Faecal Sludge Management in Urban and Peri-urban Areas of LMICs
Challenges and sustainable solutions

Elisa Roma, PhD

Elisa.roma@lshtm.ac.uk

London School of Hygiene and Tropical Medicine
About us

LSHTM
University of the Year 2016 Europe’s leading school of global health + tropical medicine

Environmental Health Group

- Behaviour change intervention design
- Evaluation - process and impact studies
- Operational research

**Nigeria:** HWWS Campaign delivered through CLTS

**Tanzania:** National Sanitation and Hygiene Campaign

**Haiti:** Handwashing with Soap + CWSS

**Buthan:** HHWS campaign

**India:** SuperAmma (HHWS)

**Nepal:** Food Hygiene Campaign

**Indonesia:** Maternal Health and Infant Breastfeeding
Our focus: Tanzania

Population growth:
75 mil by 2030, with 5% in urban areas

High sanitation coverage but with unimproved facilities, such as traditional pit latrines (75%)
What progress has been made?

Tanzania vs Neighbours

Porportion of 2015 Pop. who gained access to sanitation since 1990

<table>
<thead>
<tr>
<th>Country</th>
<th>1990</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tanzania</td>
<td>12%</td>
<td>13%</td>
</tr>
<tr>
<td>Uganda</td>
<td>13%</td>
<td>15%</td>
</tr>
<tr>
<td>Mozambique</td>
<td>15%</td>
<td>18%</td>
</tr>
<tr>
<td>Kenya</td>
<td>18%</td>
<td>19%</td>
</tr>
<tr>
<td>DRC</td>
<td>19%</td>
<td>22%</td>
</tr>
<tr>
<td>Zambia</td>
<td>22%</td>
<td>25%</td>
</tr>
<tr>
<td>Malawi</td>
<td>25%</td>
<td>26%</td>
</tr>
<tr>
<td>Burundi</td>
<td></td>
<td>42%</td>
</tr>
<tr>
<td>Rwanda</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

% of Improved sanitation

- Urban: 1990: 6.3%, 2015: 31.3%
- Rural: 1990: 6.6%, 2015: 8.3%
- National: 1990: 6.5%, 2015: 15.6%

What progress has been made?
Our Mission

Design the Phase II National Sanitation and Hygiene Behaviour Change Campaign

- Regions: 32
- LGAs: 176
- Cities and towns: 148
- Villages: 15,000
- Population: 49 million
The Campaign

Mass media campaign
Channels: TV, radio, social media

District below-the-line activities
Routine contact with health systems

Direct consumer contact events
(rolling schedule)

Market Penetration by Private Sector
Support the market and improve the chain for new/existing sanitation and hygiene products
How?

✓ Engage FSM innovators/ventures/private suppliers who meet agreed criteria
✓ Support offerings through assistance (research, trials, distribution set up); i.e. Behaviour change
✓ Help to build capacity and incentives for good regulation

Which are the candidate innovations to trial/test/scale in Tanzania?
Objectives of this study

1. Inventory of existing innovations for FSM in LMICs*.
2. Identify key criteria for assessing WASH innovators which can be adopted in Tanzania.
## Methods

- Non systematic desk review/published and grey literature in English
- Ventures identified grouped throughout FSM chain

<table>
<thead>
<tr>
<th>Venture</th>
<th>FSM chain component addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>User</td>
</tr>
<tr>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
Results

• Increased R&D in FSM components in the past decades:

• 49 WASH innovation ventures identified:
  – 4 operate at prototype level
  – 29 operate at pilot project stage
  – 16 beyond pilot stage (Scale?)
## Results

<table>
<thead>
<tr>
<th>Business model*</th>
<th>Partners</th>
<th>Ministry of Agriculture, IADB, Ministry of Water</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Customers</td>
<td>Household with ~8 people; 50 USD monthly income</td>
</tr>
<tr>
<td></td>
<td>Marketing</td>
<td>Dedicated SOIL marketing staff-community event, door to door</td>
</tr>
<tr>
<td></td>
<td>Activities</td>
<td>Cash payment for toilet rental and waste collected by SOIL Transport of waste to plant.</td>
</tr>
<tr>
<td></td>
<td>Financing</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Cost structure</td>
<td>Toilet construction with local material 50 USD without shelter and 175-400 USD with shelters. 3/4 USD a month for toilet and servicing rental</td>
</tr>
<tr>
<td></td>
<td>Revenues</td>
<td>International grants and private donations; Sales of compost</td>
</tr>
</tbody>
</table>

*Adapted from Johnson et al. 2007 as in Messmer & Gebauer, 2013

<table>
<thead>
<tr>
<th>Benefits/Innovation</th>
<th>Toilet can be installed anywhere/rocky soil, high water table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bottlenecks</td>
<td>Appropriate use is necessary for best results</td>
</tr>
<tr>
<td>Contact/link</td>
<td><a href="https://www.oursoil.org/">https://www.oursoil.org/</a></td>
</tr>
</tbody>
</table>
Results: Innovation

User interface upgrading/modular components
Ex. Lixil, Envirosan, Sanitation Solutions/Duraplats, Sulabh, Watershed

On-site treatment toilet technologies (dry)- Container based
Banza, Loowatt , Clean Team, X-Runner, SOIL, Sanergy, eKutir, Earth Auguer, Ecoloo, Mosan Mobile, Sanivation

On-site treatment technologies (wet)-with/without interface
Bear Valley Venture, GSAP Microflush Toilet, Biofilm toilet, Paul Clean Tech,Phree Loo BORDA Dewats, Cava Constructions Ltd

Waste management services
The Bio cycle, Jekora compost, Mosan Mobile Sanitation, Pivot, Sulabh, Waste2energy, Slamson, Sanergy
Results: Financial products

Households subscription to periodic waste collection by ad hoc staff
- Banza ltd, Clean Team, X-Runner, SOIL, Sanergy

Provision of financial products to facilitate consumers choice
- Loans to consumers (E-Kutir Svadha, Gramalaya, GSAP)
- Incentives/rewards (Thrive Health)
- Insurance (E-Kutir Svadha);
- Customer payment Facilitation (X-runner)

Franchising local entrepreneurs and sales agents
- Marketing training and capacity building (WaterShed; Sanergy, IDE Sanmark)
- Market entry facilitation (E-kuthir Svadah, PSMBV) or initial material purchase in bulk (e.g. Sanishop)

Direct sale of by-products from waste treatment
- Biogas (Waste2energy, Sulabh, the Biocycle, Loowatt)
- Charcoal (e.g. Slamson Ghana Ltd, Pivot)
- Compost (SOIL, X-runner etc)
Challenges: Unknown

**Technological Suitability**
- Development stage?
- Bundles (product/services) for customer segments?
- Customer needs satisfied?
- BOP the poorest of the poor addressed?

**Demand Generation**
- Reaching customer segments?
- Which Behaviour change target?
- Proven demand for the product/service offering?
- Product range to address different aspirations?

**Financial Viability**
- Supported by external funds or is it self-funded?
- Sustainability of the funding provided? beyond start-up funds?
- Presence of economy of scale make the product scalable?

**Enabling Environment**
- Offer depending on complex enabling environment?
- Is there government buy-in?
- Conducive regulatory and legislative environment?
Next Steps

• Further refine assessment of our tool to support decision.
• Key informant interviews with innovators/suppliers/ventures.
• Discuss potential collaborations in Tanzania.
Thank you

Questions?

Elisa.roma@lshtm.ac.uk

http://ehg.lshtm.ac.uk/

Acknowledgements:
UK Department for International Development
Unilever