important slice of operators’ operating expenditure. Policemen will ask for a driver’s driving licence of the driver; and normal procedure is for the driver to present their licence along with a 3 000 FCFA banknote (= 4.5 euro). If no bribe is given the police may well keep the licence, immobilising the truck until the driver can eventually reclaim their licence at the police station.⁸

Operators perceive themselves as indispensable to ONAS’ mission and believe that ONAS cannot ‘provide’ sanitation without them. They also perceive themselves as those in the field who know the sanitation situation in the city better than ONAS itself does. As such they can sometimes be reluctant to share their knowledge, concerned that providing information to ONAS may backfire should ONAS use that information to ‘control them’. Thus, while nominally open to dialogue with ONAS (seeing this as a route to improve their operating environment and to win recognition from the State), they are also a little suspicious of ONAS and their ultimate motives. Indeed one interviewee cited ONAS as a semi-competitor - ONAS is busy expending the sewerage system, thus taking away some of their existing clientele!

Both formal and informal operators are involved in activities not directly linked with household emptying. In 2008, after heavy flooding, the State (through the Ministry of Home Affairs) eventually contracted 52 trucks, paying 200 000 FCFA/day (300 Euros/day) over 30 days – equating to a market of 312 million FCFA (0.5 million Euros).⁹ Moreover, every year since 2005, during the pilgrimage to different holy cities (and because of the influence of such religious events), the State provides a special sanitation budget to ONAS. ONAS uses this for the maintenance and emptying of septic tanks for 10 days during the pilgrimage. As an example, the budget for the Magal of Touba in 2009 was in the region of 250 000 FCFA/day/truck (381 Euros) for 15 trucks. This equates to a market of 60 000 Euros. Theoretically ONAS can tender this market only to formal enterprises – but as no one firm has enough trucks, the informal operators also win a share of the business, via subcontracts to the formal enterprises. This tendering plays an important role in the relationship between ONAS and the operators (with the operators complaining about the way that ONAS awards their tenders).

Key question:

Can ONAS use leverage from these tenders to influence other parts of the system?

Entrepreneur & Staff Representation

The operators are represented by two organizations in Dakar. The “Economic Group” was formed in 1999 and is comprised of around 100 individual working on the emptying trucks in Dakar or as Baaye Pelle (manual pit-emptiers). It was created partly to organise the sector, partly to engage with the authorities. They gather in a place called “the Garage”, known by those in Dakar as the place to find the operators. Some of the trucks are parked there, waiting for potential clients. The ‘Economic Group’ has a board elected during the general assembly. Elections are irregular. Its management is pretty informal and there is little transparency. Yet from a survey done in Camberene, it appeared that 37% of those interviewed were members. As well as representing the workers, the association provides a social safety net; where there is a celebration or urgent need for money, the group can lend money to one of the members. One challenge is that the Association does not own the land upon which “the Garage” stands and they are under threat of ejection as the new owner wishes to build a petrol station there. The association “3 A.S.” (Association des Acteurs de l’Assainissement du Sénégal) stands for the Senegalese Sanitation Stakeholders Association. It was created in 2007 and groups together 37 owners of emptying trucks in Senegal. According to its president, the association has been created to unify the sector, to share advice between owners, and to give improve the image of truck operators in Senegal. Indeed, before its creation, there was no mechanism for an owner of one truck to comment upon the state of another’s, even if it was in very poor condition. The association thus (in theory) provides a flexible means of self-regulation. The association also plays a lobbying role – they negotiated with the Ministry when there were floods in 2008. These negotiations were very important for the truck owners as the government was threatening

⁸ Another challenge is choked traffic in Dakar, particularly during peak hours.

⁹ Figures were provided by the president of the 3AS Association, but have not been checked with the Ministry concerned.

to requisition their trucks. Instead they negotiated that 53 trucks would assist, pumping out floodwater, reimbursed by the government.

Notably, in December 2008, the president of the 3AS and the president of the Economic Group was the same person: M. Sow, director of one of the formal enterprises. The link between the two entities is therefore very strong. It seemed however that there is some willingness amongst the workers to become more independent of the owners.

What “engaging” with sanitation entrepreneurs could offer

As noted, a significant number of trips do not end with sludge dumped into ONAS’ treatment plants. By improving the relationship between ONAS and operators it may be possible to raise the percentage of sludge being delivered to the FSTPs and thence treated at the treatment works (as stated, this is now around 65%) – thus reducing the environmental impact of illicit dumping and the potential silting up of sewers from direct disposal into the sewer network.

ONAS sees the licence¹⁰ as more than a tool for ‘regulation’ - they also see opportunities to help the operators. *“We could help them in finding funds to renovate their trucks, and they could start thinking of a social tariff for on-site sanitation”*.

ONAS are conscious that operators’ are currently paying cash to policeman each trip and propose to involve the Justice Ministry in discussions on the matter to resolve the situation (whether this is realistic is a matter for debate, as is the impact of any license). Yet at the time of the research (December 2008) it appeared that discussions around licensing had not yet begun (despite ONAS’ professed willingness to involve the operators in the definition of the licence and its terms).¹¹

The entrepreneurs appreciate that licensing could assist their public profile and raise demand; *“we need to clean up peoples’ minds before cleaning up the city”* & *“it (licensing) will help our activities”*. In part they have an eye on winning more formal contracts with ONAS (such as ad-hoc contracts awarded during the annual religious Pilgrimage or for pumping during floods).

A second objective for engagement could be to make the existing service available to more people. Cost is seemingly a factor in this - currently the tariff is set by the open market. A better understanding of the cashflow involved in emptying could allow proactive regulation of the tariff that decreases the cost to households of emptying. Clamping down on bribes to policeman would also help.

For now the sector does not get external subsidy and the vast majority of capital investments have come from entrepreneurs themselves. Perhaps a license system would allow ONAS to propose an alternative financing system, including subsidy, through which it could improve the condition of the trucks (as mentioned, these suffer frequent breakdown). However, even with external subsidy, some households will not be reached by the existing services due to technological constraints (where streets are too narrow for the vacuum trucks for instance). No data on the percentage of the population not reachable has come to light during this research - but there are likely many households in the historical centres of some municipalities that are ‘out of reach’ (e.g. in Ouakam, Ngor, etc.).

Key question:

Will any subsidy reach those who need it most, given the current technical and other constraints?

¹⁰ Part of the ONAS’ contract with the Senegalese State promised *“... in dealing with on-site sanitation, ONAS agreed to develop within a year, a regulatory framework by which they propose to licence the enterprises dealing with faecal sludge emptying”*. Such a licence is also foreseen in the new Sanitation Code.

¹¹ ONAS has already proposed internally a norm for measuring the carrying volume of the trucks.

Factors favouring engagement

The entrepreneurs seem to perceive ONAS as a legitimate regulator of their activities. They broadly agreed the idea of a licensing system; seeing it as a way to “sanitise” their activities (by preventing bad practice). As a business activity, their prime motivation is to turn a short-term profit from their emptying operations. Yet they would also like to provide some security for their activities over the medium-term and see licenses as a step in this direction. ONAS, for its part, officially recognises the activities of the entrepreneurs – indeed, it is ONAS’ stated role to regulate them and to put in place a workable regulatory framework.

A second building block is the existing dialogue between the entrepreneurs and the authorities. This collaboration has been largely prompted by ONAS (with the support of SANDEC - the Department of Water and Sanitation in Developing Countries at the Swiss Federal Institute of Aquatic Science and Technology – or Eawag). SANDEC is doing research on Faecal Sludge Management (from technical processes for sludge treatment to the financial viability of different systems). They have advised ONAS on various issues and organised a training course for thirty entrepreneurs (vacuum tank operators and manual emptiers) on business models, hygiene and other issues. This offers some momentum for further engagement.

Likely barriers to engagement

If the purpose of any engagement is to improve the service to households, a major barrier is the informal nature of much of the household emptying that occurs currently. Most of this is done by informal firms who themselves state a preference for the more predictable market offered by businesses and the State. Managers see household emptying as complicated to monitor; it is difficult for a manager to really know how many trips the truck did during the day (and they fear ‘moonlighting’ by their operators). Moreover, when discussing their relationship with ONAS, the entrepreneurs tend to concentrate on the ad-hoc contracts they receive for flood relief and tenders during pilgrimages. It may be hard to switch the subject of conversation (and thus focus the engagement) on household emptying; without being overly distracted by these other issues.

A further difficulty is an apparent lack of coherence from ONAS concerning the entrepreneurs’ broader involvement. Different departments within ONAS are involved in the management of the faecal sludge and have different viewpoints.¹² For example, the On-Site Sanitation department, developed during the PAQPUD program and in charge of the construction of the FSTPs, was historically the first one to open dialogue with the entrepreneurs, through its stakeholder committee. After a few months of operation the FSTPs were transferred to the Commercial department of ONAS (as they are revenue generating). As it stands the employees of the Commercial department are best acquainted with the entrepreneurs (as they see them everyday at the FSTP) – yet they have little technical knowledge of the FSTPs and how they function. A third department, Operations, has links to the entrepreneurs – they are responsible for the contracts awarded during the pilgrimage. Each department follows its own agenda and there is currently little, if any, co-ordination between them. Yet each has a strong influence on the entrepreneurs – who tend to see ONAS as a single entity, and do not

Point of Reflection:

If the associations provide an ‘interlocutor’ for the entrepreneurs, does ONAS need to review how it itself communicates?

¹² Some of these differences in vision can be seen elsewhere. The original plan was to delegate management of the FSTP in Camberene to a private operator after a few months. Yet after two years ONAS still manages the FSTP itself. It cites a few reasons for keeping this in-house: i) the FSTP is part of the larger WWT (spatially as well as from a process point of view), therefore it is difficult to have separate management; ii) ONAS wishes to extend the FSTP model to other large cities in Senegal, and are still researching how to improve the treatment process and decrease the cost of construction.

differentiate greatly between the various departments. This situation can create (as is the case for the tenders awarded for the pilgrimage) tension and a bad perception of ONAS amongst the entrepreneurs (threatening the overall strength of their relationship and other dialogue).

Not yet discussed is an important technical barrier. Currently the FSTPs are significantly overloaded. The flow estimates the work undertaken suggested that Rufisque FSTP is operating at 900% of its capacity (it was designed for 60 m³/day) and Camberene FSTP at 450% (designed for 100 m³/day). The last FSTP – which was not operating at the time of the research, but opened in February 2008 - is designed for 60 m³/day. The outflow from the FSTP (which accepts waste from the trucks) leads to a treatment plant that deals with this, plus the city's sewage. The sewerage network has not yet reached the planned size (so there is less sewage load) which may mean that the waste is still being treated adequately before being discharged into the environment.

However as the sewerage network is extended, this will no longer be the case. Moreover, currently 35% of the truck volumes are not being discharged at the FSTP – were this situation to be corrected the FSTP bottleneck would only be exacerbated.

Key issues for the wider topic of sanitation entrepreneurs

- The segment that may well interest donors & NGOs most (household emptying) may be the least attractive to the actual entrepreneurs themselves.
- Manual emptying is not part of the dialogue. Yet it forms an estimated 37% part of the picture. Likely it is relatively more important to poorer householders.
- What is the rationale for “engaging” the entrepreneurs? Is this likely different within different departments within ONAS? Would donors (who may be approached for subsidy) share the rationale?
- It seems that the health sector is important to bolster regulation, yet we do not have a good understanding of their position, motives and aspirations. When we discuss engaging sanitation entrepreneurs, how much do we take the health sector (or others) for granted and how important is their direct and indirect role?
- The role played by the authority resides in this case entirely with the national sanitation provider, ONAS – which has pros and cons. Local government no longer play a role. Nor do householders themselves feature much in this discussion. Both could play a stronger role in controlling the way waste is discharged (following an awareness campaign from ONAS?).
- ONAS is looking at licensing the regulators – as is the case in Dar es Salaam and elsewhere. This does not always lead to additional support to operators though – rather a system of regulation ‘from afar’. What is the current dynamic in Dakar?
- Associations may help ‘organise’ the entrepreneurs, but their governance may be questionable. They may play a role in self-regulation, but the effectiveness of this is hard to judge.
- Government tenders go to the most formal entrepreneurs – what about the others? Is there some sort of ‘trickle-down’ effect, or should government explicitly consider how it engages the weaker of the pack (which, in this case, are dealing more with households)?

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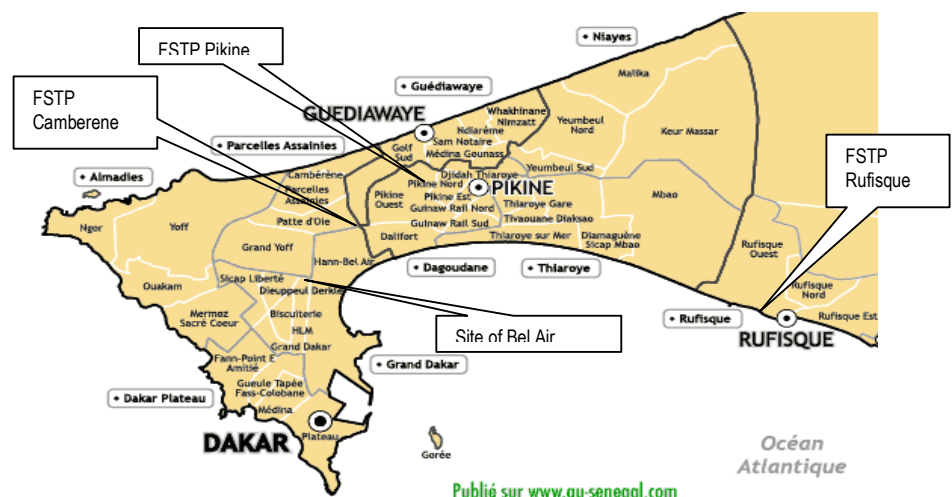


Figure : Map of the region of Dakar (FSTP = Faecal Sludge Treatment Plant)