- **Title of grant**: Sanitation Pricing for the Urban Poor in Burkina Faso and Ghana
- **Subtitle (more descriptive title):** Economic and Financial Models for Pricing and Setting Sanitation Tariffs for the Benefit of the Urban Poor
- **Name of lead organization:** Innovations for Poverty Action,
- **Primary contact at lead organization**: Shoshana Griffith (IPA), Primary Investigators: Terence Johnson (University of Notre Dame, USA), Molly Lipscomb (University of Virginia, USA)
- **Grantee location**: New Haven, Connecticut
- **Developing country where the research is being or will be tested**: Burkina Faso and Ghana
- **Start and end date:** January 1, 2014 to December 31, 2016
- **Grant type:** (e.g. Global Challenges Explorations, Reinvent the Toilet Challenge, Other) Global Development
- **Grant size in USD:** $1,145,422
- **Short description of the project:**

A well-functioning sanitation services market improves welfare by reducing externalities, allowing for coordination in services within neighborhoods, and minimizing the cost of providing the services. The market for mechanized desludging services in Accra (capital of Ghana) and Ouagadougou (capital of Burkina Faso) is inefficient and underdeveloped. In Ouagadougou, many households use manual desludging when they could use mechanized desludging instead. While the sanitation market in Accra is somewhat more developed than in Ouagadougou and households rarely use the services of manual desludgers, households often have difficulty locating providers and negotiating a price for the service. This project will examine the efficient pricing of desludging services in a market where externalities are present and the impact of an intervention improving linkages between households and desludging operators.

In markets where externalities are present, efficient adoption of many services is unlikely. If some market participants fail to adopt an efficient service, benefits fail to accrue to neighbors, and particular neighborhoods can end up in caught in a socially inefficient equilibrium. In the long run, this also depresses investment in the market, since suppliers of the service will face a lower return than they would otherwise. In this kind of market failure, there is clearly a role for

government intervention. However, there are two key obstacles. First, the true costs of providing the service are not observed in existing market price data, since firms presumably set prices to maximize their profits, which will include a mark-up over marginal cost. Second, the externality benefits cannot be inferred from existing usage data, since the neighborhoods which were "lucky" enough to start at a high sanitation equilibrium cannot be separately identified from those in which there happen to live a large number of agents with idiosyncratically high value for the service.

In this project, we measure the impact of alternative pricing models and information interventions on prices and use of improved sanitation services by households not connected to sewer networks in peri-urban areas in two towns in West Africa.

In Accra, Ghana, which has a more advanced sanitation service market, we introduce a call center system aimed at improving linkages between desludging providers and customers, and test the impact on desludging prices, customer satisfaction, and desludger business revenue. We will measure the underlying values of services for customers, measure the cost of providing services for desludging operators, and measure the impact of information on the level of satisfaction of households with their desludging operators and whether they continue to use them on future desludgings.

In Ouagadougou, a less developed market compared to Accra where manual desludging is still prevalent, we test the effect of alternative pricing models on take-up of mechanical desludging, and willingness to pay for sanitation services. We design two pricing treatment structures, one with fixed prices set based on household characteristics, and another with desludger bidding and negotiations with desludgers for lower prices. The fixed prices are set based on household characteristics; this treatment is designed to allow governments to target subsidies to poor households while financing some of the subsidies through price discrimination toward wealthier households. We will test whether these pricing structures, developed based on the underlying factors in the economy, perform better than the control group which has no pricing intervention in terms of total take-up of mechanized desludging.

- **Goal(s):** The goal of our research is to design and test ways to better organize markets for sanitation services in order to improve the pricing of sanitation services, improve access

to sanitation services, and increase household welfare in peri-urban households not connected to sewer networks.

- **Objectives:** In Ghana, the project will identify and test strategies to address inefficiencies in the market for sanitation services, thereby increasing access and affordability.

  In Burkina Faso, the project will identify and test strategies to encourage households to switch from manual to mechanized desludging.
- **Research or implementation partners:** Water and Sanitation for Africa (WSA), Accra Metropolitan Authority, Office National de l'Eau et de l'Assainissement (Ouagadougou, Burkina Faso), University of Virginia Batten School of Public Policy, University of Notre Dame
- **Links, further readings – results to date:**

  http://www.poverty-action.org/study/sanitation-pricing-urban-poor-burkina-faso

  https://www.socialscienceregistry.org/trials/338

  https://www.socialscienceregistry.org/trials/834
- **Current state of affairs:**

  Accra, Ghana

  The Ghana projects consists of four main phases: baseline, call center intervention, midline and endline.

  We completed the baseline desludger and household surveys in October 2014, interviewing 100 desludging operators and truck owners, and 4459 households in 225 neighborhoods of peri-urban Accra. The call center was advertised to households in 150 neighborhoods (over 6,000 households); the remaining 75 neighborhoods (about 900 households) will serve as a control group.

  We piloted the call center platform in August 2014 and it became operational at the beginning of the baseline survey. The call center connects households to desludgers to empty their septic tank using a ranking system. From September 2014 to March 2015, the call center assigned suppliers randomly in order to gather enough price data to construct the ranking system. The platform was updated to introduce the final ranking system used in the intervention in March 2015.

  From October to November 2015, we conducted a midline survey to enroll 2000 additional households in the call center. A final endline survey is planned for 2016, once the call center's ranking system has been in place for at least one year.

Ouagadougou, Burkina Faso

In Burkina Faso, in 2014, we completed a baseline survey of 85 desludging service operators and truck owners, as well as a first round survey of 2,000 households, in which we measured the underlying values of services for customers and the cost of providing services for desludging operators. Since November 2014, enrolled households and desludgers have had access to our project's call center which connects suppliers to clients using second price auctions.

We used data from our baseline surveys and to design two pricing treatment structures, one with fixed prices set based on household characteristics, and another with desludger bidding and negotiations with desludgers for lower prices. From July to August 2015, we conducted a baseline survey of approximately 4,000 new households. Of these, 2733 were enrolled in the call center (1660 as fixed price and 1073 as negotiations), and the remaining 1284 will serve as the control group.

The endline survey will take place in 2016, once the pricing structures have been in place for one year. We will test whether the pricing structures, developed based on the underlying factors in the economy, perform better than the control group which has no pricing intervention in terms of total take-up of mechanized desludging.

- **Biggest successes so far:**

  - design of model for targeting subsidies to households in Burkina Faso.

  -design, management, and oversight of call centers in Burkina Faso and Ghana

  - collection of data on desludging practices and market structure

- **Main challenges / frustration:**

  - Households need to desludge only once or twice per year, which means that sample size must be quite large in order to have enough volume to observe changes.