

Title of grant: Structuring of the fecal sludge market for the benefit of poor households in Dakar, Senegal (ONAS)

Lead organization / grantee (name and location): Senegal National Sanitation Utility (ONAS)

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Partners: WSA, IPA, EDE, Association of Senegalese Sanitation Workers, OXFAM America

Water and Sanitation for Africa (WSA): WSA is a non-governmental, not for profit organization and an intergovernmental support organization, which was established in 1989, and currently works in 18 countries in Africa. As an interstate water and sanitation (WATSAN) institution, WSA supports access to safe water and sanitation facilities for poor and/or marginalized people. It has programmes in the areas of capacity building for government agencies, research, policy analysis, and knowledge management.

Innovations for Poverty Actions (IPA): IPA is a US non-profit organisation, which develops, tests, and scales up proven solutions to real-world problems faced by the poor in developing countries. IPA has experience working in over 40 countries around the world and their staff receives rigorous training in implementing randomized controlled trials in the field. They strive to bridge the gap between cutting-edge academic research and action by nonprofits, governments, and firms. IPA is represented in this project by three economics professors from the University of Wisconsin, Madison and University of Notre Dame.

EDE, Senegal (Engineers company specialized in water and sanitation)

An engineering consulting firm, specializing in the field of water and sanitation, established in 2001. EDE has developed a close partnership with ONAS through its consulting work on the first major sanitation project undertaken in the Dakar region (2001 to 2008), PAQPUD. EDE is the first such firm to conduct socio-economic and engineering studies in the area of public and independent sanitation, in both urban and rural areas of Senegal, as well as other countries in Africa. EDE's role in this program will be to provide project management expertise by supporting the coordination of the program and providing technical expertise on studies, selected by mutual agreement.

Association of Senegalese Sanitation Workers

They will specialize in maintenance and clearing of rain and wastewater networks, industrial cleaning, pumping and oil transport, desludging septic tanks. The

association was created in 2007 in Dakar and registered in 2008. It covers the whole country and unites about 47 companies and 200 trucks for metropolitan Dakar. Regional structures have been put in place in Thies, Touba, and Kaolack. This exercise will be followed up in other cities. To improve their supply of services, they are in charge of:

- Increasing membership,
- Centralizing resources,
- Registration and mapping of domestic sanitation,
- The consumer network data base creation,
- Mapping of desludging services,
- Subscription services,
- Capital improvements,
- Sludge management.

This association will provide mechanical desludging services at competitive rates to targeted households. They will also be contracted by the subscription services program to perform services for subscribing households as required. In addition, they will participate in the operation of the fecal sludge treatment stations as part of a public/private partnership. The project intervention design in the operator market has been guided by the stated needs of the sanitation workers as represented by their association. These stated needs include: formalization of the industry; private management of sludge treatment stations; access to new capital equipment; and effective training of operators. Manual desludging operators, organized into Economic Interest Groups (GIE) are also involved in this project through retraining and improvements in services to neighborhoods which are difficult to access as technology is identified through CREPA's research into the adaption of existing desludging technologies for the sanitation market in Senegal.

OXFAM America

They provide humanitarian programs to reduce the risk of contamination during floods in Pikine. Their services will be coupled with the priority sanitation services targeted toward inhabitants of the areas of Pikine most vulnerable to flooding.

Location of research: Dakar, Senegal

Start and end date: This project has received 3 grants so far. In total the funding period is November 2011; to January 2017

Grant Scheme: Others

Short description of the project (and goals):

The National Office for Sanitation in Senegal (ONAS) has received a \$17,070,000 grant from the Bill and Melinda Gates Foundation to support the creation of a large scale, sustainable sanitation value chain in Dakar, Senegal including mechanized fecal sludge management. Manual desludging is predominant in Dakar. This project aims to make hygienic fecal sludge emptying services accessible and affordable to

the peri-urban poor of Dakar (Pikine and Guédiawaye) through interventions that lead to increased coverage, lower prices, and higher quality fecal sludge management (FSM) services in Senegal.

Goal(s) / aim(s)

This project aims to make hygienic fecal sludge emptying services accessible and affordable to the urban poor through interventions that make the sanitation sector more sustainable, competitive and dynamic.

The **objectives** are:

1. Establishment of a **more efficient division of labor between public and private partners** through a transfer of responsibility for the operation and maintenance of sanitation infrastructure to the private sector.
2. Adjustment in ONAS's focus towards sanitation project management and focus on **developing an environment in which the private operators can flourish**.
3. Program for the **structuring of the fecal sludge market for the benefit of poor households** in Dakar.
4. **Reduction in the cost of desludging operations** through increased competition and reduced operator expenses. The private sector depending on the profitability of the venture will invest more in sludge management and extend services to more households thus acquiring economies of scale. At the moment, mechanical desludging costs approx. \$54 and at the end of the project the target will be at \$46.
5. **Training module and database equipment to increase knowledge and professionalism** for the private sector and the municipalities. It will be organized for each of these stakeholders at least one training per year. The aim is to familiarize them with new tools developed by the program: certification, call center, subscription systems, auctions, etc.
6. **Formalization of the private sector** through accreditation.

This will include the following **key steps**:

- Identify, test, and evaluate **key interventions (call in center implementation, mobile money platform, auction, etc.) to increase demand and competition** in the fecal sludge emptying services market in Senegal.
- **Construct one key piece of infrastructure**, which will facilitate reduced operating costs for desludging operators. It will be built in Keur Massar (in the project area) a new fecal sludge treatment plant. The objective is to make closer the dumping site to the households (fecal sludge producer). This station will be a biogas production plant from fecal sludge. An additional funding from the Gates Foundation of nearly \$3'000'000 was granted to ONAS for this purpose.
- **Increase awareness** of the importance of the use of mechanized desludging services to increase demand and willingness to pay for hygienic desludging services.
- Assure the sustainability of these interventions through **training coordination**

to various stakeholders (emptiers, ONAS regional services and municipalities), management, and technical oversight.

To achieve these objectives, the program is divided into **4 components**:

1. Research (IPA and WSA):

This research is expected to take 36 months, and will be implemented in 4 phases. Further details provided below:

Phase 1: Review Existing Knowledge, Practices and Needs

This includes:

- ✓ Review of the existing technologies and systems in Senegal including their costs, mode of operation, actors and payments.
- ✓ Review of national policies and regulations related to FSM in Senegal.
- ✓ The benchmarking of legislation related to FSM in other Sub-Saharan African countries
- ✓ Review of past initiatives in Senegal to improve FSM and synthesis of key learning from both their positive and negative outcomes.
- ✓ Stakeholder and situational analysis to establish the knowledge needs and communication pathways in target municipalities. Which groups are best situated to initiate recommended changes? Which groups have the highest potential to run FSM as a viable business?
- ✓ Site selection of research neighborhoods. Neighborhoods chosen for research must be far enough away from each other to avoid potential contamination from different treatments.
- ✓ Pilot programs in smaller sample areas to verify the randomized trials project design.
- ✓ Baseline surveys of targeted neighborhoods.

The analysis will cover both the existing FSM systems and potential improvements to those systems. Phase 1 review will inform Phase 2 in finalizing the methodology and identifying potential designs.

Phase 2: Research Methodology Workshop

A methodology workshop will be conducted to coordinate research approaches and synthesize available knowledge to ensure a consistent approach across the research partners in Phases 3 and 4. The research methodology workshop will:

- ✓ Review available research methodologies and assessment frameworks and prioritize those to be used.
- ✓ Review the relevant literature and other studies carried out prior to this research (e.g. Benchmarking of Urban Sanitation Pricing and Tariff Structure in Africa in Senegal and Study on Fecal Sludge Businesses in Ten Countries)
- ✓ Prepare common research questions, data collection tools, and methodologies.
- ✓ Develop a framework terms of reference for each research theme to ensure consistency throughout.

Phase 3: Active Research

Active research involves interacting with the suppliers and consumers of FSM. This research includes:

- ✓ Community meetings to establish key issues and local needs.
- ✓ Active research with key actors including sanitation operators, households, and

- municipal and private systems to understand how better to protect the livelihoods of the operators while maintaining affordability of services for poor households.
- ✓ A pilot subscription services program offering services to 4,000 households in 400 neighborhoods.
 - ✓ Randomized controlled trials testing new marketing strategies, program designs, and billing systems to evaluate their ability to increase households' willingness to pay for hygienic sanitation services.
 - ✓ Randomized controlled trials to evaluate alternative mechanisms for intervening in the supply side of the sanitation market, with the goals of increasing quality, increasing access to hygienic sanitation services, and lowering prices.

Phase 4: Dissemination of the Research Findings

The primary audience for our research results is ONAS which is developing the sanitation services projects at scale. We are working directly with them to ensure that our research results are applicable and address their implementation concerns. We will begin the research six months prior to the implementation of the operational project in order for the findings from the initial research to be incorporated into the full-scale design process.

Findings from the research in this project will also be made available to a broader audience through activities promoting the research. These include the following:

- ✓ Findings from the monitoring and evaluation component will provide scientific measurement of the full impact of the project on access to hygienic sanitation services and use of illegal manual emptying in the sector.
- ✓ A workshop will be used to present and validate the research with all stakeholders. The outcomes of the research will be collectively agreed on prior to the dissemination of the findings.
- ✓ Research papers and manuals from the research outputs will be published.
- ✓ Findings will be presented at regional and international conferences such as World Water Day.
- ✓ The research consortium will collaborate with UN-Habitat, SANDEC in Switzerland, and an experts group on FSM to disseminate the research findings globally.

Some investigated **key questions** are:

- i. What is the impact of social pressure or coordination on the take up of mechanized desludging?
- ii. How do payment mechanisms affect the willingness to pay for mechanized desludging services?
- iii. How can we most efficiently match household demand for desludging services with suppliers?
- iv. What is the willingness to pay to substitute from manual to mechanical desludging?

2. Public works (EDE)

- **Construction of one new fecal sludge disposal and treatment station** in the outskirts of Dakar. Its location will make it possible to reduce the volume handled by the existing stations so that they can treat all of the sludge they receive. It would have a total capacity of about 550 m³/day. Three fecal sludge treatment centers are currently functional in Dakar.

- **Construction of transfer systems** in inaccessible areas, which will make mechanical desludging possible in areas currently inaccessible to trucks. This could include temporary storage installations or other installation resulting from the Research findings.
3. **A marketing strategy:** open the market to the desludging operators by increasing demand for mechanized desludging services. This includes:
 - a. A media campaign implemented by EDE with a communication agency (PHENIX).
 - b. Visual and promotional supports/tools for operators and households.
 The media plan is scheduled to be held from the second year and the strategy document is currently being developed.
 4. **Project management** will be carried out by ONAS with the assistance of EDE.
 5. **A sanitation component for flood prone areas led by Oxfam America. Oxfam will do this by focusing on five specific objectives that will be achieved by the end of the project:**
 - The most vulnerable populations in flooded and flood-prone areas of Pikine and Guédiawaye will demonstrate a positive shift in risk perception, attitudes, norms and ability and self-regulating factors related to purchase and use of sanitation coupled with improved hand washing behavior.
 - At least 3 to 5 innovative sanitation technology systems developed and tested in the targeted communities, providing suitable and affordable options for the communities to choose from.
 - A business model is developed outlining how the communities will integrate and ensure mass acquisition of latrines and future maintenance of the new sanitation solution in a sustainable way affordable to the communities.
 - Up to 5,000 families in the target population have access to the new sanitation system and, replication of the sanitation technology is accepted by key stakeholders as a sustainable, affordable and effective solution to household sanitation in flood prone areas.

Current state of affairs:

First research results:

- Increased adoption of mechanized desludging can be achieved by improving neighborhood coordination:
 - Harnessing social pressure to maintain improved levels of take-up of sanitation practices.
 - Using local social network connections for improved targeting of messages to those most likely to diffuse ideas to the community.
 - Measuring spillover effects of government sanitation projects.
- Access to mechanized desludging can be achieved through improved payment

systems:

- Subscription service (monthly payments)
- Micropayments service

Next steps:

- Piloting of call in center system begins in February 2013 to improve linkages between suppliers and customers. Customers call the center when they need a desludging service. Calls for bids go out over cell phone text messages. Affiliated and independent desludging operators are invited to submit an offer. Lowest bidder among the operators is awarded the job.
- Various demand treatments about possible collusion; effects of social pressure, leadership and reciprocity; spillover effects; and impacts of payment timing begin in March 2013. 18 months research data collection is planned. Final results are expected by end of 2014 or in 2015.

These steps are part of the research component and are piloted by IPA.

Biggest successes so far:

The great success achieved so far is the involvement of the private sector in the management of fecal sludge treatment plants. Indeed, the program has worked to the delegation of the three existing fecal sludge treatment plants of Dakar.

Main challenges / frustration:

The biggest challenge we are currently facing is the timeliness. The diversity of partners and activities explains the difficulty of compliance with contractual deadlines.

Links and further readings:

<http://www.solutionsforwater.org/solutions/program-for-the-structuring-of-the-fecal-sludge-market-for-the-benefit-of-poor-households-in-dakar-slums-senegal>

Presentation:

<http://www.povertyactionlab.org/sites/default/files/documents/Day%202%20-%20Joint%20session%20-%20Mbaye%20and%20Molly.pdf>