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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.6 Kampala, Uganda**

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FINAL DRAFT

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

## A.6 Kampala, Uganda

All data sourced from WSP (2008) except where shown.

### A.6.1. Summary

Population (millions)	1.5
Percentage of households using on-site sanitation or open defecation	91%
Percentage of total fecal waste (sewage and fecal sludge) safely managed	19% to 40%
Percentage of sewage safely managed	78%
Percentage of fecal sludge from OSS safely managed	12% to 37%
FSM Framework	Improving
FSM Services	Poor/Improving
City Type	2

The sanitation sector in Uganda is under-funded and, despite the fact that at the national level the institutional and legal framework is largely in place, poor regulation, a lack of enforcement and the limited functionality of the city's treatment works have all had a negative impact on Kampala's environment and the health of its residents. The majority of households in Kampala use on-site sanitation as the city's sewerage network covers less than a tenth of the population but Kampala City Council is itself under-resourced and has limited capacity to discharge its mandate for on-site sanitation.

### A.6.2. Institutional framework

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

The institutional framework for sanitation service delivery in Uganda is defined although the interface between the various stakeholders in some areas is somewhat blurred and the emphasis remains on sewerage. ; Recent developments indicate an increased understanding of the importance of FSM.

Responsibility for providing and managing sewerage in the country rests with the National Water and Sewerage Corporation (NWSC) while on-site sanitation is the responsibility of municipalities. The Kampala City Council (KCC) being mandated to manage on-site sanitation in Kampala.

The Ministry of Environment (NEMA) through the Directorate of Water Resources Management (DWRM) carries out regulation of the sector. NEMA manages and enforces environmental legislation using national waste management regulations while wastewater discharge and sewerage regulations are also in place. However, in Kampala (and generally in Uganda) NEMA focuses on management of solid and hazardous wastes and leaves supervision of FSM to the KCC. The KCC meanwhile has limited capacity to implement their mandate and also focuses on solid waste – spending 90% of their sanitation budget on solid waste (Mutono, 2013). As a result private emptiers have emerged to fill the gap in service while treatment plants in Kampala are run by the NWSC.

Recognising the need for change and the importance of on-site sanitation, FSM is now being incorporated within new strategies and programmes. For instance, the current

Kampala Sanitation Master Plan has provision for constructing sludge treatment facilities as well as improving the collection of sludge, while a new European Union-funded project in Kampala is dedicated to developing an integrated city-wide on-site sanitation concept with an emphasis on FSM (Mutono, 2013).

### **A.6.3. The FSM scorecard**

*Description of key points in SDA scorecard....*

The FSM scorecard for Kampala shows that the framework is being developed and parts of it are in place, particularly at the level of policy and planning. There is however, clearly, inadequate budget to facilitate significant development of infrastructure except in treatment.

Improvements in treatment capacity are expected following recent expenditure (and reports suggests that more are planned (Mutono, 2013)). Emptying and transporting fecal sludge is taking place although on a limited scale; the private sector-led mechanical pit emptying service shows signs of improvement and could potentially become consolidated to deliver some of the needed services. Overall areas of weakness remain in equity and output and especially in containment and reuse/disposal.

### **A.6.4. FSM along the sanitation service chain**

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

#### **Containment:**

It is estimated that only 9% of households in Kampala are connected to city's main sewerage network, approximately 1% continue to practice open defecation and the remaining 90% of households use some form of on-site sanitation – a mix of latrines, septic tanks and cess pits. However, there are no enforced standards guiding their construction resulting in poor workmanship and subsequent malfunction of these facilities.

#### **Emptying:**

Manual emptying is common in Kampala and it is estimated that one-third of waste from households using on-site sanitation is emptied and buried or dumped locally in open drains. Latrines in the low-income more densely populated areas are often heavily loaded, poorly built, badly maintained and access to enable emptying is often impossible. An estimated 25% of the waste from households using on-site sanitation is left to overflow into the environment when the container is full and unsafely abandoned. It is recognised that some households do prevent contamination of the environment and protect public health by safely covering pits when they fill up – i.e. by safely abandoning them. There is no data to suggest what the percentage is but for the purpose of this analysis it is considered that a quarter of pits are abandoned safely in this manner.

The KCC owns five vacuum trucks and carries out a limited amount of mechanical pit emptying. Private companies known locally as 'cesspool operators' do the majority of mechanical emptying. There are approximately 27 cesspool operators who are all members of a Private Pit Emptiers Association (PEA). In total it is estimated that the KCC and the private operators empty around a fifth of the fecal waste generated in Kampala.

#### **Transport:**

The cesspool operators are charged a user fee for delivering sludge to the Bugolobi treatment site. The KCC and NWSC assert that, in order to avoid paying the fee and to reduce their transportation costs, at times the cesspool emptiers illegally discharge waste into the environment. In the absence of any data it is assumed that 10% of the mechanically emptied sludge is dumped illegally by the operators before it reaches treatment.

#### **Treatment:**

The cesspool operators transport fecal waste to the Bugolobi treatment plant. The plant has recently been revamped to handle at least 200m<sup>3</sup> per day of sludge but the limited

functionality of the plant has been a serious problem in Kampala and for the purpose of the analysis it has been assumed that the treatment process is only 75% efficient – it is anticipated that this will improve following the rehabilitation. Mutono (2013) reports that in addition to Bugolobi a new FSTP at Lubigi will handle 400m<sup>3</sup>/day when complete while two other FSTPs are planned. These sites will greatly increase NWSC's fecal sludge treatment capacity.

**Reuse/disposal:**

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

**A.6.5. Outcome**

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

Overall in Kampala at least 60% of the fecal waste generated remains untreated and while there is some doubt about the proportion of fecal waste from on-site sanitation that is safely buried by households it is clear that the majority of the untreated waste is from the large number of on-site sanitation facilities. Although some of the FSM framework is in place the actual level of service being delivered is lagging behind the establishment of the enabling environment and the scale of the service is currently limited. The cesspool operators are providing households with an emptying service and the majority of sludge emptied is being treated and safely disposed of but only 14% of fecal waste generated from on-site sanitation is treated.

**References**

WSP (2008). *Market Analysis Of On-Site Sanitation & Cesspool Emptying Services in Kampala.*

Mutono, S. (2013). *Personal communication.*

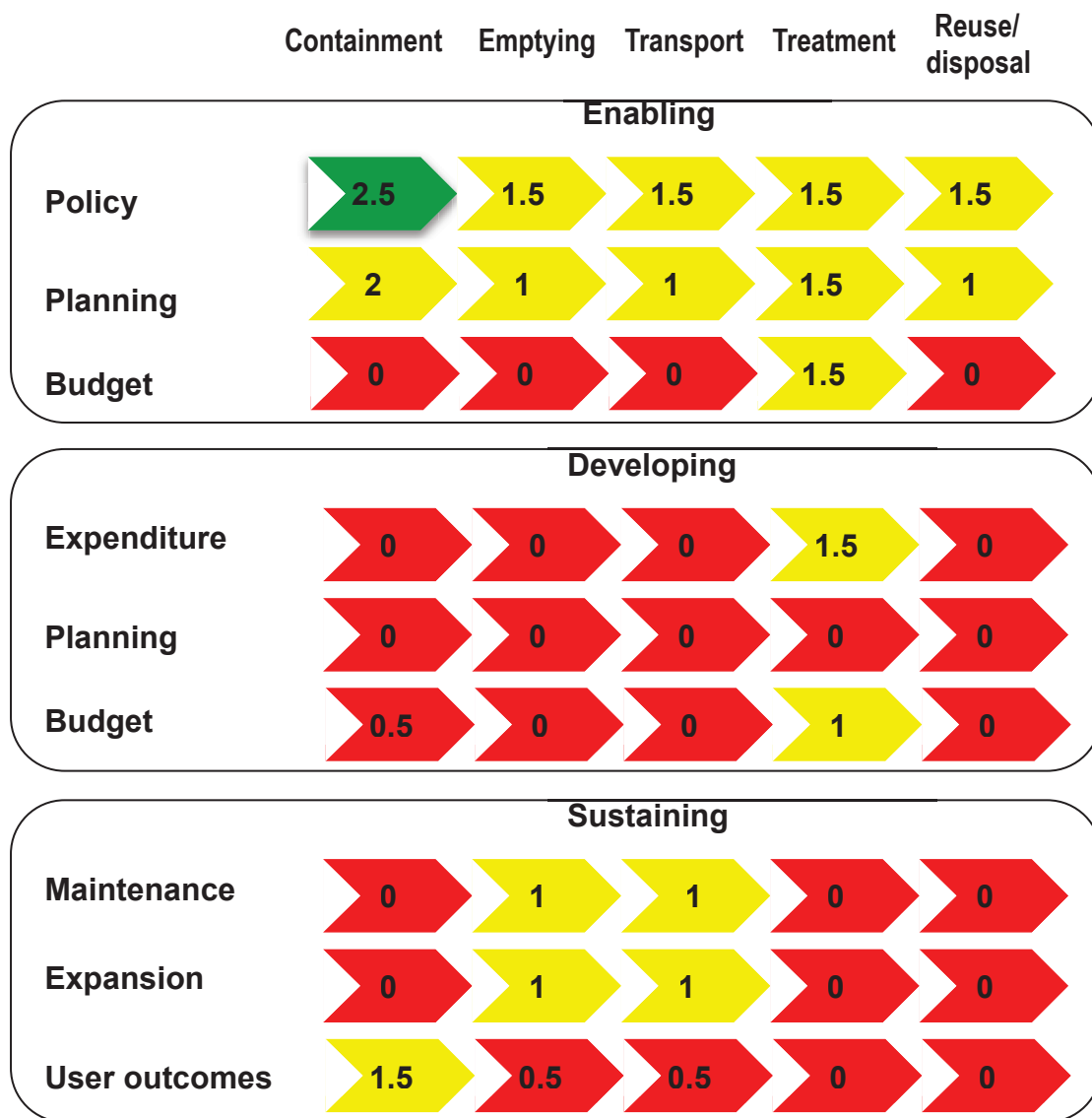


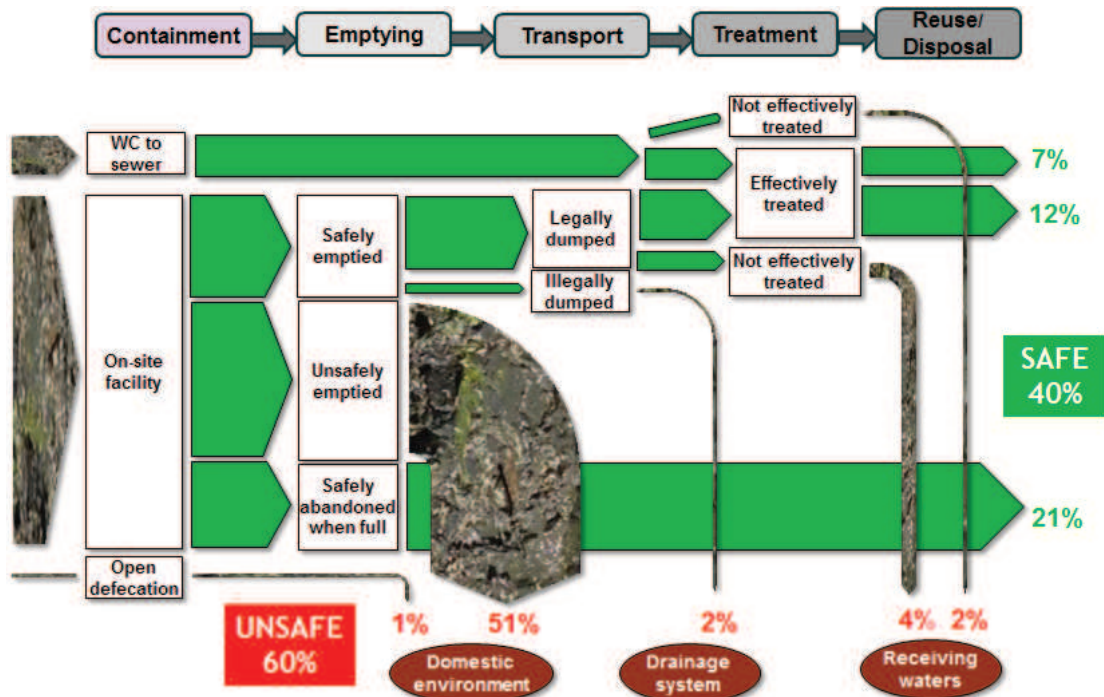
Figure 36: FSM scorecard for Kampala, Uganda

Fecal waste flow matrix		% of FW	of which safely collected	of which safely delivered	of which safely treated	Safe: 19% to 40%
Type of system						
Sewered (off site centralised or decentralised)		9%	100%	100%	80%	7%
On-site containment - permanent/emptiable		69%	26%	90%	75%	12%
On-site containment - single-use/not emptied/safely abandoned (see note 1)		21%	100%	100%	100%	21%
Open defecation		1%	0%			
<b>Unsafe: 60% to: 81%</b>			<b>52%</b>	<b>2%</b>	<b>6%</b>	
Affected zones			local area & drainage	drainage system	receiving waters	

Notes:

- 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.
- All sources shown in waste flow diagram below.

Figure 37: Fecal waste flow matrix for Kampala, Uganda



Sources: From WSP (2008) unless otherwise stated.  
 Sewered: 9%; On-site sanitation: 69%; and open defecation: 1%.  
 Dysfunctional treatment: 20% of sewerage (nominal)  
 For on-site sanitation: not emptied (cover & forget) 25% of OSS; mechanically emptied 20% of OSS; manually emptied 30% of OSS (100% illegally dumped & buried); not emptied and abandoned unsafely 25% of OSS (all Mutono, 2013).  
 Illegal dumping: 10% of mechanical emptying (nominal)  
 Dysfunctional treatment: 25% of transported to treatment (nominal)

Figure 38: Fecal waste flow diagram for Kampala, Uganda