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WASTE
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Institute of
Water and
Sanitation
Development

Building Successful Sludge Enterprises in Norton, Zimbabwe

4th International Faecal
Sludge Management
Conference, Chennai India

22 Feb 2017

Supporting water sanitation
and hygiene services for life



What we will cover..

1. Objectives of Research Into Sludge Enterprise (RISE)
2. FSM in Zimbabwe
3. Why the MDU?
4. Key findings
5. Lessons learnt
6. Challenges
7. Next steps



The problem..



- FSM in Zimbabwe is mostly provided informally, unplanned, unsystematic and “invisible” to policy makers.
- Most cities aim for full flush sewerage and see FSM as a temporary solution for informal urban settlements.
- Pit latrines are filling up. Manual emptying is illegal but no other option except to dig a new toilet. (150% more \$ than emptying)
- Vacuum trucks cannot access pits in dense settlements, or with high solid content
- Public and environmental health considerations (and the SDGs) require that faecal sludge is safely managed

RISE Action research objectives

To bring users, operators and local authorities together, to:

- Develop their ability to design, implement and scale up faecal desludging and safe disposal in Norton and beyond

To answer these questions:

- What are the key considerations in developing sustainable business models for desludging units in small urban centres?
- What are the enablers and barriers to success?
- How can the regulatory environment enable local faecal sludge conveyance, treatment and disposal?

RISE Research – how?

Applied adapted Technology Applicability Framework (TAF) 3 times:

At the feasibility stage – 7-8 July 2015

- Assessment of sustainability indicators by all relevant actors to ensure that the MDU introduction process addresses gaps identified and has the best chance of success

At the implementation stage (mid-line) – 15-16 Sept 2016

- Assessment of sustainability indicators by all relevant actors to strengthen implementation of MDUs

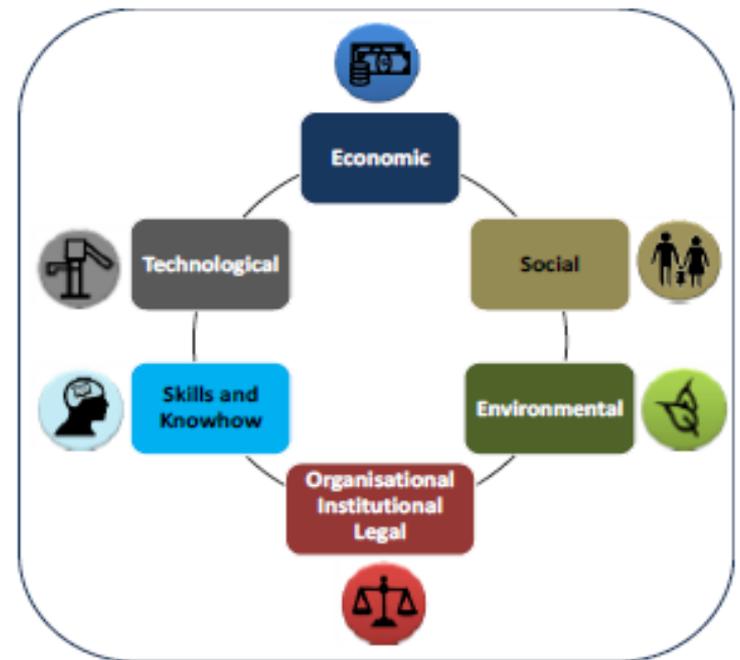
At end evaluation stage – (end line) – 26-27 Jan 2017

- Assessment of sustainability indicators by all relevant actors to identify lessons and actions towards scaling up

What is the TAF?

The Technology Applicability Framework (TAF) is a decision-support tool to assess the applicability, scalability and sustainability of a specific WASH technology to provide lasting services in a specific context

Perspective \ Sustainability Dimension	User / buyer 	Producer / provider 	Regulator investor facilitator 
Social 	(1) Demand for the technology	(2) Need for promotion and market research	(3) Need for behavioural change and social marketing
Economic 	(4) Affordability	(5) Profitability	(6) Supportive Financial Mechanisms
Environmental 	(7) Potential for benefits or negative impacts for user	(8) Potential for local production of product or spares	(9) Potential for negative impacts or benefits for natural resources on a larger scale
Legal, institutional, organisational 	(10) Legal structures for management of technology and accountability	(11) Legal regulation and requirements for registration of producers	(12) Alignment with national strategies and validation procedures
Skill and knowledge 	(13) Skill set of user or operator to manage technology including O&M	(14) Level of technical and business skills needed	(15) Sector capacity for validation, introduction of technologies and follow up
Technological 	(16) Reliability of technology and user satisfaction	(17) Viable supply chains for product, spares and services	(18) Support mechanisms for upscaling technology



Traffic lights scores are assigned by each main actors to 3 scoring questions for each of the 6 sustainability dimensions

FSM in Norton

- Despite by-laws, 22% of Norton's population have pit latrines and 37% have small septic tanks/ infiltration pits.
- Average monthly household income is \$100-150;
- Norton Town Council's honeysucker (vacuum truck) is too large to access pits in dense areas; has inadequate suction to desludge the thick sludge from Blair toilets and small septic tanks.
- Sewage treatment plant design capacity of 30 mega litres/day, processes approx. 10 mega litres/day
- By-laws against manual emptying and unauthorised disposal are weakly enforced
- No standard procedures for sludge disposal at the treatment plant

The Mobile Desludging Unit (MDU)

- Innovated in Malawi thru Speedkits
- Designed to empty pit latrines, BVIPs and infiltration pits with difficult sludge:
 - High solid content (15% solids)
 - High rubbish content
 - Difficult access (narrow roads)
- Proven effective in emptying pit latrines and BVIPs in institutions and homes in small and peri-urban areas.
- Used in Malawi serving Blantyre city council, UNICEF, Red Cross, Concern Universal, WHH, GIZ, EU, Gates Foundation, private households, etc.



MDU service in Norton and surrounds

- MDU imported from ROM and arrived in Harare in Aug 2015
- A small private company (Green Earth Waste Removals) was selected from 16 candidates who responded to an open call
- Criteria for operator selection included: company registration, financial performance, understanding of the business, investment levels, marketing strategy, visibility and reputation. Contract between WHH and operator signed with T&Cs and respective obligations
- MoU in place with NTC (March 2016), reduced fee for sludge disposal to \$5 per load, operating license agreed
- Operator training and mentorship by WASTE and Malawi operator on cost structure, cash book, O&M of MDU and marketing strategy
- Demos, billboards and flyers distributed; dry season, politics had a role - initial demand low
- Late 2016, rainy season and improved marketing paid off – higher demand from hhs and from institutions in Norton and surrounds

MDU service cost structure

- Capital costs (\$20,000 per unit) covered by project for two years. Other costs carried by operator include trailer and truck
- Operating cost per trip is \$20, hhs charged \$35 per trip, profit \$15 per trip.

20%	80%
Paying households in high density areas should represent around 20% of the revenue. Charges are lower and operating costs higher because customers are dispersed.	Enterprises such as mines, NGOs, schools typically have more toilets clustered together and can pay more. They should be targeted for 80% of business revenue .

MDU service outcomes so far (April 2016-Feb 2017)

- 120 household latrines and 120 institutional latrines safely emptied – no complaints on quality of service
- Despite initial concerns about competition between the MDU and the Council honeysucker, NTC is supportive, sees the MDU as complementing it's efforts and offering a service it cannot offer in high density areas
- Low uptake among the poor



Lessons learnt 1

Appropriate technology: The MDU fills a real gap in safely managed sanitation, i.e. pit latrines in high density and difficult to reach settlements. It complements FSM services provided by local authorities

But it's not all about technology: MDU has all the hallmarks of contextual and market fit but viable business models, marketing, operator drive and properly structured public private partnerships are crucial

Operator selection criteria: Commitment to social entrepreneurship and desire to serve the poor; business drive and focus; business process management capacity, and contract negotiation and management experience are suggested

Applying and adapting tools: The use of the TAF to spark and guide discussion between users, operators, authorities and regulators, and to form the basis of action planning put the “action” into action research

TAF workshops also built partnerships between users, officials, politicians, the Regulator and the operator.

Lessons learnt 2

Uptake with local authorities: Need to value private service providers as extending their sanitation provision mandate (not a threat or opportunity for increased income) and synchronise prices

Clear accountability relationships between service authorities, service providers and users

- Formal agreements needed between operators and LAs, brokered by an independent agency if needed, with understanding of political and administrative dynamics and a good working relationship with the LA
- Government needs to partner to provide services but the private sector is not a panacea, PPPs take effort and require skills and subsidies for business viability

Regulatory support needed to introduce FSM services and enforce by-laws to reduce illegal manual emptying and disposal is crucial

Scale up challenges

Affordability and profitability: Balance essential, MDU hh market is low income, needs commitment to social entrepreneurship, corporate and institutional customers (plus concerted marketing strategy) and public, private or hybrid financing mechanisms

Financing mechanisms for CAPEX for the current and future MDUs – high import cost and operation costs are not well known.

Contract negotiation and business flow design and implementation capacity of the operator is essential

Size of pits vis-à-vis the capacity of the MDU: takes 3 trips to empty a large pit latrine – price decrease if use a larger MDU.

Strong seasonal variations in demand for the MDU needs to be incorporated into the business model

Operator mentorship –post-project cascading mentorship model

Next steps – uptake in SUCs in Zimbabwe

MDU capacity and local production: Investigate options and costs for MDU modification to 2 cubic metres locally.

Disposal sites in new areas: Database/ map of licensed disposal sites to be developed

National and provincial advocacy: Visual IEC materials and video to popularise the MDU service. An **SFD** will be completed for Norton

Regulatory provisions: Desludging guidelines and standard procedures for sludge disposal in areas without wastewater treatment plants

Marketing strategy: Need to improve marketing to make business profitable but include the poor.

Build public private partnerships: Service Level Agreements setting out service level standards and benchmarks and tariffs, segmented by customer group needed to strengthen the accountability relationship between the operator/s and LAs

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- IRC led the research with the Institute of Water and Sanitation Development (IWSD) as local research partner
- WASTE Malawi transferred the technology from Malawi to Zimbabwe and mentored Green Earth on marketing the technology and developing the business model



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