Nine distinct segments differ in propensity to invest in improved sanitation

<table>
<thead>
<tr>
<th>Source: FSG analyses based on Swiss-TPH 2015; percentages are share of total households without IBTs; Acronym: IBT = Improved basic toilet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significance gaps in customers’ ability to pay</td>
</tr>
<tr>
<td>Ease of conversion, average value of assets, and target market size by segment</td>
</tr>
<tr>
<td>14% need subsidy</td>
</tr>
<tr>
<td>23% have ability to pay for an IBT</td>
</tr>
<tr>
<td>Size of bubble indicates number of households in a segment without IBTs</td>
</tr>
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</tr>
</tbody>
</table>

The Sagal aggregator model is viable, but transportation is a major issue that limits reach and affects profitability

- High benchmark of “ideal” toilets
- Perceived unaffordability of improved basic toilets
- Lack awareness of affordable improved toilets

Most Sagal are viable, serving distant customers increases revenue but hired transport reduces profitability while owned transport maintains profitability

Existing SSPs growth, low entry barriers for new SSPs, and potential development of FSTPs will increase safe FSM in secondary urban regions

SSPs in secondary urban regions are viable and can scale by purchasing second-hand trucks

Potential for market entry by entrepreneurs with capital adopting a passive “hands-off” delivery model

Manual pit emptiers cannot transition to safer practices without solutions to extract dry sludge

SSPs want safe disposal infrastructure to reduce costs and ease of operations

Source: FSG analyses; Acronym: SSP = Sanitation service provider; FSTP = Fecal sludge treatment plant; FSM = Fecal sludge management

Secondary (Ziguinchor, Kao-lack, Tambacounda) |
<table>
<thead>
<tr>
<th>Collection</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source: FSG analyses</td>
<td></td>
</tr>
</tbody>
</table>

Key challenge: Low safe collection levels in secondary urban regions; unsafe disposal in primary and secondary urban regions

- Pit emptying frequency in two representative primary urban and secondary urban regions
  - Dakar (primary) |
  - Tambacounda (secondary)

Revenue and gross profit |
(n=9; XOF millions, 2020) |

Revenue (XOF million), adjusted gross margin (%) over distance (hired vs. owned vehicle) for a sample enterprise extending reach

- Price: Lack options
- Promotion: Passive
- Lack the financial incentive to invest in sanitation

Net profits (XOF million, 2020) relative to price of new and second-hand trucks

- High benchmark of “ideal” toilets
- Perceived unaffordability of improved basic toilets
- Lack awareness of affordable improved toilets

Source: FSG analyses; Acronym: OD = Open defecation

Rural Masons do not address key customer challenges

- High benchmark of “ideal” toilets
- Perceived unaffordability of improved basic toilets
- Lack awareness of affordable improved toilets

Source: FSG analyses; Acronym: FSM = Fecal sludge management

High demand for pit emptying

- Pit emptying frequency in two representative primary urban and secondary urban regions
  - 24% twice a year
  - 33% once a year
  - 6% every two years
  - 27% more than two years

Secondary urban regions lack FSTPs and SSPs

- FSTP trucks

- Dakar (primary)
- Tambacounda (secondary)
THE MARKET VALUE OF REUSE PRODUCTS CAN INCREASE SIGNIFICANTLY BY IMPLEMENTING 3 LEVERS

Annual market value of fecal sludge (FS) reuse (XOF million)

<table>
<thead>
<tr>
<th>Current value</th>
<th>Shift product portfolio</th>
<th>Integrate MSW</th>
<th>Expand to other regions</th>
<th>Combine all 3 levers</th>
<th>Potential value</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>34</td>
<td>19</td>
<td>17</td>
<td>350</td>
<td></td>
</tr>
</tbody>
</table>

LEVER 1: SHIFT THE PORTFOLIO TO HIGHER VALUE AND EASIER TO IMPLEMENT REUSE PRODUCTS

Economic value per m³ of FS input (XOF) vs. ease of implementation vs. annual addressable market

- Compost
- Animal feed
- Biogas
- Solid fuel

Current reuse portfolio in Senegal
Annual addressable market

Economic value per m³ FS input (XOF)

LEVER 2: INTEGRATE MUNICIPAL SOLID WASTE (MSW) TO IMPROVE YIELD AND QUALITY

Increase in economic value (XOF per m³ of FS input) for each reuse product due to integration of MSW

LEVER 3: EXTEND REUSE TO CITIES BEYOND DAKAR

Increase in FS used ('000 m³)

Address customers’ perceptions about ideal toilets and affordability
- Invest in demand generation and demand activation
- Widen the product system range
- Localize labor, materials, and payment forms

Recommendations by Stakeholders

Support fleet expansion and new entrants
- Continue formal programs for vehicles and spare parts acquisition
- Develop credit products for second-hand trucks
- Implement fiscal incentives

Leverage the sanitation code
- Widen institutional customer base for SSPs
- Facilitate adoption of safe practices by manual emptiers

Innovate treatment infrastructure
- Identify and pilot new treatment technologies
- Reduce trip distances

Demonstrate safety of reuse products

Implement short and long-term waste segregation mechanisms

Mandate government procurement and distribution

Facilitate knowledge sharing among local practitioners

Roles for government, donors, and MBS program implementers

- Leverage the community health network
- Disseminate and expand proven market-based sanitation (MBS) approaches
- Facilitate innovation in rural loan products
- Extend or scale the truck acquisition program
- Accelerate the setup of new FSTPs and incentivize co-located FS reuse facilities
- Provide concessional loans to accelerate setup of FSTPs
- Fund experimentation of new models (e.g., rural loans, transfer stations, waste segregation)
- Expand the scope of MBS approaches in sanitation programming
- Support the performance evaluation of subsidies
- Learn and replicate successful enterprise models
- Identify focal point entrepreneurs beyond masons
- Support testing of new rural loan products
- Design an exit strategy in MBS programs
- Assist manual emptiers adopt safer methods

Contact the USAID Mission in Senegal or visit www.globalwaters.org/WASHPaLS for more information