Is there a **Business Case** for Mechanical Emptying of Pit Latrines?

A closer look at the ‘formal’ pit latrine emptying market

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Tate Rogers, Jocelyn Tsai, Dr. Francis de los Reyes
Is there a **Business Case** for Mechanical Emptying of Pit Latrines?

1. The Current Market
   - Customers
   - Systems in Place
   - Service Providers

2. The Equipment

3. Business Case
   - Service Provider
   - The Market Enablers
   - Manufacturer
1. The Current Market: Customers

~300-350 MILLION PIT LATRINES GLOBALLY

Population (% using any pit latrine)

- NA
- 0-20
- 21-40
- 41-60
- 61-80
- 81-100

Washdata.org
1. The Current Market: **Systems in Place**
## 1. The Current Market: Service Providers

<table>
<thead>
<tr>
<th>TYPE</th>
<th>Vacuum Truck Operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment</td>
<td>Vacuum Trucks</td>
</tr>
<tr>
<td>Capital Investment</td>
<td>USD 30,000 - 70,000</td>
</tr>
<tr>
<td>Cost per job</td>
<td>USD 70-120</td>
</tr>
<tr>
<td>Cost per m3</td>
<td>USD 10-40</td>
</tr>
</tbody>
</table>

SSG, Uganda
2. The Equipment: The Excluder

1 - Custom Vacuum System
2. The Equipment: Can it solve poor pit emptying practices?

No

- Technology/Infrastructure
- Policy/Regulation
- Behaviour/Habit
- Capacity of Stakeholders
2. The Equipment: It’s all about the...

MONEY

SERVICE PROVIDER          MARKET ENABLERS          MANUFACTURER
3. The Business Case: **Service Providers – Who would use it?**

**Expenditure per job (%)**

- Vacuum Truck Operator ~$55
- Improved Pit Emptier ~$70
- Manual Pit Emptier ~$30

**Pie Chart:**

- Personnel: 39%
- Vehicle: 27%
- Insurance/Tax/Licenses: 17%
- Disposal fees: 9%
- Maintenance: 4%
- Rent/Comms/Health and Safety: 3%
3. The Business Case: Service Providers – Who would use it?

GAINS HAVE TO COME FROM INCREASED NUMBER OF CUSTOMERS

EQUIPMENT SAVES TIME, NOT (MUCH) MONEY

GAINS ARE LIMITED BY TRANSPORT – BOTH IN TERMS FOR COST AND TIME WASTED
3. The Business Case: Improved Pit Emptying

**Cost of Emptying – Excluder + Trash Pump**

<table>
<thead>
<tr>
<th>Pits/day</th>
<th>Equipment + staff</th>
<th>Overheads</th>
<th>Sludge to disposal</th>
<th>$/pit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>21</td>
<td>9</td>
<td>40</td>
<td>$70</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>8</td>
<td>40</td>
<td>$60</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>7</td>
<td>40</td>
<td>$56</td>
</tr>
</tbody>
</table>

**Custom Vacuum**

- $62
- $70
- $85

- Excluder + staff
- Overheads
- Sludge to disposal
3. The Business Case: **Improved Pit Emptying**

Profit proportional to:

(i) How much you manage to charge

<table>
<thead>
<tr>
<th>Pit/Day</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charge/pit ($)</td>
<td>Profit ($/annum)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>- 5,305</td>
<td>- 5,295</td>
<td>- 5,285</td>
</tr>
<tr>
<td>75</td>
<td>1,070</td>
<td>7,455</td>
<td>13,840</td>
</tr>
<tr>
<td>100</td>
<td>7,445</td>
<td>20,205</td>
<td>32,295</td>
</tr>
</tbody>
</table>

(i) Availability of customers

(ii) Disposal infrastructure access

(iii) Subsidy for services?
### 3. The Business Case – The Market Enablers

<table>
<thead>
<tr>
<th>STAKEHOLDER</th>
<th>PROPOSITION STRENGTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client</td>
<td>MEDIUM</td>
</tr>
</tbody>
</table>

Who to work with…

...without inflating expectations

- Incentivise the Vac trucks
- Train more manual emptiers
- Establish more improved emptying teams

This industry simply must exist
3. The Business Case – The Manufacturers

Max Available Market
~66,000 units

5 year Market
~200-300 units

Early Adopters
- IPEs – East Africa
- Utilities/NGOs

Local presence required
‘without aftersales – there are no sales’

Partner based model with reduced risk purchase
Is there a **Business Case** for Mechanical Emptying of Pit Latrines?

- There is a business case BUT the strength of the case relies on factors external to the machine itself – enabling environment, access to treatment facilities

- Existing business case won’t excite ‘good’ entrepreneurs without incentive/support

- Enables the IPE industry to gain legitimacy, operate in the day time, and demand and demonstrate the need for infrastructure, regulation and support to offer their services.

A MARKET ENABLING TECHNOLOGY
What Next?

• Extended testing – Rwanda/Madagascar
• Test with existing pumps/trash pumps
• Identify means to reach early customers
• Manufacturing at small scale for early adopters
• Funding through ‘valley of death’

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