

Addressing Shared Fecal Sludge Containment Needs in Abidjan, Côte d'Ivoire

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Background

The Sanitation Service Delivery (SSD) project is a United States Agency for International Development/West Africa regional urban sanitation project being implemented in Benin, Côte d'Ivoire, and Ghana by Population Services International in collaboration with PATH and Water and Sanitation for the Urban Poor. The goal of the SSD project is to improve urban sanitation outcomes through developing and testing scalable, market-based models that contribute to structural change within the region's sanitation sector with an initial focus on the cities of Cotonou (Benin), Abidjan (Côte d'Ivoire), Accra (Ghana), and Kumasi (Ghana).

Fecal sludge management in Abidjan, Côte d'Ivoire

In the spring of 2015, Population Services International Côte d'Ivoire and PATH conducted market and product research on fecal sludge management (FSM) products and practices to understand the market for sanitation products and services, better define user and market-actor needs and desires, and identify next steps for business-model development and pilot testing of potential products and services.

Challenges around FSM storage and containment

Findings from the market landscape and product research in Côte d'Ivoire revealed several gaps related to safe and hygienic containment of fecal sludge.

- Limited supply of affordable and appropriate products.
- Low quality of existing tanks.
- Limited space within compounds.
- Non-hygienic and low-quality fecal sludge emptying services.
- Limited knowledge by consumers and service providers around appropriate designs and functional requirements of septic tanks.

Improving FSM in Abidjan

Following the identification of gaps and challenges along the sanitation service chain in Côte d'Ivoire, the SSD team prioritized product development activities related to identifying existing and/or developing new, lower-cost shared septic tank designs. Our hypothesis was improved products would lead to: 1) more hygienic management of fecal sludge within compounds; 2) efficiency and effectiveness of fecal sludge emptying services; and 3) reduction in environmental contamination.

In addition to developing a list of affordable, fecal-sludge containment technologies appropriate for Côte d'Ivoire, our team sought to identify: 1) key geographical features of potential locations to test technologies and 2) highlight potential incentives and barriers for generating demand and supply-side interest.

Research activities

Primary objective

User research: Collect feedback on shared FSM containment designs (e.g., septic tanks) from tenants, landlords, and sanitation supply-chain actors.

Secondary objectives

Materials and costs: Identify appropriate and locally available materials and costs of FSM containment technologies.

Site evaluation: Develop a list of recommended sites for field testing of FSM containment technologies.

Research design

Primary research

Individual interviews: Tenants (n=7) and landlords (n=10) were interviewed to collect feedback on product specifications, designs, and payment options. Government actors (n=2) were interviewed to understand regulatory policies regarding septic tank installation and design.

Market visits and discussions: Septic tank manufacturers and fecal sludge vacuum truck operators (n=5) were interviewed to collect information on installation, manufacturing, and servicing processes, as well as product designs.

Site evaluations: Eleven compounds were visited to evaluate geological, spatial, and hydrological factors, as well as to identify potential sites for feasibility and pilot testing of FSM products.

Secondary research

Technology landscape: Technical specifications on existing technologies for shared storage and containment were collected from several sources (supply-chain actors, grey literature, and sanitation-focused websites). This landscape was revised and updated during the research period to include additional, relevant technologies as they were identified.

Key results

User feedback—septic tanks

- Neighboring compounds are not interested in a single, shared septic tank.
- Variable user understanding of the required function and specifications of a “septic tank.”
- Cost and space are top concerns for all value-chain actors.
- Manufacturers decide type of tanks to be installed based on perceptions of consumers' ability to pay.

User feedback—FSM

- Average fecal sludge removal costs paid by compounds varies between US\$41 and US\$137.
- Consumers are not satisfied with the quality of fecal sludge removal services due to factors such as accidental spilling, bad odors, and incomplete emptying
- Potential to connect existing compound systems to public sewer network.
- Customers prefer fecal sludge removal service intervals of a minimum of one year.

Key results (continued)

Technology landscape—product specifications, materials, and cost

- Seven septic tank and onsite digester models analyzed.
- Maximum users per design ranges from 10 to 100 people.
- Area required for installation is 2 m² to 42 m².
- Product costs range from US\$300 to US\$6,500.
- Majority of septic tanks constructed of cement and brick.

Compound site characteristics

- Varied water table depths in each commune, from standing water to > 3m.
- Average open area in each compound is roughly 12m x 10m or 120 m².
- Nearly all entrances of compounds visited were within 5m of main road.



Conclusion

User feedback clearly showed shared containment between neighboring compounds is not a desired option. Findings also showed additional improvements are needed around functionality, design, and cost of products. Building capacity and improving service provision of manufacturers and sludge-removal actors could further improve FSM practices, as well as increase awareness of product requirements and fecal sludge emptying regulations for demand and supply-side users.

Next steps: introducing improved FSM products

- Design and test a lower-cost, precast, 6m³ septic tank for compounds of up to 60 people.
- Conduct a market-sizing exercise to determine demand estimates for revised septic tank design.
- Identify and train masons on construction methods and standards for new septic tank design.
- Develop consumer information and marketing materials for product promotion.