



An international partnership to help poor people gain sustained access to improved water supply and sanitation services

A Review of Fecal Sludge Management in 12 Cities

Annexure A.4 Maputo, Mozambique

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FINAL DRAFT

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

A.4 Maputo, Mozambique

All data sourced from Muximpua and Hawkins (2011) except where shown.

A.4.1. Summary

Population (millions)	1.9
Percentage of households using on-site sanitation or open defecation	90%
Percentage of total fecal waste (sewage and fecal sludge) safely managed	8% to 26%
Percentage of sewage safely managed	4%
Percentage of fecal sludge from OSS safely managed	8% to 28%
FSM Framework	Poor
FSM Services	Poor
City Type	1

A large proportion of Maputo's population lives in low-income settlements, often in areas with high water table. Greater Maputo comprises Maputo City and Matola. There is no sewerage network in Matola; in Maputo City, about 10% of households have sewer connections, while the remainder depend on septic tanks and latrines of different types and qualities (WSUP/IWA, 2011).

A.4.2. Institutional framework

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

Nationally, sanitation is the responsibility of the National Water Directorate (DNA). In Maputo, the assets and responsibilities of the DNA are in the process of being transferred to the Water and Sanitation Department (DAS) of the Municipal Council (CMM). DAS manages the city's stormwater drainage, sewerage network, wastewater treatment plant and de-sludging of septic tanks and pits but is currently severely under-funded and under-resourced for these roles. In 2009 a new asset-holding company, the *Administração de Infraestruturas de Abastecimento de Água e Saneamento* (AIAS), was created with responsibility for water supply assets in secondary towns and sanitation assets in all urban areas including Maputo. Water supply is regulated by a national regulator, *Conselho de Regulação da Água* (CRA) and in 2009 CRA was also tasked with the regulation of sanitation services. However, as yet the modalities of how AIAS and CRA will perform their respective tasks remain undefined (WSUP, 2012).

A.4.3. The FSM scorecard

Description of key points in SDA scorecard...

The FSM service provided in Maputo is poor as indicated by the low scores in the enabling, developing and sustaining aspects of the FSM scorecard. The relatively high scores for the policy element of the enabling block indicates that the institutional framework is largely in place and significantly the recently agreed National Urban Water and Sanitation Strategy does include FSM. However, the strategy is new and has not yet been operationalized. Therefore, in terms of delivering an FSM service the responsible organisations remain ineffective with little planning and no budgetary allocation for FSM services – hence the poor level of service as indicated in the developing and sustaining

blocks. A degree of limited progress is being made by donor-supported local community organisations that have set up small-scale pit-emptying operations but these are not yet operating at scale, and remain dependent on donor support (WUSP, 2011).

A.4.4. FSM along the sanitation service chain

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

Containment:

It is estimated that 1% of Maputo residents practice open defecation while around 10% are connected to the city's sewer network. The remaining 89% of households use some form of on-site sanitation (Hawkins, 2013). A minority of these are water closets connected to septic tanks but most commonly they are pour flush latrines, improved latrines with a concrete slab or traditional latrines built from tyres, barrels, and/or timber. The quality of construction, particularly of the traditional latrines which are often built by the householders themselves, is generally poor with no quality control either by the households or by local government; this results in a risk of collapse and harm to users as well as posing a threat to the environment and public health.

Emptying:

There is a lack of hygienic toilet desludging services in Maputo. The majority of on-site sanitation is found in the poor peri-urban neighborhoods and these latrines are either emptied manually by individuals or by small-scale contractors with the sludge generally buried in the user's backyard, dumped in the drainage system or in the skips used for secondary collection of solid waste. (Hawkins (2013) estimates that around 60% of non-sewered households carry out this practice and a much smaller percentage (around 20% of pits built by non-sewered households) are not emptied but are buried safely when they become full.)

Some sanitation facilities are emptied mechanically using vacuum trucks but these are mostly septic tanks in the middle-income areas. Two CBOs and one microenterprise, supported by WaterAid and WSUP respectively, also provide mechanical desludging services using small tankers (a VacuTug or a motorized diaphragm pump) and a hand pump (known as a "Gulper"). The municipality also has one vacuum truck but this is often inoperable. It is estimated that around 20% of containment systems in Maputo are emptied mechanically (Hawkins, 2013).

Transport:

Some of the mechanically emptied sludge is transported to treatment but Hawkins (2013) estimates that 25% of the volume emptied is dumped illegally. The reasons for this include the fact that a) the only treatment site is at Infulene which is approximately 9km from Maputo city centre (therefore transportation costs are high) b) the operators have no incentive to deliver the waste to Infulene and c) the CMM does not have the resources to monitor the activity and implement sanctions against illegal dumping.

Treatment:

There is no dedicated fecal sludge treatment plant in Maputo although (as explained above) the discharge of fecal sludge to the Infulene wastewater treatment works stabilization ponds is permitted. However, even then the treatment of the waste that does reach the site is not guaranteed; the site is not maintained at all, and no monitoring is done to assess its effectiveness (Muximpua and Hawkins, 2011). Hawkins (2013) estimates that only 50% of the waste delivered to the site is treated effectively.

Reuse/disposal:

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

A.4.5. Outcome

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

Overall, and making allowances for poor operation and maintenance of the sewer network and dysfunctional treatment, it is suggested that at least three-quarters of the fecal waste generated in Maputo is unsafely reused/disposed of to the environment. The majority of this waste is from households not connected to the sewer network who use some form of on-site sanitation. The small scale FSM service in Maputo is poor; it serves less than a fifth of the users of the users of on-site sanitation and safely treats and disposes of less than half of the waste that they generate.

References

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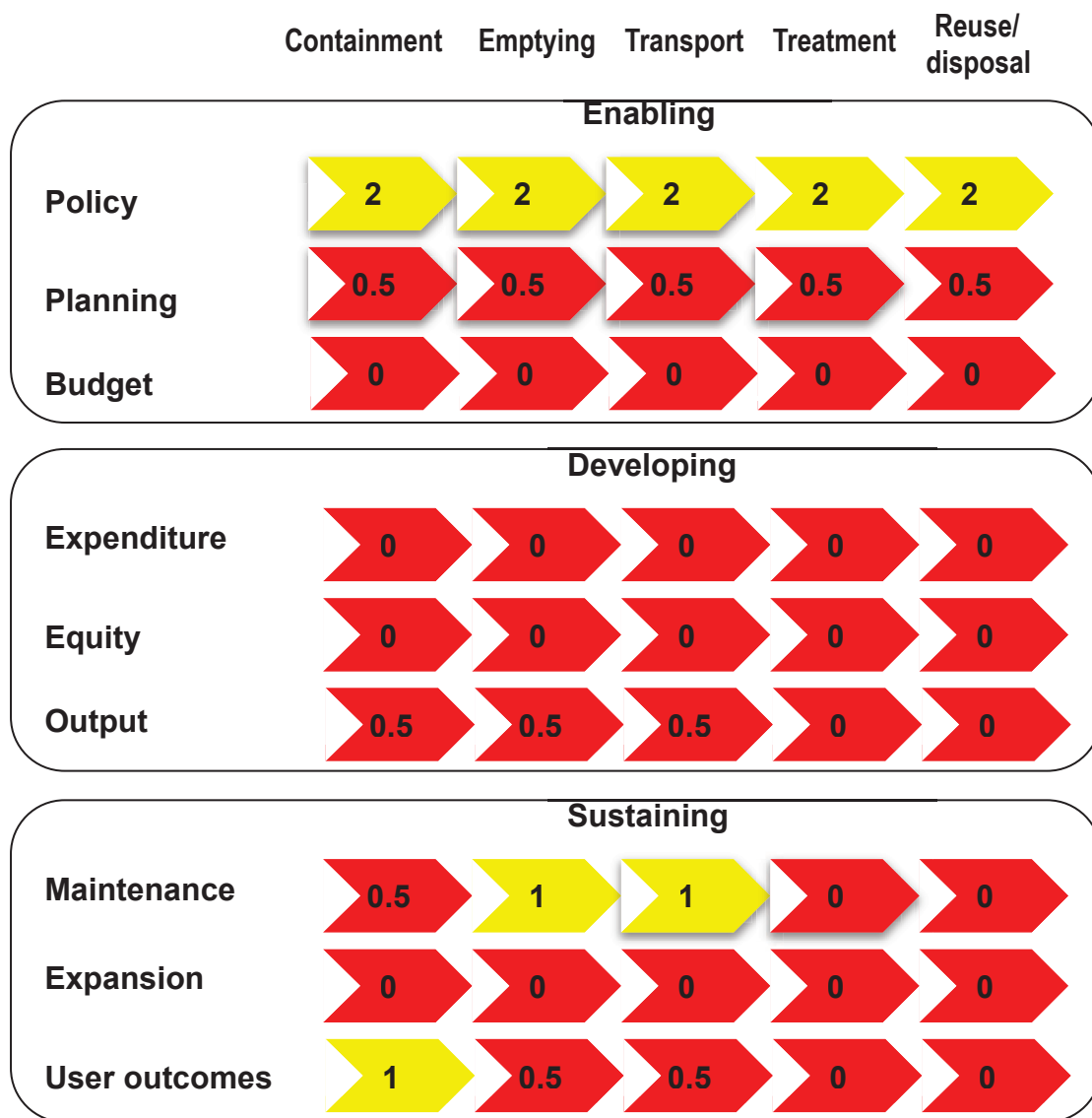
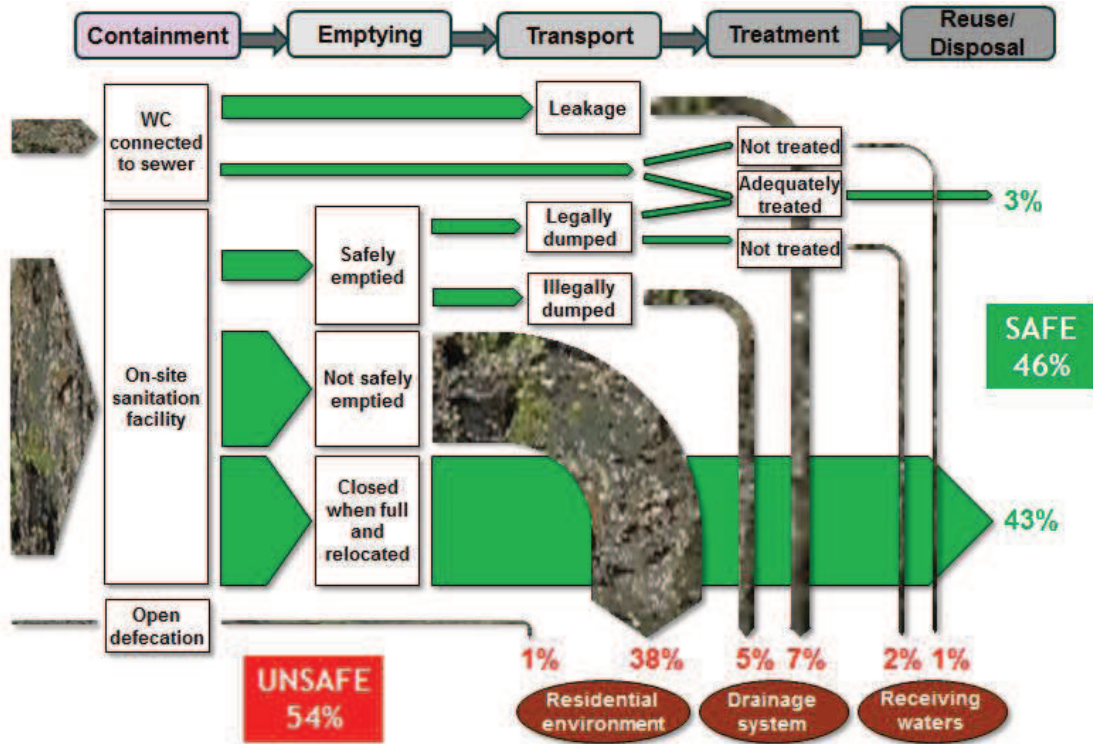


Figure 30: FSM scorecard for Maputo, Mozambique

Fecal waste flow matrix	% of FW	of which safely collected	of which safely delivered	of which safely treated	Safe: 46%
Type of system					
Sewered (off site centralised or decentralised)	9%	100%	25%	50%	1%
On-site containment - permanent/emptiable	47%	20%	48%	50%	2%
On-site containment - single-use/not emptied/safely abandoned	43%	100%	100%	100%	43%
Open defecation	1%	0%			
Unsafe: 56%		39%	12%	3%	
<i>Affected zones</i>		<i>local area & drainage</i>	<i>drainage system</i>	<i>receiving waters</i>	

Figure 31: Fecal waste flow matrix for Maputo, Mozambique



Sources: From Hawkins (2013) unless otherwise stated.
 Sewered: 10%; on-site sanitation: 89%; and open defecation: 1%. (Note: Maximpu and Hawkins (2011) quote sewered percentage as 15% but not all households are connected).
 Dysfunctional sewerage: 75%; and defective treatment: 50%
 For on-site sanitation: not emptied (cover and forget) is 20% of OSS; mechanically emptied is 20% of OSS; and manually emptied: 60% of OSS (100% illegally dumped).
 Illegal dumping: 25% of mechanically emptied
 Defective treatment: 50% of transported to treatment.

Figure 32: Fecal waste flow diagram for Maputo, Mozambique