



Emerging Lessons on FSM from Maputo, Mozambique

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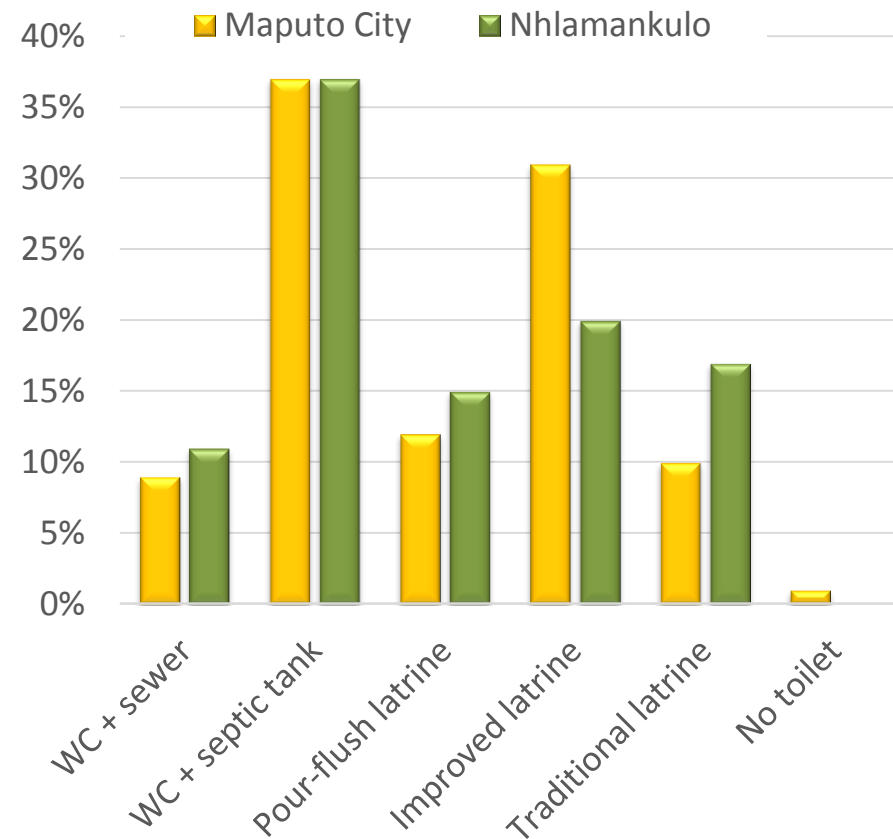
P. Hawkins, J. Stricker, Z. Mugabe, O. Matendjua and A.
Madamuge

World Bank



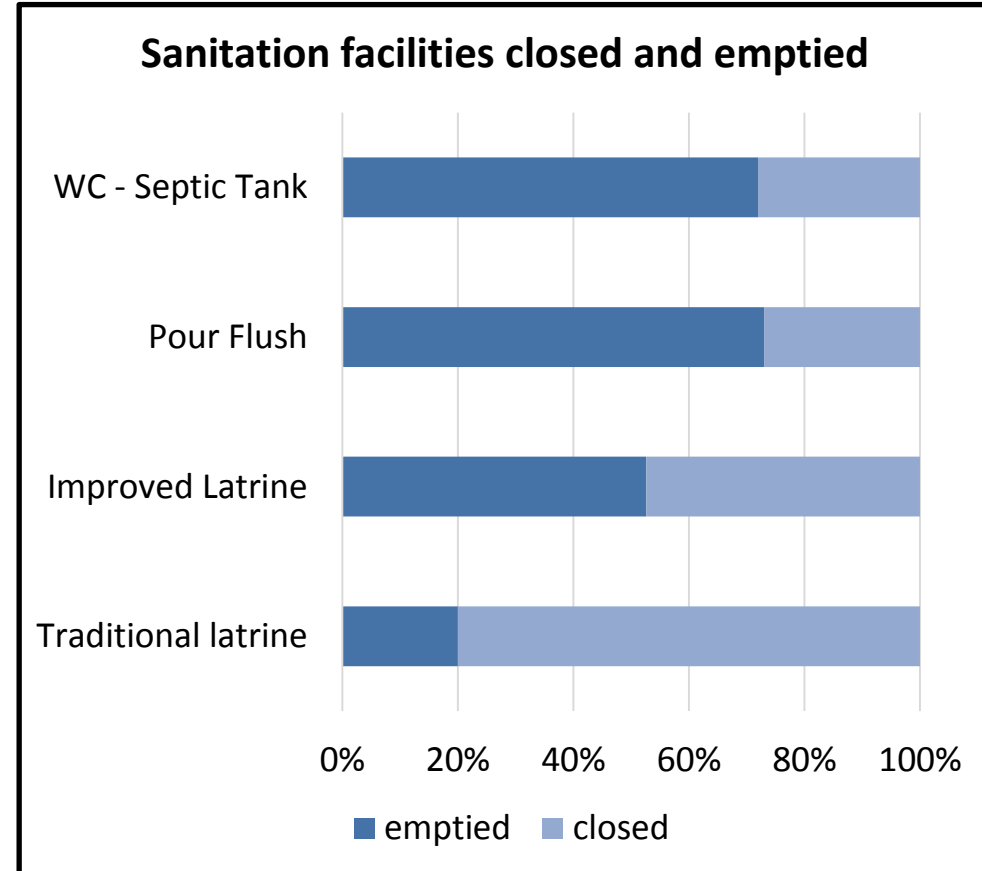
1. Background

- City: 1.2M population
 - Project area: 150,000
- Rapid Water supply expansion
 - Shift from dry to wet sanitation systems
- Unclear mandates and lack of service provision capacity
 - 100% household responsibility



2. Existing Conditions...

- Replacement of pits
 - Poorly constructed structures
- Limited FSM services
 - Informal emptying
 - Limited access for vacuum tankers
 - Lack of appropriate equipment for unlined pits
- Illegal dumping into residential environment
 - Prevalence of unhygienic, informal, manual emptying



3. Project Design

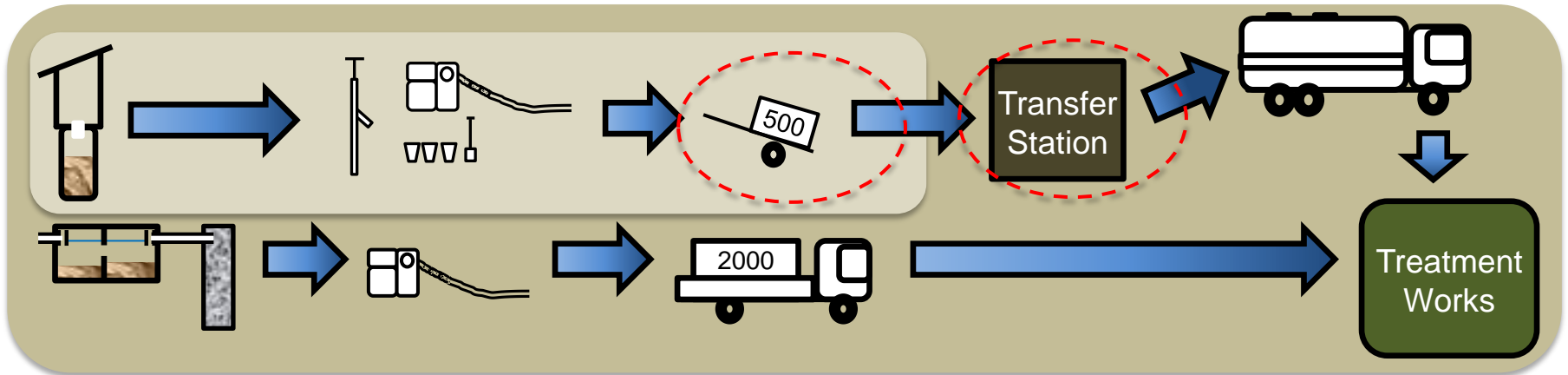
- Partnership led by Maputo City Council
 - Supported by WB and WSUP, funded by JSDF
- Sanitation service improvements in Nhlamankulo District
 - Private sector engagement
 - Technology development
 - Design of service models
 - Capacity development



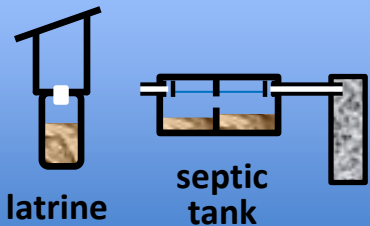
3. Project Design – cont.

- Transfer stations to improve access and reduce transport costs
- 8 operators (5 primary and 3 secondary)

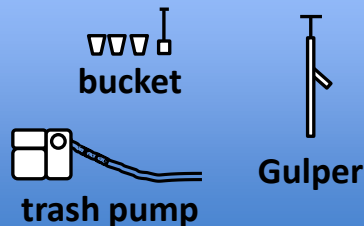
Initial Model



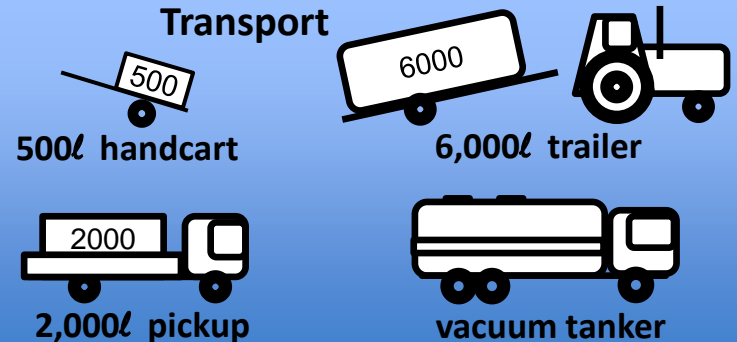
Containment



Emptying



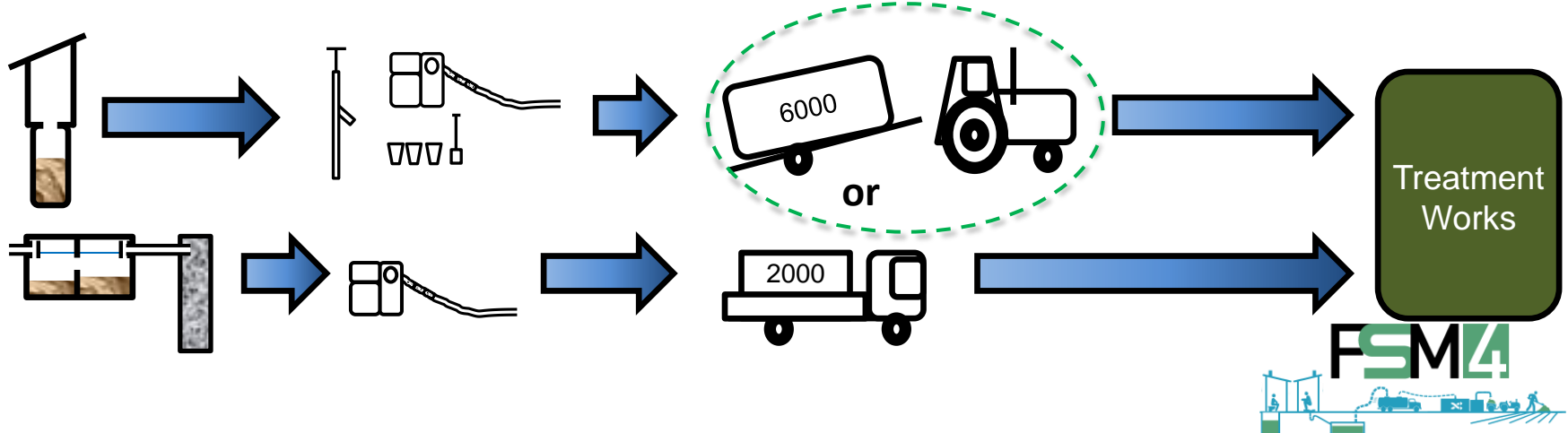
Transport



4. Challenges and Modifications

- Local resistance to construction of transfer stations → mobile tanks
- High dependence on the secondary operators
- Difficulties operating handcarts
- Higher volumes to be emptied compared to reference volumes at the design stage

Current Model



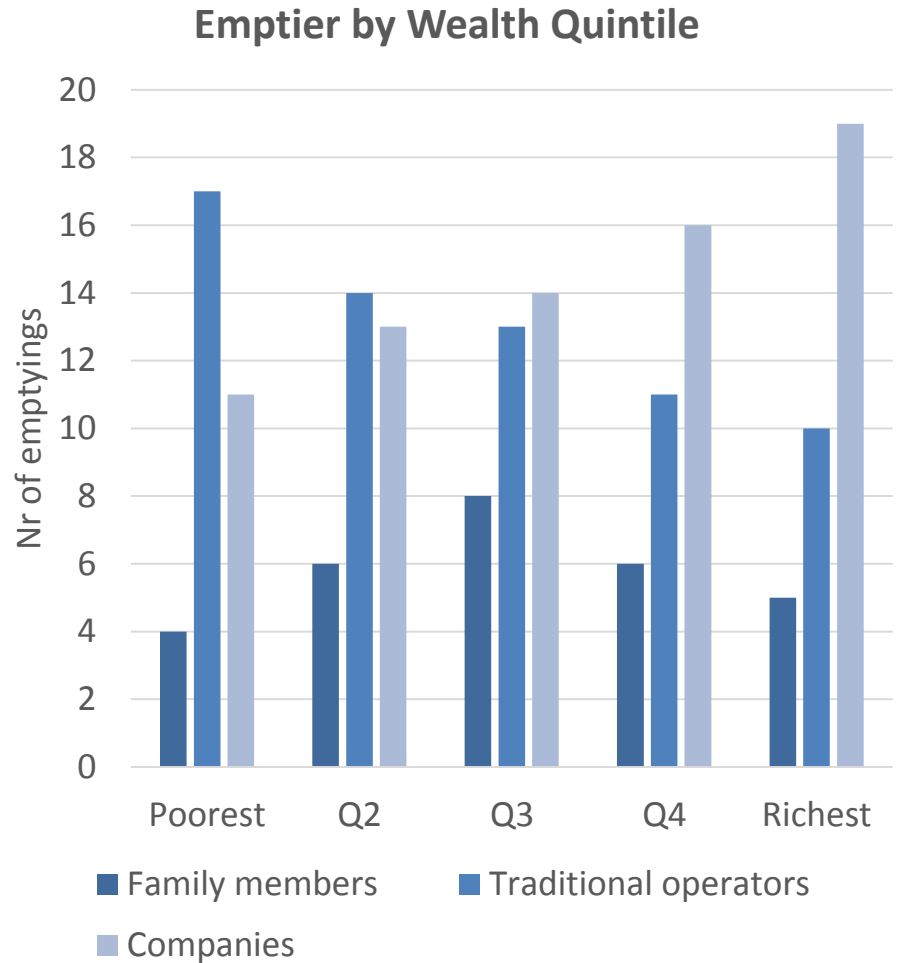
5. Financial Data

Operator	No. of emptyings		Revenue (USD)	Cost (USD)	Operating profit (USD)	Depre- ciation (USD)	Net profit (loss) (USD)
	Pits	Septic tanks					
Primary Operators							
Acadec	52	61	7,645	4,975	2,670	2,832	(162)
Bejoel	3	63	4,307	1,800	2,507	2,832	(325)
Magoanine	76	79	7,589	2,963	4,626	2,832	1,794
Modac	0	41	1,675	1,293	383	2,832	(2,449)
(Phatima)*	1	7	661	470	191	2,832	(2,641)
Secondary Operators							
Mbonga Mbilo	49	185	10,996	6,488	4,509	11,495	(6,896)
Sizema	77	69	8,635	4,107	4,528	11,495	(6,967)
Oliveira	0	42	4,976	1,119	3,857	11,495	(7,638)
TOTAL	258	547	46,485	23,213	23,271	48,645	(25,374)



5. Financial Data – *cont.*

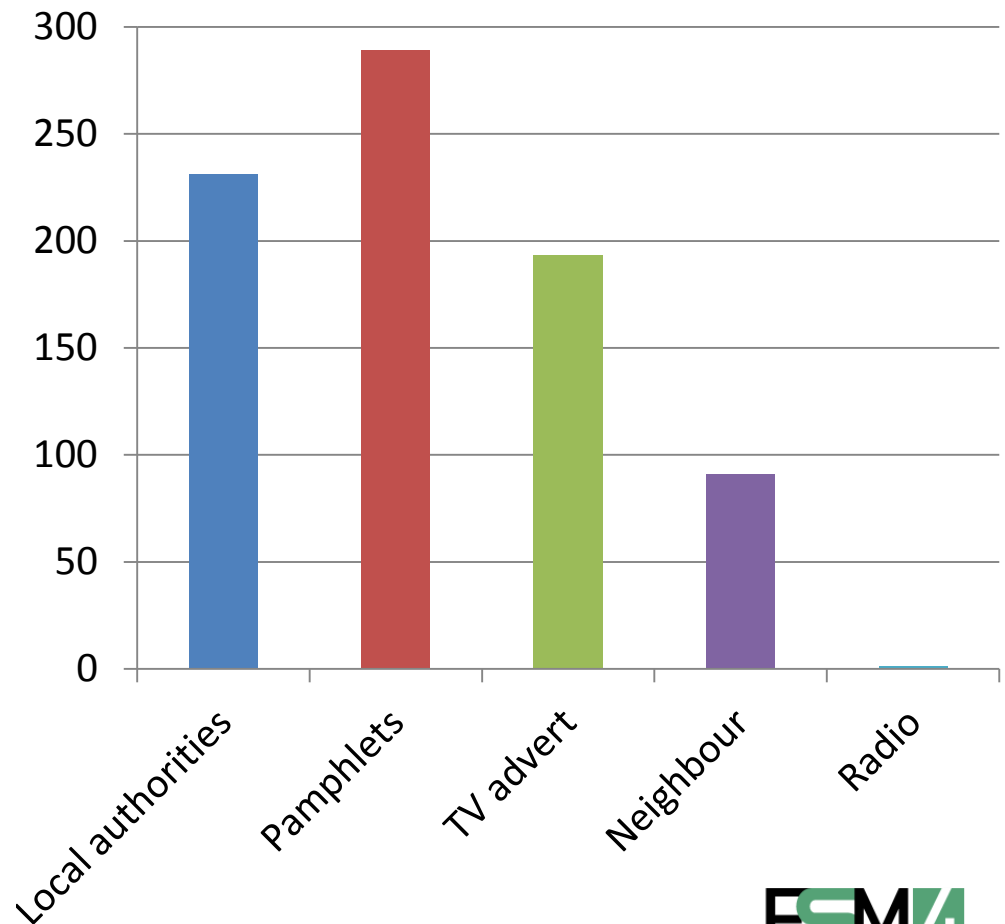
- Prices not affordable for poor households
- 7 of 8 operators still operating and covering costs
- Additional investments made by operators
- Access to banking services to expand business
- Haulage to treatment is the largest cost component



6. Customer feedback

- Pamphlets were main source of information
- Service appreciated for its cleanliness
- 40% who contacted new service fell back on alternative options due to price

Source of Information



7. Drivers of Change

- Existing SWM microenterprises:
 - Familiarity with customer base
 - Similarities in operation of SWM and FSM
 - Existing association of microenterprises
- Political support from City Council
 - Development of sanitation byelaw covering FSM
 - Tipping fees waived
- Available data on key challenges for sanitation services



8. Lessons Learned

- Technical
 - Need for **improved manual emptying tools**
 - Dynamic nature of informal settlements requires flexibility to service **wide range of sanitation facilities**
 - Due to **seasonality of FSM business**, operators need complementary sources of income to survive
- Commercial
 - **TV adverts** had major impact on demand, but **leaflets** more effective in customer engagement
 - Selling points of the new services were **cleanliness** and **positive environmental impact**
 - **Price is a major constraint** to service uptake and pushes users back to traditional manual emptying



9. Outstanding Challenges

- **Affordability** of improved services → subsidies?
- **Mix of equipment types** and transport options to increase profitability
- **Improved technology** for dry sludge and accessing dense unplanned areas
- **Improved sludge treatment and re-use**



Kanimambo!

