

A Review of Fecal Sludge Management in 12 Cities

Annexure A.5 Dakar, Senegal

March 2013, updated June 2015

FINAL DRAFT

Prepared by:
Andy Peal and Barbara Evans
with
Isabel Blackett, Peter Hawkins and Chris Heymans

For WSP Urban Global Practice Team

Link to full report: <http://www.susana.org/en/resources/library/details/2212>

A.5 Dakar, Senegal

All data sourced from Scott (2010) except where shown.

A.5.1. Summary

Population (millions)	2.7
Percentage of households using on-site sanitation or open defecation	75%
Percentage of total fecal waste (sewage and fecal sludge) safely managed	21% to 31%
Percentage of sewage safely managed	14%
Percentage of fecal sludge from OSS safely managed	25% to 39%
FSM Framework	Improving
FSM Services	Partial
City Type	3

Sewerage coverage in Dakar is high by comparison with most African cities (25% considering the agglomeration as a whole), with an extensive sewerage system that covers significant areas of the city, although with currently limited coverage of lower-income districts (WUSP, 2012); however, the majority of households use on-site sanitation, notably pour-flush latrines discharging to septic tanks or pits. The FSM service for these households is strengthening as a result of improved planning, investment and a focus on providing a city-wide sanitation service in Dakar; although performance is perhaps lagging behind the development of the enabling environment.

A.5.2. Institutional framework

Brief summary of who is responsible for urban sanitation in the country and in the city if different...

Sanitation in Senegal is under the responsibility of the Ministry of Urbanisation and Sanitation. Through a service contract, the state delegates the responsibility for implementation and management of national sanitation policies to a national sanitation utility, the Office National de l'Assainissement du Sénégal (ONAS), created in 1995.

In 2002, the Programme d'assainissement dans les quartiers périurbains (PAQPUD) was launched with World Bank support. PAQPUD was a major sanitation programme with the aim of improving sanitation services in low-income districts outside central Dakar, through heavily subsidised construction of a) on-site sanitation facilities (mainly two-pit pour-flush latrines) and b) settled sewerage networks (WSUP, 2012).

In 2008, a revised code of sanitation was agreed explicitly stating the roles and responsibilities relevant to the PAQPUD developments. In the same year ONAS signed a new contractual agreement with the state where take a greater responsibility for fecal sludge management and treatment, including establishing a framework for the licensing of the fecal sludge entrepreneurs (Scott, 2010).

ONAS aims to provide sanitation services throughout Dakar and works alongside private pit emptiers although its capacity and commitment to fulfil these responsibilities in practice are limited. Nonetheless, WSUP (2012) observe that ONAS is one of the few utilities in sub-Saharan Africa to accept responsibility for FSM in low-income communities.

A.5.3. The FSM scorecard

Description of key points in SDA scorecard....

The FSM scorecard for Dakar shows that the enabling framework is in place and there is relatively good improvement in the developing and sustaining pillars. The World Bank PAQPUD project has been instrumental to this success through infrastructure investments from containment to treatment and this has had a positive influence. However, the challenge remains to develop and sustain progress following completion of the project.

The key remaining weaknesses appear in 'sustaining' treatment and overall in the lack of positive management of reuse and disposal – which clearly remains a need in all three pillars of the scorecard.

A.5.4. FSM along the sanitation service chain

A brief description of each part of the chain....

Containment:

It is estimated that 25% of households in Dakar are connected to city's main sewerage network¹⁰, approximately 2% continue to practice open defecation and the remaining 73% of households use some form of on-site sanitation. These are predominantly pour flush latrines discharging to septic tanks (56%) or pit latrines of various types (11%) (Scott, 2010).

Emptying:

Manual emptying by contractors (known locally as “*baay pelle*”) continues to be the most common desludging method employed in Dakar, with as much as 40% of the fecal waste produced being handled manually. However, for the purpose of this analysis it is considered that a proportion of this waste (estimated to be approximately one-quarter) is not emptied but buried safely by households when a pit fills up. Nevertheless, the vast majority is still unsafely removed from the pit and buried locally with great risk to both public health and the environment.

EDE and H₂O (2011) report that there are 50 private operators using mechanical emptying technologies to desludge tanks and pits. These mechanical operators have organised themselves into a pit emptiers association (*Association des Acteurs de l'Assainissement du Sénégal - A.A.A.S.* started in 2007); the manual emptiers remain less organised and tend to operate more locally. It is estimated that 46% of the fecal waste produced by households using on-site sanitation is emptied mechanically and that this includes households in low-income neighbourhoods.

Transport:

The private operators are charged a fee for dumping sludge at the fecal sludge treatment plant, this and the distance from the city centre to the plant deter many drivers from discharging their loads legally and they choose to dump the waste illegally. It is estimated that 30% of the exhausted sludge is dumped illegally.

Treatment:

There are three fecal sludge treatment plants in Dakar built under the PAQPUD project. The capacity of these plants is difficult to ascertain from literature but EDE and H₂O report that they now “deal with loads far beyond their capacity” and it is estimated that due to dysfunctional treatment 25% of the sludge delivered is discharged untreated.

¹⁰ Scott (2010) observes that a handful of semi-collective settled sewage schemes have been installed across several areas of Greater Dakar, first by the NGO ENDA-RUP and subsequently as part of the national sanitation strategy for urban areas. However, the coverage of these is limited compared to the main city network.

Reuse/disposal:

There is no formal reuse of fecal sludge or wastewater in Dakar.

A.5.5. Outcome

An overview or summary of the situation (i.e. poor FSM service delivery, improving FSM service delivery or partial FSM service delivery)

While the FSM service in Dakar has developed significantly over the last 10 years the waste flow diagram shows that despite these improvements it is estimated that only 50% of the fecal sludge collected is actually treated before disposal; equivalent to 25% of the total fecal waste generated by households using on-site sanitation. While there is some doubt about the proportion of waste that is safely buried and does not need treating it is clear that the current provision in Dakar can be considered to be a partial FSM service.

References

WUSP (2012). *Sanitation surcharges collected through water bills: a way forward for financing slum sanitation? Discussion Paper. Water and Sanitation for the Urban Poor (WUSP). London, UK.*

EDE and H₂O. (2011). *Landscape Analysis & Business Model Assessment In Fecal Sludge Management: Extraction & Transportation Models In Africa – Senegal.*

Scott, R. (2010). *Unbundling Tenure Issues for Urban Sanitation Development.* Loughborough University of Technology.

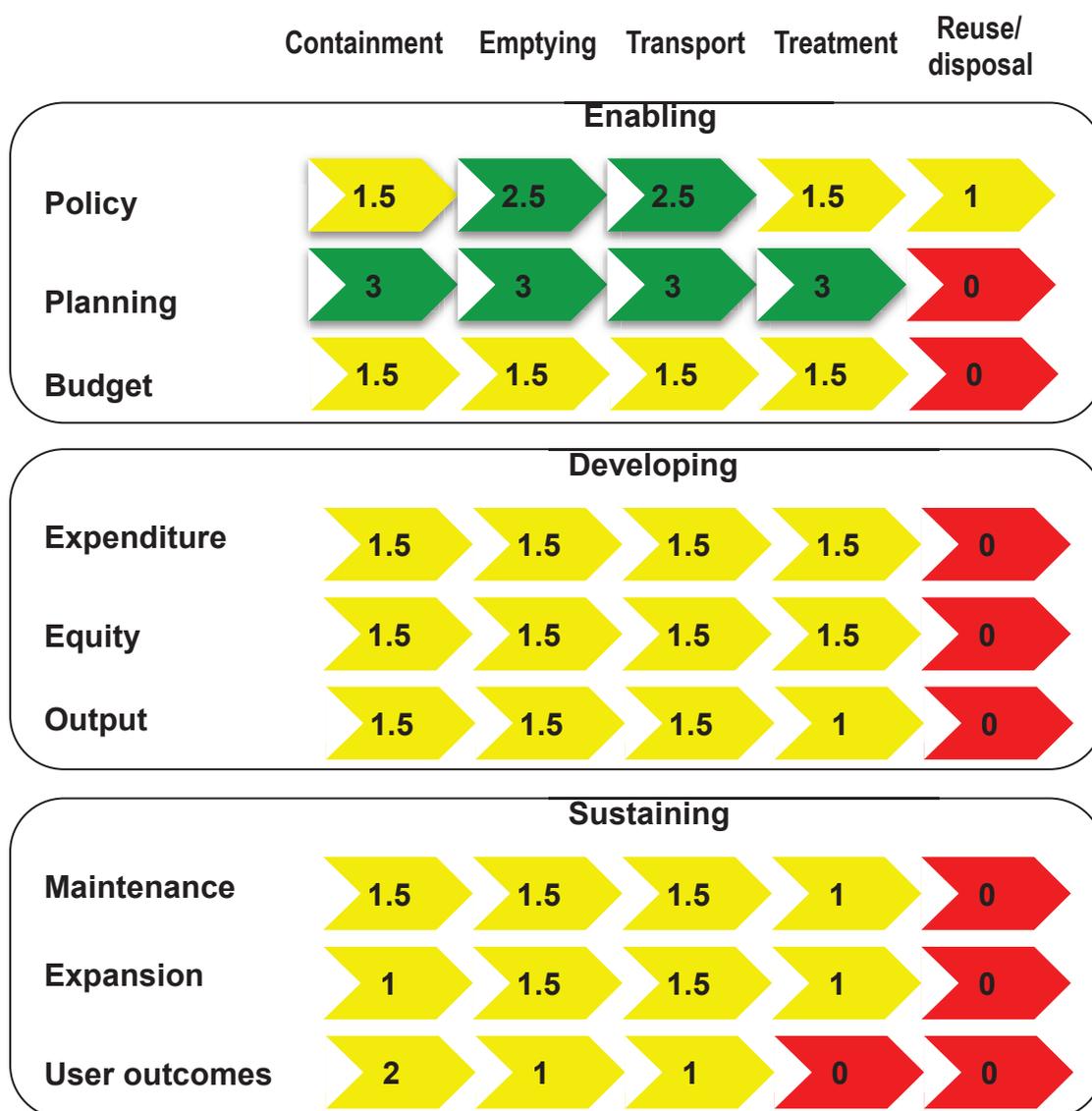


Figure 33: FSM scorecard for Dakar, Senegal

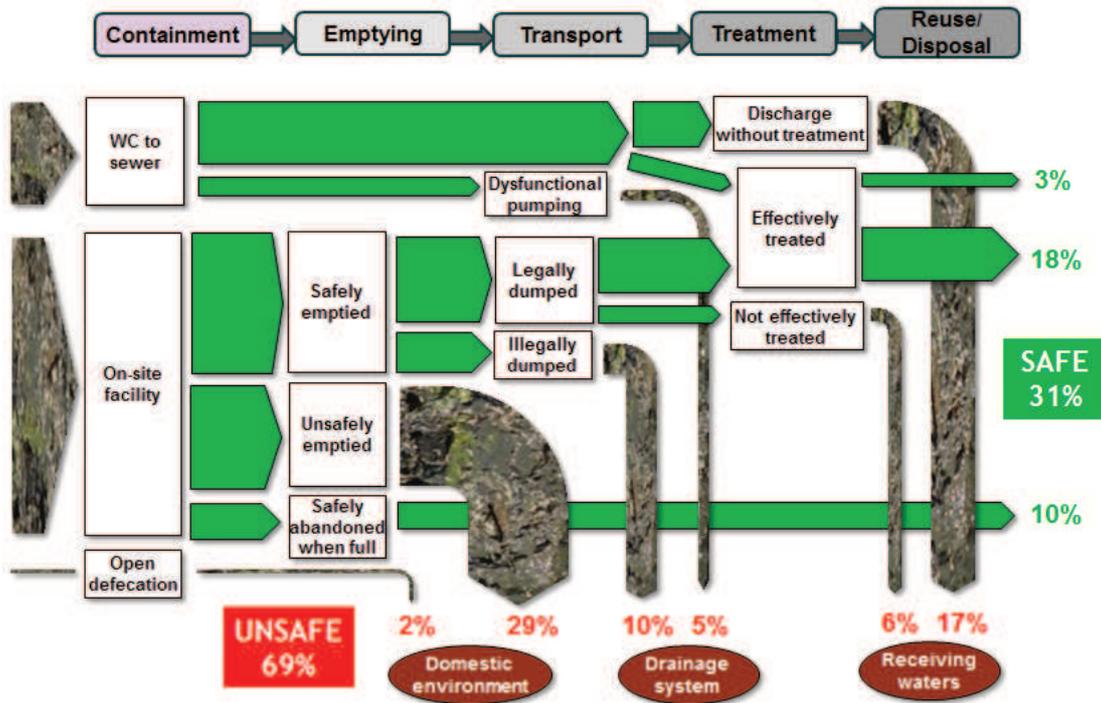
Fecal waste flow matrix	% of FW	of which safely collected	of which safely delivered	of which safely treated	Safe: 21% to 31%
Type of system					
Sewered (off site centralised or decentralised)	25%	100%	80%	15%	3%
On-site containment - permanent/emptiable	63%	53%	70%	75%	18%
On-site containment - single-use/not emptied/safely abandoned (see note 1)	10%	100%	100%	100%	10%
Open defecation	2%	0%			
Unsafe: 69% to: 79%		31%	15%	23%	
<i>Affected zones</i>		<i>local area & drainage</i>	<i>drainage system</i>	<i>receiving waters</i>	

Notes:

1. Single-use/not emptied/safely abandoned on-site containment is considered a safe disposal method but data available is poor so total 'safe' and total 'unsafe' are both shown as ranges.

2: All sources shown in waste flow diagram below.

Figure 34: Fecal waste flow matrix for Dakar, Senegal



Sources: Adapted from Scott (2010) and as otherwise stated.
 Sewered: 25%; on-site sanitation: 3%; and open defecation: 2%.
 Dysfunctional pumping: 0% of sewerage (Hawkins, 2013); discharged without treatment: 6% of sewerage; treated: 4% of sewerage.
 For on-site sanitation: not emptied (cover and forget): 4% of OSS; mechanically emptied: 6% of OSS; and manually emptied: 0% of OSS.
 Illegal dumping: 30% of mechanically emptied.
 Defective treatment: 25% of transported to treatment.

Figure 35: Fecal waste flow diagram for Dakar, Senegal