Serviced Household Toilets, FSM and ICT in Antananarivo
Lessons Learned

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Today: Whole Value Chain Approach

- **Service**
  - One Weekly Service
  - Home Toilets

- **Toilet**
  - Polymer Refills

- **Transport**
  - Anaerobic Digester

- **Treatment**
  - By-Products
  - energy
  - vermi-compost

- **Model**
  - Today: Whole Value Chain Approach
Global Under served Markets 2016

By-Products

Model

Transport

Treatment

By-Products

Service

Toilet

Tomorrow: Value Chain in Partnerships

Home Toilets

Polymer Refills
100 household toilets in Antananarivo

Purchased Pedestal

Locally supplied Superstructure

Loowatt Hardware

*Two hubs: Loowatt digester, SAMVA digester
Treatment System: A.D. + CHP + Pasteurisation
Mobile App and Web Platform
Mobile App & Platform - Functions

- Tracking waste transport: Refills, Containers
- Monitoring waste collected
- Providing assurance of treatment
- Improving logistics management & customer service
## Service Model Overview

<table>
<thead>
<tr>
<th>Item</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toilets in current system</td>
<td>100</td>
</tr>
<tr>
<td>Number of household users</td>
<td>600</td>
</tr>
<tr>
<td>Toilet Refills (purchased 1x weekly)</td>
<td>US$ .75-1.00</td>
</tr>
<tr>
<td>Toilet services per week</td>
<td>1</td>
</tr>
<tr>
<td>Households that purchase 1 refill / week</td>
<td>98%</td>
</tr>
</tbody>
</table>
## FSM Treatment System Overview (60 toilets)

<table>
<thead>
<tr>
<th>Item</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Gas Output</td>
<td>25 m3</td>
</tr>
<tr>
<td>Waste processed per week</td>
<td>1.2 T</td>
</tr>
<tr>
<td>Exportable Energy (Electricity, Heat)</td>
<td>23 kWh/day, 18 kWh/day</td>
</tr>
<tr>
<td>Energy byproduct – estimated annual value</td>
<td>US$ 500</td>
</tr>
<tr>
<td>Fertilizer byproduct – estimated annual value</td>
<td>US$ 7,200</td>
</tr>
<tr>
<td>FSM system replication cost</td>
<td>US$ 40,000</td>
</tr>
</tbody>
</table>
Lessons Learned

- Product generates demand
- Scale needed for financial sustainability
- Speculative approach to byproducts
- The need for partnerships
Next steps and challenges

• Biopolymer material: Options, availability, and processing
• Sale of value byproducts – began in February
• Partnerships with FSM providers in Antananarivo
• Partnership developments in other global cities
Thank you

- Bill & Melinda Gates Foundation
- GSMA Mobile for Development Utilities
- DeTong Chengdu
- Qube Renewables
- Envirosan
- Airtel Madagacsar
- Loowatt team